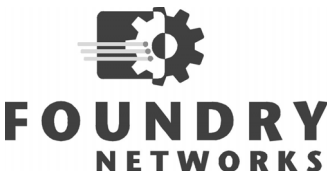
Foundry Management Information Base Reference



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November 2002

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Chapter 1
Getting Started

This guide describes the objects supported in the Foundry Management Information Base (MIB). A MIB is a database of objects that can be used by network management systems to monitor devices on the network. It contains the definitions of the object properties within a managed device. Each managed device keeps a database of values for each of the definitions in the MIB.

Audience

This manual is designed for network administrators with a working knowledge of the following:

- Layer 2 and Layer 3 switching and routing
- Layer 4 to 7 networking

If you are using a Foundry Layer 3 Switch, you should be familiar with the following protocols if applicable to your network: IP, RIP, OSPF, BGP4, IGMP, PIM, DVMRP, IPX, AppleTalk, FSRP, and VRRP.

Nomenclature

This guide uses the following typographical conventions to show information:

Italic	highlights the title of another publication and occasionally emphasizes a word or phrase.
Bold Italic	highlights a term that is being defined.

NOTE: A note emphasizes an important fact or calls your attention to a dependency.

Related Publications

The following Foundry Networks documents supplement the information in this guide.

- *Foundry Switch and Router Installation and Basic Configuration Guide* – provides hardware and software installation information, and configuration information for system-level features.
- *Foundry Security Guide* – provides procedures for securing management access to Foundry devices and for protecting against Denial of Service (DoS) attacks.
- *Foundry Enterprise Configuration and Management Guide* – provides configuration information for enterprise routing protocols including IP, RIP, IP multicast, OSPF, BGP4, VRRP and VRRPE.
- *Foundry NetIron Service Provider Configuration and Management Guide* – provides configuration information for IS-IS and MPLS.

- *Foundry Diagnostic Guide* – provides descriptions of diagnostic commands that can help you diagnose and solve issues on Layer 2 Switches and Layer 3 Switches.
- *Foundry Switch and Router Command Line Interface Reference* – provides a list and syntax information for all the Layer 2 Switch and Layer 3 Switch CLI commands.
- *Foundry ServerIron Application Guide* – provides setup procedures for the ServerIron's basic SLB and TCS features.
- *Foundry ServerIron Installation and Configuration Guide* – provides installation instructions as well as detailed feature descriptions, procedures, and application examples for Server Load Balancing (SLB), Global SLB (GSLB), Transparent Cache Switching (TCS), and URL Switching.
- *Foundry ServerIron Firewall Load Balancing Guide* – provides detailed feature descriptions, procedures, and application examples for Firewall Load Balancing (FWLB).
- *Foundry ServerIron Command Line Interface Reference* – provides detailed syntax information for all ServerIron CLI commands.

To order additional copies of these manuals, do one of the following:

- Call 1.877.TURBOCALL (887.2622) in the United States or 1.408.586.1881 outside the United States.
- Send email to info@foundrynet.com.

How to Get Help

Foundry Networks technical support will ensure that the fast and easy access that you have come to expect from your Foundry Networks products will be maintained. If you have comments, questions, and corrections to this document, contact Foundry Networks technical support.

Web Access

The latest product information and technical tips are always available to our customers from the Foundry Networks web site. You can access the web site at the following URL:

- http://www.foundrynetworks.com

Email Access

Technical requests can also be sent to the following email address:

- support@foundrynet.com

Telephone Access

- 1.877.TURBOCALL (887.2622) United States
- 1.408.586.1881 Outside the United States

Warranty Coverage

Contact Foundry Networks using any of the methods listed above for information about the standard and extended warranties.

Chapter 2
Overview of the Foundry MIB

The Management Information Base (MIB) is a database of objects that can be used by a network management system to manage and monitor devices on the network. The MIB can be retrieved by a network management system that uses Simple Network Management Protocol (SNMP). The MIB structure determines the scope of management access allowed by a Foundry device. By using SNMP, a manager application can issue read or write operations within the scope of the MIB.

Obtaining and Installing the Foundry MIBs

You can obtain the Foundry MIBs:

- From the product CD-ROM
- By downloading the file from Foundry Networks Web site or FTP site.

After obtaining the MIB, follow the instructions for your network management system to be able to use the MIB.

Obtaining the MIB from the Product CD

On the product CD-ROM, look for the MIB file under the “image” folder. MIB files have a .mib extension.

Downloading the MIB from Foundry Networks Web Site

To download the MIB from the Foundry Networks Web site, you must have a user name and password to access the Foundry Networks support site. Then do the following:

1. Open your Web browser and enter the following URL:

   http://www.foundrynet.com/

2. Click Service -> Technical Support to display the Technical Support page.
3. Click the Log In button and enter your user name and password.
4. Click a product on the left frame of the Technical Support site and find the appropriate IronWare release for that product. Each IronWare release has a link for its corresponding MIB.
5. Click the link for the MIB to open the file or save it to disk.

Downloading the MIB from Foundry Networks FTP Site

You can also download the MIB from the Foundry ftp support site. Contact Foundry support for details. (Refer to “How to Get Help” on page 1-2.)

Standard Objects

The Foundry MIB supports certain standard MIB objects, which are derived from Request for Comments (RFCs) documents. This section summarizes the standard objects that are supported in the Foundry MIB. Refer to the appropriate RFC for details.

The following sections present the standard objects that are supported in the Foundry MIB:

Refer to each section to determine which objects from the RFCs are supported.

RFC 1213: Management Information Base (MIB-II)

The following objects from RFC1213 are supported in Foundry devices.

Object Group Name	Object Identifier
system	1.3.6.1.2.1.1
interfaces	1.3.6.1.2.1.2
ifTable	1.3.6.1.2.1.2.2
ifEntry	1.3.6.1.2.1.2.2.1
ifIndex (See note below.)	1.3.6.1.2.1.2.2.1.1
ip	1.3.6.1.2.1.4
icmp	1.3.6.1.2.1.5
tcp	1.3.6.1.2.1.6
udp	1.3.6.1.2.1.7
transmission	1.3.6.1.2.1.10
snmp	1.3.6.1.2.1.11
rmon	1.3.6.1.2.1.16
dot1dBridge	1.3.6.1.2.1.17

The following groups from RFC 1213 are not supported.

- at

NOTE: The table ipNetToMediaTable (OID 1.3.6.1.2.1.4.22) is used instead of the atTable. The atTable has been obsoleted in RFC 1213.

- egp

NOTE:

The ifIndex values allocated for physical ports do not change as modules are inserted and removed. However, they may have changed between software releases of Foundry products to accommodate a greater number of ports per module. In IronWare software previous to release 07.1.xx, a block of 32 ifIndex values was allocated for each slot. Ports in slot 1 would have ifIndex values from 1 to 32, slot 2 would have values from 33 to 64, and so on.

In IronWare TrafficWorks software release 07.2.xx, the number of allocated ifindex was changed to allow 64 ports for modules. Ports in slot 1 would have ifIndex values from 1 to 64, slot 2 would have values from 65 to 128, and so on.

Virtual and loopback interface ifIndex values are allocated from ranges above those used for physical ports

ATM subinterfaces and PVCs have ifIndex values allocated in a dynamic fashion, which is not readily predictable.

In IronWare software release 07.5.00 and TrafficWorks software release 08.0.00, the following blocks of ifIndexes have been allocated:

Physical ports:	1 – 680 (48-T blades * 14 slots + 8 management ports)
VE:	255 (configuratble to 2048)
Loopback: :	8
Multicast tunnel	32
GRE IP tunnel	4
ATM subinterface	10
Unused	10
MPLS tunnel	8192
PVC tunnel	4096

These allocations can change in future releases.

RFC 1493: Definitions of Managed Objects for Bridges

The following groups are supported in Foundry devices.

Object Group Name	Object Identifier
dot1dBridge	1.3.6.1.2.1.17
dot1dBase	1.3.6.1.2.1.17.1
dot1dStp	1.3.6.1.2.1.17.2
dot1dTp	1.3.6.1.2.1.17.4

NOTE: The dot1dTpFdbTable (OID 1.3.6.1.2.1.17.4) in RFC 1493 is used for dynamic learned MAC addresses. Statically configured MAC addresses are in the snFdbTable (refer to “Forwarding Database Static Table Information” on page 8-4).

RFC 1643: Ethernet-Like Interface Types

The following groups are supported in Foundry devices.

Object Group Name	Object Identifier
dot3	1.3.6.1.2.1.10.7
dot3StatsTable	1.3.6.1.2.1.10.7.2
dot3CollTable	1.3.6.1.2.1.10.7.5
dot3Tests	1.3.6.1.2.1.10.7.6
dot3Errors	1.3.6.1.2.1.10.7.7
dot3ChipSets	1.3.6.1.2.1.10.7.8

RFC 1695: ATM Management Objects

Only The following objects groups from RFC 1695 are supported in Foundry devices.

Object Group Name	Object Identifier
atmMIB	1.3.6.1.2.1.37
atmMIBObjects	1.3.6.1.2.1.37.1
atmInterfaceConfTable	1.3.6.1.2.1.37.1.2
atmInterfaceTCTable	1.3.6.1.2.1.37.1.4
aal5VccTable	1.3.6.1.2.1.37.1.12

Other object groups from this RFC are not supported.

RFC 1742: AppleTalk Management Information Base II

The following groups from this RFC are supported in Foundry devices.

Object Group Name	Object Identifier
appletalk	1.3.6.1.2.1.13
aarp	1.3.6.1.2.1.13.2
atport	1.3.6.1.2.1.13.3
ddp	1.3.6.1.2.1.13.4
rtmp	1.3.6.1.2.1.13.5
zipRouter	1.3.6.1.2.1.13.7
rtmpStub	1.3.6.1.2.1.13.16
zipEndNode	1.3.6.1.2.1.13.17
perPort	1.3.6.1.2.1.13.18

The following object groups from RFC 1742 are not supported in Foundry devices.

- llap
- ddp
- kip
- nbp
- atecho
- atp
- pap
- asp
- adsp
- atportptop

RFC 1757: Remote Network Monitoring Management Information Base

The following groups from this RFC are supported in Foundry devices.

Object Group Name	Object Identifier
rmon	1.3.6.1.2.1.16
statistics	1.3.6.1.2.1.16.1
history	1.3.6.1.2.1.16.2
alarm	1.3.6.1.2.1.16.3
event	1.3.6.1.2.1.16.9

The following object groups in RFC 1757 are not supported in Foundry devices.

- hosts
- hostTopN
- matrix
- filter
- capture (packet capture)

RFC 2233: The Interfaces Group MIB using SMIv2

NOTE: RFC 2233 is supported in Foundry devices, starting with IronWare release 07.5.01.

The following groups from this RFC are supported in Foundry devices.

Object Group Name	Object Identifier
ifMIB	1.3.6.1.2.1.31
ifMIBObjects	1.3.6.1.2.1.31.1
ifXtable	1.3.6.1.2.1.31.1.1

ifStackTable	1.3.6.1.2.1.31.1.2
ifConformance	1.3.6.1.2.1.31.2

RFC 2515: Definitions of Textual Conventions and Object Identities for ATM Management

The following groups from this RFC are supported in Foundry devices.

Object Group Name	Object Identifier
atmTCMIB	1.3.6.1.2.1.37.3

RFC 2674: Definitions of Managed Objects for Bridges with Traffic Classes, Multicast Filtering and Virtual LAN Extensions

The following groups from this RFC are supported in Foundry devices.

Object Group Name	Object Identifier
pBridgeMib	1.3.6.1.2.1.17.6
qBridgeMib	1.3.6.1.2.1.17.7

RFC 3176: InMon Corporation’s sFlow: A Method for Monitoring Traffic in Switched And Routed Networks.

IronWare release 07.5.01 and later provide support for RFC 3176, “InMon Corporation's sFlow: A Method for Monitoring Traffic in Switched and Routed Networks“. Support for this MIB enables you to configure the sFlow Export feature.

The following groups from this RFC are supported in Foundry devices.

Object Group Name	Object Identifier
sFlowAgent	1.3.6.1.4.1.4300.1.1
sFlowTable	1.3.6.1.4.1.4300.1.1.1.4

Proprietary Objects

Proprietary objects are MIB objects that have been developed specifically to manage Foundry products. This section presents a summarized list of these objects.

Table 2.1 shows the hierarchy of the MIB objects that are proprietary to Foundry products. These objects may also be referred to as the private (or enterprise) MIBs.

On the MIB tree, the object named “foundry” marks the start of the Foundry MIB objects. The “foundry” object branches into the “products” branch, which branches further into three major nodes:

- switch – Includes general SNMP MIB objects and objects related to switching functions.
- router – Contains objects for routing protocols, such as IP, OSPF, BGP.
- registration – Includes the objects for each model of the Foundry product line.

Each of these major nodes are further divided into smaller categories.

Table 2.1 contains a summary of the major categories or MIB object groups under each major node. The MIB object groups can be divided into the individual MIB objects or additional object groups.

The column “Object Group Name” presents the name of the MIB object. The “Object Identifier” column shows the MIB object’s identifier (OID). In this guide, the Foundry objects are presented with their object names and object their identifiers (OIDs). As shown in Table 2.1, OIDs are presented in the format fdry.x.x.x.x, where:

- “fdry” represents the number 1.3.6.1.4.1.1991
- .x.x.x.x is the remainder of the number

For example, the OID for the object snChassis is 1.3.6.1.4.1.1991.1.1.1, but appears as fdry.1.1.1 in this guide.

The Description column indicates the section in this guide that contains details for that object.

Table 2.1: Summary of MIB Objects Proprietary to Foundry Products

Object Group Name	Object Identifier	Sections to Refer To
foundry	**fdry**	**All sections in this manual**
products	**fdry.1**	**All sections in this manual**
switch	**fdry.1.1**	**All sections under the switch branch**
snChassis	fdry.1.1.1	
snChasGen	fdry.1.1.1.1	“Common Objects” on page 4-1
snChasPwr	fdry.1.1.1.2	“Power Supply” on page 4-2
snChasFan	fdry.1.1.1.3	“Fan” on page 4-3
snAgentSys	fdry.1.1.2	
snAgentBrd	fdry.1.1.2.2	“Agent Board Table” on page 4-7
snAgenTrp	fdry.1.1.2.3	“Trap Receiver Table” on page 21-2
snAgentBoot	fdry.1.1.2.4	“Boot Sequence Table” on page 5-11
snAgCfgEos	fdry.1.1.2.5	“Encoded Octet Strings Table” on page 5-24
snAgentLog	fdry.1.1.2.6	“System Logging” on page 19-11

Table 2.1: Summary of MIB Objects Proprietary to Foundry Products (Continued)

Object Group Name	Object Identifier	Sections to Refer To
snAgentSysParaConfig	fdry.1.1.2.7	"Agent System Parameters Configuration Table" on page 5-12
snAgentConfigModule	fdry.1.1.2.8	"Configured Module Table" on page 4-14
snAgentUser	fdry.1.1.2.9	"Agent User Access Group" on page 6-1
snAgentRedundant	fdry.1.1.2.10	"Redundant Modules" on page 4-17
snAgentCpu	fdry.1.1.2.11	"CPU Utilization" on page 19-1
snSwitch	fdry.1.1.3	"Basic Configuration and Management" on page 5-1
snSwInfo	fdry.1.1.3.1	"Switch Group Configuration" on page 5-14
snVLanInfo	fdry.1.1.3.2	"VLAN By Port Information Table" on page 11-1
snSwPortInfo	fdry.1.1.3.3	"Switch Port Information Table" on page 7-1
snFdbInfo	fdry.1.1.3.4	"Forwarding Database Static Table Information" on page 8-4
snPortStpInfo	fdry.1.1.3.5	"Port STP Configuration Groups" on page 7-21
snTrunkInfo	fdry.1.1.3.6	"Trunk Port Configuration Group" on page 7-14
snSwSummary	fdry.1.1.3.7	"Switch Configuration Summary Group" on page 5-19
snDnsInfo	fdry.1.1.3.9	"DNS Group" on page 5-19
snMacFilter	fdry.1.1.3.10	"MAC Filter Table" on page 8-2 and "MAC Filter Port Access Tables" on page 8-3
snNTP	fdry.1.1.3.11	"NTP General Group" on page 5-21 and "NTP Server Table" on page 5-23
snRadius	fdry.1.1.3.12	"Authorization and Accounting" on page 6-8 and "RADIUS General Group" on page 6-9
snTacacs	fdry.1.1.3.13	"TACACS General Objects" on page 6-13 and "TACACS Server Table" on page 6-14
snQos	fdry.1.1.3.14	"QoS Profile Table" on page 9-1 and "QoS Bind Table" on page 9-2
snAAA	fdry.1.1.3.15	"Authorization and Accounting" on page 6-8
snCAR	fdry.1.1.3.16	"CAR" on page 9-2
snVLanCAR	fdry.1.1.3.17	"VLAN CAR Objects" on page 9-5
snNetFlow	fdry.1.1.3.18	"NetFlow Export" on page 19-7
sFlowCollectorTable	fdry1.1.3.19.2	"sFlow" on page 19-6

Table 2.1: Summary of MIB Objects Proprietary to Foundry Products (Continued)

Object Group Name	Object Identifier	Sections to Refer To
snFdp	fdry.1.1.3.20.1	"FDP and CDP" on page 5-26
snvsrp	fdry.1.1.3.21	"VSRP" on page 12-18
snL4	fdry.1.1.4	"Layer 4 Switch Group" on page 20-1
snL4Gen	fdry.1.1.4.1	"Layer 4 Switch Group" on page 20-1
snL4Bind	fdry.1.1.4.6	"Bind Table" on page 20-34
snL4Policy	fdry.1.1.4.11	"Layer 4 Policy Table" on page 20-6
snL4PolicyPortAccess	fdry.1.1.4.12	"Layer 4 Policy Port Access Table" on page 20-8
snL4Trap	fdry.1.1.4.13	"Layer 4 Traps" on page 21-22
snL4WebCache	fdry.1.1.4.14	"Web Cache Table" on page 20-12 and "Server Cache Groups" on page 20-10
snL4WebCacheGroup	fdry.1.1.4.15	"Web Cache Group Table" on page 20-11
snL4WebCacheTrafficStats	fdry.1.1.4.16	"Web Cache Traffic Statistics Table" on page 20-15
snL4WebUncachedTrafficStats	fdry.1.1.4.17	"Web Uncached Traffic Statistics Table" on page 20-17
snL4WebCachePort	fdry.1.1.4.18	"Web Cache Real Server Port Table" on page 20-14
snL4RealServerCfg	fdry.1.1.4.19	"Real Server Configuration Table" on page 20-18
snL4RealServerPortCfg	fdry.1.1.4.20	"Real Server Port Configuration Table" on page 20-19
snL4VirtualServerCfg	fdry.1.1.4.21	"Virtual Server Configuration Table" on page 20-27
snL4VirtualServerPortCfg	fdry.1.1.4.22	"Virtual Server Port Configuration Table" on page 20-29
snL4RealServerStatistic	fdry.1.1.4.23	"Real Server Statistics Table" on page 20-21
snL4RealServerPortStatistic	fdry.1.1.4.24	"Real Server Port Configuration Table" on page 20-19
snL4VirtualServerStatistic	fdry.1.1.4.25	"Virtual Server Statistic Table" on page 20-31
snL4VirtualServerPortStatistic	fdry.1.1.4.26	"Virtual Server Port Statistics Table" on page 20-33
snL4GslbSiteRemoteServerIrons	fdry.1.1.4.27	"GSLB Site Remote ServerIron Configuration Table" on page 20-35
snL4History	fdry.1.1.4.28	"Monitor Groups" on page 20-36
router	**fdry.1.2**	**All sections under the router branch**

Table 2.1: Summary of MIB Objects Proprietary to Foundry Products (Continued)

Object Group Name	Object Identifier	Sections to Refer To
snIpx	fdry.1.2.1	"IPX" on page 17-1
snIpxGen	fdry.1.2.1.1	"IPX General Objects" on page 17-1
snIpxCache	fdry.1.2.1.2	"IPX Cache Table" on page 17-4
snIpxRoute	fdry.1.2.1.3	"IPX Route Table" on page 17-4
snIpxServer	fdry.1.2.1.4	"IPX Server Table" on page 17-5
snIpxFwdFilter	fdry.1.2.1.5	"IPX Forward Filter Table" on page 17-6
snIpxRipFilter	fdry.1.2.1.6	"IPX RIP Filter Table" on page 17-7
snIpxSapFilter	fdry.1.2.1.7	"IPX SAP Filter Table" on page 17-8
snIpxIfFwdAccess	fdry.1.2.1.8	"IPX IF Forward Access Table" on page 17-9
snIpxIfRipAccess	fdry.1.2.1.9	"IPX IF RIP Access Table" on page 17-10
snIpxIfSapAccess	fdry.1.2.1.10	"IPX IF SAP Access Table" on page 17-11
snIpxPortAddr	fdry.1.2.1.11	"IPX Port Address Table" on page 17-12
snIpxPortCounters	fdry.1.2.1.12	"IPX Port Counters Tables" on page 17-13
snIp	fdry.1.2.2	"Global Router and IP" on page 13-1
snRtIpGeneral	fdry.1.2.2.1	"Global Router and IP" on page 13-1
snAgAcl	fdry.1.2.2.15	"Filtering Traffic" on page 8-1
snIPAsPathAccessListString Table	fdry.1.2.2.16	"IP AS-Path Access List Table" on page 13-20
snIpCommunityListStringTable	fdry.1.2.2.17	"IP Community List String Table" on page 6-6
snRtIpPortIfAddrTable	fdry.1.2.2.18	"IP Interface Port Address Table" on page 13-8
snRtIpPortIfAccessTable	fdry.1.2.2.19	"IP Interface Port Access Table" on page 13-9
snRip	fdry.1.2.3	"RIP" on page 14-1
snRtIpRipGeneral	fdry.1.2.3.1	"IP RIP General Group" on page 14-1
snOspf	fdry.1.2.4	"OSPF" on page 15-1
snOspfGen	fdry.1.2.4.1	"OSPF General Objects" on page 15-2
snOspfArea	fdry.1.2.4.2	"OSPF Area Table" on page 15-4
snOspfAddrRange	fdry.1.2.4.3	"Area Range Table" on page 15-5
snOspfIntf	fdry.1.2.4.4	"OSPF Interface Configuration Tables" on page 15-6
snOspfVirtIf	fdry.1.2.4.5	"OSPF Virtual Interface Table" on page 15-13

Table 2.1: Summary of MIB Objects Proprietary to Foundry Products (Continued)

Object Group Name	Object Identifier	Sections to Refer To
snOspfRedis	fdry.1.2.4.6	"OSPF Redistribution of Routes Table" on page 15-16
snOspfNbr	fdry.1.2.4.7	"OSPF Neighbor Table" on page 15-18
snOspfVirtNbr	fdry.1.2.4.8	"OSPF Virtual Neighbor Table" on page 15-21
snOspfLsdb	fdry.1.2.4.9	"OSPF Link-State Database" on page 15-23
snOspfExtLsdb	fdry.1.2.4.10	"OSPF Link State Database, External" on page 15-25
snOspfAreaStatus	fdry.1.2.4.11	"OSPF Area Status Table" on page 15-26
snOspfIfStatus	fdry.1.2.4.12	"OSPF Interface Status Table" on page 15-28
snOspfVirtIfStatus	fdry.1.2.4.13	"OSPF Virtual Interface Status Table" on page 15-31
snOspfRoutingInfo	fdry.1.2.4.14	"OSPF Routing Information Table" on page 15-34
snOspfTrapControl	fdry.1.2.4.15	"OSPF Traps" on page 21-17 section in the "Traps and Objects to Enable Traps" on page 21-1 chapter
snDvmrp	fdry.1.2.5	"DVMRP" on page 10-11
snDvmrpMIBObjects	fdry.1.2.5.1	
snIgmp	fdry.1.2.6	"IGMP" on page 10-1
snIgmpMIBObjects	fdry.1.2.6.1	
snFsrp	fdry.1.2.7	"FSRP Objects" on page 12-1
snFsrpGlobal	fdry.1.2.7.1	"FSRP Global Variables" on page 12-2
snFsrpIntf	fdry.1.2.7.2	"FSRP Interface Table" on page 12-2
snGblRt	fdry.1.2.8	"Global Router Objects" on page 13-1
snGblRtGeneral	fdry.1.2.8.1	
snPim	fdry.1.2.9	"PIM" on page 10-3
snPimMIBObjects	fdry.1.2.9.1	"Common PIM Objects" on page 10-3, "PIM Virtual Interface Table" on page 10-4, "PIM Neighbor Table" on page 10-6, and "PIM Virtual Interface Statistics Table" on page 10-6
snPimSMMIBObjects	fdry.1.2.9.2	"PIM-SM" on page 10-9
snAppleTalk	fdry.1.2.10	"AppleTalk" on page 18-1
snRtATGeneral	fdry.1.2.10.1	
snBgp4	fdry.1.2.11	"BGP4" on page 16-1

Table 2.1: Summary of MIB Objects Proprietary to Foundry Products (Continued)

Object Group Name	Object Identifier	Sections to Refer To
snBgp4Gen	fdry.1.2.11.1	“BGP4 General Variables” on page 16-2
snBgp4AddrFilter	fdry.1.2.11.2	“BGP4 Address Filter Table” on page 16-8
snBgp4AggregateAddr	fdry.1.2.11.3	“BGP4 Aggregate Address Table” on page 16-9
snBgp4AsPathFilter	fdry.1.2.11.4	“BGP4 AS-Path Filter Table” on page 16-12
snBgp4CommunityFilter	fdry.1.2.11.5	“BGP4 Community Filter Table” on page 16-13
snBgp4NeighGenCfg	fdry.1.2.11.6	“BGP4 Neighbor General Configuration Table” on page 16-24
snBgp4NeighDistGroup	fdry.1.2.11.7	“BGP4 Neighbor Distribute Group Table” on page 16-27
snBgp4NeighFilterGroup	fdry.1.2.11.8	“BGP4 Neighbor Filter Group Table” on page 16-29
snBgp4NeighRouteMap	fdry.1.2.11.9	“BGP4 Neighbor Route Map Table” on page 16-30
snBgp4Network	fdry.1.2.11.10	“BGP4 Network Table” on page 16-7
snBgp4Redis	fdry.1.2.11.11	“BGP4 Redistribution of Routes Table” on page 16-20
snBgp4RouteMapFilter	fdry.1.2.11.12	“BGP4 Route Map Filter Table” on page 16-14
snBgp4RouteMapMatch	fdry.1.2.11.13	“BGP4 Route Map Match Configuration Table” on page 16-15
snBgp4RouteMapSet	fdry.1.2.11.14	“BGP4 Route Map Set Configuration Table” on page 16-18
snBgp4NeighOperStatus	fdry.1.2.11.15	“BGP4 Neighbor Operational Status Table” on page 16-31
snBgp4NeighborSummary	fdry.1.2.11.17	“BGP4 Neighbor Summary Table” on page 16-33
snBgp4Attribute	fdry.1.2.11.18	“BGP4 Attribute Entries Table” on page 16-11
snBgp4ClearNeighborCmd	fdry.1.2.11.19	“BGP4 Clear Neighbor Command Table” on page 16-35
snBgp4NeighPrefixGroup	fdry.1.2.11.20	“BGP4 Neighbor Prefix Group Table” on page 16-35
snVrrp	fdry.1.2.12	“Router Redundancy Protocols” on page 12-1
snVrrpGlobal	fdry.1.2.12.1	“VRRP Global Variables” on page 12-4
snVrrpIf2Table	fdry.1.2.12..4.1	“VRRP and VRRPE Interface Table 2” on page 12-6

Table 2.1: Summary of MIB Objects Proprietary to Foundry Products (Continued)

Object Group Name	Object Identifier	Sections to Refer To
snVrrpVirRtr2Table	fdry.1.2.12.5.	"VRRP and VRRPE Parameter Table 2" on page 12-13
snLoopbackIf	fdry.1.2.13	"Loopback Interface Configuration Table" on page 7-19
snPOS	fdry.1.2.14	"Packet Port Information Table" on page 7-15
snPOSInfo	fdry.1.2.14.1	
registration	**fdry.1.3**	**Product identification**

Structure of This Guide

All chapters in this guide contain details about the MIB objects that are in the Foundry MIB. Each object is presented with its object name and OID, the access type available for that object (for example, read-write or read only), and a description. Objects are grouped according to their function.

The chapter "Traps and Objects to Enable Traps" on page 21-1 contains both the objects used to enable a particular type of trap and the objects that are available for a trap type. For example, objects to enable Layer 4 traps as well as the Layer 4 trap objects are in the chapter.

General Notes

SNMPv3 engine is supported in Foundry devices, beginning with IronWare release 07.5.01; however, there are no MIB objects specific to SNMPv3. The SNMPv3 engine can accept V1, V2c and V3 packet formats. IronWare releases prior to 07.5.01 support SNMP v1 and v2c engine. No V3 packet can be accepted by these engines.

Also, in IronWare releases earlier than 07.5.00, the SNMP agent does not check for type validity with the SNMP version. In IronWare release 07.5.00 and above, if the manager sends an SNMP request with a varbind of an invalid type for that version of SNMP, the SNMP agent sends a response with the error "noSuchName" for that varbind. For example, MIB objects of type Counter64 cannot be retrieved using a v1 packet, as Counter64 is a v2c and v3 type.

Chapter 3
Registration

Registration objects identify the Foundry product that is being managed. The following table presents the objects for product registration. The sysOID will return one of these values:

Object Name and Identifier	Description
snFIWGSwitch fdry.1.3.1.1	Stackable FastIron Workgroup Switch
snFIBBSwitch fdry.1.3.1.2	Stackable FastIron Backbone Switch
snNIRouter fdry.1.3.2.1	Stackable NetIron Router
snSI fdry.1.3.3.1	Stackable ServerIron
snSIXL fdry.1.3.3.2	Stackable ServerIronXL
snSIXLTCS fdry.1.3.3.3	Stackable ServerIronXL TCS
snTISwitch fdry.1.3.4.1	Stackable TurboIron/8 Switch
snTIRouter fdry.1.3.4.2	Stackable TurboIron/8 Router
snT8Switch fdry.1.3.5.1	Stackable TurboIron/8 Switch
snT8Router fdry.1.3.5.2	Stackable TurboIron/8 Router

Object Name and Identifier	Description
snT8SI fdry.1.3.5.3	Stackable ServerIronXL
snT8SIXLG fdry.1.3.5.4	Stackable ServerIronXLG
snBI4000Switch fdry.1.3.6.1	BigIron 4000 Switch
snBI4000Router fdry.1.3.6.2	BigIron 4000 Router
snBI4000SI fdry.1.3.6.3	BigServerIron, 4-slot
snBI8000Switch fdry.1.3.7.1	BigIron 8000 Switch
snBI8000Router fdry.1.3.7.2	BigIron 8000 Router
snBI8000SI fdry.1.3.7.3	BigServerIron
snFI2Switch fdry.1.3.8.1	FastIron II Switch
snFI2Router fdry.1.3.8.2	FastIron II Router
snFI2PlusSwitch fdry.1.3.9.1	FastIron II Plus switch
snFI2PlusRouter fdry.1.3.9.2	FastIron II Plus router
snNI400Router fdry.1.3.10.1	NetIron Router
snNI800Router fdry.1.3.11.1	NetIron 800 Router
snFI2GCSwitch fdry.1.3.12.1	FastIron II GC switch
snFI2GCRouter fdry.1.3.12.2	FastIron II GC router
snFI2PlusGCSwitch fdry.1.3.13.1	FastIron II Plus GC switch

Object Name and Identifier	Description
snFI2PlusGCRouter fdry.1.3.13.2	FastIron II Plus GC router
snBigIron15000 fdry.1.3.14.1	BigIron 15000 Switch
snBI15000Router fdry.1.3.14.2	BigIron 15000 Router
snBI15000SI fdry.1.3.14.3	BigIron 15000 ServerIron for M2-M4 modules running the BS2 ServerIron code
snNI1500Router fdry.1.3.15.1	NetIron 1500 Router
snFI3Switch fdry.1.3.16.1	FastIron III Switch
snFI3Router fdry.1.3.16.2	FastIron III Router
snFI3GCSwitch fdry.1.3.17.1	FastIron III GC switch
snFI3GCRouter fdry.1.3.17.2	FastIron III GC router
snSI400Switch fdry.1.3.18.1	ServerIron 400 switch
snSI400Router fdry.1.3.18.2	ServerIron 400 router
snSI800Switch fdry.1.3.19.1	ServerIron 800 switch
snSI800Router fdry.1.3.19.2	ServerIron 800 router
snSI1500Switch fdry.1.3.20.1	ServerIron 1500 switch
snSI1500Router fdry.1.3.20.2	ServerIron 1500 router
sn4802Switch fdry.1.3.21.1	Stackable FastIron 4802 switch
sn4802Router fdry.1.3.21.2	Stackable FastIron 4802 router

Object Name and Identifier	Description
sn4802SI fdry.1.3.21.3	Stackable FastIron 4802 ServerIron
snFI400Switch fdry.1.3.22.1	FastIron 400 switch
snFI400Router fdry.1.3.22.2	FastIron 400 router
snFI800Switch fdry.1.3.23.1	FastIron 800 switch
snFI800Router fdry.1.3.23.2	FastIron 800 router
snFI1500Switch fdry.1.3.24.1	FastIron 1500 switch
snFI1500Router fdry.1.3.24.2	FastIron 1500 router
snFES2402Switch fdry.1.3.25.1	FastIron Edge switch 2402
snFES2402Router fdry.1.3.25.1	FastIron Edge router 2402
snFES4802Switch fdry.1.3.26.1	FastIron Edge switch 4802
snFES4802Router fdry.1.3.26.2	FastIron Edge router 4802
snFES9604Switch fdry.1.3.27.1	FastIron Edge switch 9604
snFES9604Router fdry.1.3.27.2	FastIron Edge router 9604
vendors fdry.2	
digitalChina fdry.2.1	
dcrs7504Switch fdry.2.1.1.1	DCRS 7504 switch
dcrs7504Router fdry.2.1.1.2	DCRS 7504 router

Object Name and Identifier	Description
dcrs7508Switch fdry.2.1.2.1	DCRS 7508 switch
dcrs7508Router fdry.2.1.2.2	DCRS 7508 router
dcrs7515Switch fdry.2.1.3.1	DCRS 7508 switch
dcrs7515Router fdry.2.1.3.2	DCRS 7508 router

Chapter 4
Physical Properties of a Device

This chapter presents the global objects for the general management of a device's physical properties, such as the current status of the power supply, fan, and modules. This chapter contains the following sections:

Refer to the *Foundry Switch and Router Installation and Basic Configuration Guide* and the *Foundry ServerIron Installation and Configuration Guide* for details on power supplies, fans, modules, and other features discussed in this chapter.

Common Objects

The following sections contain objects that are common to most Foundry devices:

Power Supply

The following object applies to all Foundry devices. Refer to the chapter, “Traps and Objects to Enable Traps” on page 21-1, for information on power supply traps.

Name, Identifier, and Syntax	Access	Description
snChasPwrSupplyStatus fdry.1.1.1.1.3 Syntax: Integer	Read only	Shows the state of the power supply in Foundry products. This is a packed bit string. The power supply status are encoded into four bits. There are multiple power supplies per device. The following shows the meaning of each bit: **Bit position** — **Meaning** 12 – 31 — reserved 11 — Power Supply 4 DC 0 – bad, 1 – good 10 — Power Supply 3 DC 0 – bad, 1 – good 9 — Power Supply 4 present status 0 – present, 1 – not present 8 — Power Supply 3 present status 0 – present, 1 – not present 4 –7 — Reserved. 3 — Power Supply 2 (DC +5 v) 0 – bad, 1 – good 2 — Power Supply 1 (DC +5 v) 0 – bad, 1 – good 1 — Power Supply 2 present status 0 – present, 1 – not present 0 — Power Supply 1 present status 0 – present, 1 – not present Bit 0 is the least significant bit.

Fan

The following object applies to all stackable Foundry devices. Refer to the chapter, “Traps and Objects to Enable Traps” on page 21-1, for information on traps for fans.

Name, Identifier, and Syntax	Access	Description
snChasFanStatus fdry.1.1.1.1.4 Syntax: Integer	Read only	Shows the status of fans in stackable products. There are six fans per device. This is a packed bit string. Each bit shows one of the following values: • 0 – Fan failure. • 1 – Fan is operational The following shows the meaning of each bit: **Bit position** — **Meaning** 6 – 31 — reserved 5 — Fan6 status 4 — Fan5 status 3 — Fan4 status 2 — Fan3 status 1 — Fan2 status 0 — Fan1 status (Bit 0 is the least significant bit.)

Boards

Name, Identifier, and Syntax	Access	Description
snChasMainBrdId fdry.1.1.1.1.13 Syntax: Octet string	Read only	Applies to all stackable Foundry products. It identifies the main board. This is an encoded octet string. Each octet provides the following information: **Octet 0** – Identifies the format of this octet string. **Octets 1 and 2:** **If the value of Octet 0 is 1, then:** **Octet 1** – Product type: • FIWG – 0x57 • FIBB – 0x42 • FIMLS – 0x4D • NI – 0x4E • TI – 0x54 • TIRT – 0x52 **Octet 2** – Board type: • POWERPC – 1 • ALPHA – 2 The length of the octet string is 27. **If Octet 0 has a value of 2, then:** **Octet 1** – Product type: • BI_WG – 0x57 • BI_BB – 0x42 • BI_NI – 0x4E • NI_M4 – 0x4D • BI_SLB – 0x53 **Octet 2** – Module type: • MASTER_FIBER_8G – 0x0 • MASTER_FIBER_4G – 0x1 • MASTER_COPPER_16 – 0x2 • FI_MASTER_FIBER_2G – 0x4 • FI_MASTER_FIBER_4G – 0x5 • MASTER_COPPER_8G – 0x6 FI_MASTER_FIBER_8G – 0x7

Name, Identifier, and Syntax	Access	Description
snChasMainBrdId (continued)		**Octet 2** – Module type (continued): • MASTER_COPPER_12_2 – 0x9 • MASTER_FIBER_2G – 0x12 • MASTER_FIBER_0G – 0x14 • FI_MASTER_COPPER_8G – 0x1D • FI_MASTER_COPPER_4G – 0x1F • FI_MASTER_COPPER_2G – 0x20 • MASTER_COPPER_4G – 0x21 • MASTER_COPPER_2G – 0x22 • MASTER_M4_8G – 0x23 • MASTER_M4_4G – 0x24 • MASTER_M4_0G – 0x26 The length of the octet string is 28.
		Octet 3 – Processor type (both format version 1 and 2): • PVR_M603 – 3 • PVR_M604 – 4 • PVR_M603E – 6 • PVR_M603EV – 7 • PVR_M604E – 9 **Octet 4 to Octet 5** – Processor speed in MHz (both format version 1 and 2): **Octet 6** – MAC type: • MAC_NONE – 0 • MAC_SEEQ_10_100 – 1 • MAC_DEC_10_100 – 2 • PHY_ICS – 3 • MAC_XI0GMAC_1000 – 4 • MAC_SEEQ_1000 – 5 • MAC_GMAC_1000 – 6 • MAC_VLSI_1000 – 7

Name, Identifier, and Syntax	Access	Description
snChasMainBrdId (continued)		**Octet 7** – PHY type (both format version 1 and 2): • PHY_NONE – 0 • PHY_QSI – 1 • PHY_BROADCOM – 2 • PHY_ICS – 3 • PHY_NATIONAL – 4 • PHY_LEVEL1 – 6 • PHY_LEVEL16 – 7 • PHY_LEVEL24 – 8 **Octet 8** – Port type: • COPPER – 0 • FIBER – 1 **Octet 9** – Fiber port type (both format version 1 and 2): • NONFIBER – 0 • SX_FIBER – 1 • LX_FIBER – 2 • LHX_FIBER – 3 • LX_SX_FIBER – 4 • LHB_FIBER – 5 **Octet 10 to Octet 13** – DRAM size in KBytes (both format version 1 and 2) **Octet 14 to Octet 17** – Boot flash size in KBytes (both format version 1 and 2) **Octet 18 to Octet 21** – Code flash size in KBytes (both format version 1 and 2) **Octet 22 to Octet 27** – Serial number (both format version 1 and 2) **Octet 28** – Chassis backplane type (format version 1 only): This octet applies only if Octet 0 is equal to 1. • chassis4000 – 0x00 • chassis8000 – 0x04 • chassis15000 – 0x05 • Turbo8 – 0x07 (stack2) • FastIron2 – 0x06 (stack1)

Chassis Number

Name, OID, and Syntax	Access	Description
snChasIdNumber fdry.1.1.1.1.17 Syntax: Display string	Read only	Shows the chassis identity number. This is used by inventory control. By default, this object displays a null string. It can have up to 64 characters.

Agent Board Table

The Agent Board Table provides information about the boards. It contains the board ID, board status, LEDs, status, and other information of the main and expansion board. The table applies to all Foundry devices, except for the ServerIron products.

Name, OID, and Syntax	Access	Description
snAgentBrdTable fdry.1.1.2.2.1	None	A table of each physical board information.
snAgentBrdEntry fdry.1.1.2.2.1.1	None	A row in the Agent Board table.
snAgentBrdIndex fdry.1.1.2.2.1.1.1 Syntax: Integer	Read only	The index to the Agent Board Table. Valid values: 1 – 32
snAgentBrdMainBrdDescription fdry.1.1.2.2.1.1.2 Syntax: Display string	Read only	Contains the main board description. This object can have up to 128 characters.
snAgentBrdMainBrdId fdry.1.1.2.2.1.1.3 Syntax: Octet string	Read only	Is the main board identifier, which can uniquely identify a board type. It is an encoded octet string. The octets in the string provide the following information: **Octet 0** – Identifies the format of this object's octet string. This object has a value of 2 **Octet 1** – Product type: • BI_WG – 0x57 • BI_BB – 0x42 • BI_NI – 0x4E • NI_M4 – 0x4D • BI_SLB – 0x53

Name, OID, and Syntax	Access	Description
snAgentBrdMainBrdId (continued)		**Octet 2** – Module type: • MASTER_FIBER_8G – 0x0 • MASTER_FIBER_4G – 0x1 • MASTER_COPPER_16 – 0x2 • SLAVE_FIBER_4G – 0x3 • FI_MASTER_FIBER_2G – 0x4 • FI_MASTER_FIBER_4G – 0x5 • MASTER_COPPER_8G – 0x6 • FI_MASTER_FIBER_8G – 0x7 • SLAVE_FIBER_8G – 0x8 • MASTER_COPPER_12_2 – 0x9 • SLAVE_COPPER_24 – 0xA • FI_SLAVE_COPPER_24 – 0xB • SLAVE_100FX_8 – 0xD • SLAVE_100FX_16 – 0xC • SLAVE_COPPER_8G – 0xE • SLAVE_COPPER_16_2 – 0xF • STACK_FIBER_8G – 0x10 • STACK_COPPER_8G – 0x11 • MASTER_FIBER_2G – 0x12 • SLAVE_100FX_24 – 0x13 • MASTER_FIBER_0G – 0x14 • POS_622M – 0x15 • POS_155M – 0x16 • SLAVE_FIBER_2G – 0x17 • SLAVE_COPPER_2G – 0x18 • FI_SLAVE_FIBER_2G – 0x19 • FI_SLAVE_FIBER_4G – 0x1A • FI_SLAVE_FIBER_8G – 0x1B • FI_SLAVE_COPPER_8G – 0x1C • FI_MASTER_COPPER_8G – 0x1D • POS_155M2P – 0x1E • FI_MASTER_COPPER_4G – 0x1F • FI_MASTER_COPPER_2G – 0x20 • MASTER_COPPER_4G – 0x21

Name, OID, and Syntax	Access	Description
snAgentBrdMainBrdId (continued)		**Octet 2** – Module type (continued): • MASTER_COPPER_2G – 0x22 • MASTER_M4_8G – 0x23 • MASTER_M4_4G – 0x24 • MASTER_M4_2G – 0x25 • MASTER_M4_0G – 0x26 • MASTER_M5_0G – 0x27 • POS_2488M – 0x28 • SLAVE_M5_0G – 0x29 • POS_N2488M – 0x2A • STACK_IPC_48_2 – 0x2B • SLAVE_NPA_FIBER_4G – 0x2C • ATM_2PORT – 0x2D • ATM_4PORT – 0x2E • SLAVE_FIBER_10G – 0x2F • SLAVE_JC_48E – 0xC3 • SLAVE_JC_48T – 0xC4 • MASTER_JC_M4_8G – 0xC5 • SLAVE_JC_8G – 0xC6 • SLAVE_JC_B16GF – 0xC8 • MASTER_JC_B2404 – 0xC9 • SLAVE_JC_B16GC – 0xCA **Octet 3** – Processor type: • PVR_M603 – 3 • PVR_M604 – 4 • PVR_M603E – 6 • PVR_M603EV – 7 • PVR_M604E – 9 **Octet 4 to Octet 5** – Processor speed in MHz

Name, OID, and Syntax	Access	Description
snAgentBrdMainBrdId (continued)		**Octet 6** – MAC type: • MAC_SEEQ_10_100 – 1 • MAC_DEC_10_100 – 2 • MAC_3COM_10_100 – 3 • MAC_X10GMAC_10000 – 4 • MAC_SEEQ_1000 – 5 • MAC_GMAC_1000 – 6 • MAC_VLSI_1000 – 7 • PHY_LEVEL24 – 8 **Octet 7** – PHY type: • PHY_NONE – 0 • PHY_QSI – 1 • PHY_BROADCOM – 2 • PHY_ICS – 3 • PHY_NATIONAL – 4 • PHY_LEVEL1 – 6 • PHY_LEVEL16 – 7 • PHY_LEVEL24 – 8 • PHY_BROADCOM_10000 – 9 **Octet 8** – Port type: • COPPER – 0 • FIBER – 1 **Octet 9** – Fiber port type: • NONFIBER – 0 • SX_FIBER – 1 • LX_FIBER – 2 • LHX_FIBER – 3 **Octet 10 to Octet 13** – Size of DRAM in KBytes **Octet 14 to Octet 17** – Size of boot flash in KBytes **Octet 18 to Octet 21** – Size of code flash in KBytes **Octet 22 to Octet 27** – Serial number

Name, OID, and Syntax	Access	Description
snAgentBrdMainBrdId (continued)		**Octet 28** – Chassis backplane type. • chassis4000 – 0x00 • chassis8000 – 0x04 • chassis1500 – 0x04 • Turbo8 – 0x07 (stack2) • FastIron2 – 0x06 (stack1)
snAgentBrdMainPortTotal fdry.1.1.2.2.1.1.4 Syntax: Integer	Read only	Shows the total number of ports on the main board.
snAgentBrdExpBrdDescription fdry.1.1.2.2.1.1.5 Syntax: Display string	Read only	Contains the expansion board description string. Expansion board are those boards attaching on the main board. This object can have up to 128 characters.
snAgentBrdExpBrdId fdry.1.1.2.2.1.1.6 Syntax: Octet string	Read only	Is the expansion board identifier. Expansion board are those boards attaching on the main board. It is an encoded octet string with the following meaning: **Octet 0** – Identifies the format of this string. This octet has a value of 1. **Octet 1** – Expansion board type: • HUNDRED_MEG_1PORT – 1 • HUNDRED_MEG_2PORT – 2 • HUNDRED_MEG_1PORT_COPPER – 3 • HUNDRED_MEG_2PORT_COPPER – 4 • HUNDRED_MEG_2PORT_LX – 5 • GIGA_1PORT – 8 • GIGA_2PORT – 9 **Octet 2** – Fiber port type: • NONFIBER – 0 • SX_FIBER – 1 • LX_FIBER – 2 • LHX_FIBER – 3 • LX_SX_FIBER – 4
snAgentBrdExpPortTotal fdry.1.1.2.2.1.1.7 Syntax: Integer	Read only	Shows the total number of ports for the expansion board.

Name, OID, and Syntax	Access	Description
snAgentBrdStatusLeds fdry.1.1.2.2.1.1.8 Syntax: Integer	Read only	Applies to devices running IronWare release 07.1.00 and earlier. Refer to the “Bit Map of LEDs” in Figure 4.1 on page 4-21. It is replaced by the object snAgentBrdStatusLedString in Release 07.2. and later. The value of this LED can be one of the following: 0 – Link off 1 – Link on
snAgentBrdTrafficLeds fdry.1.1.2.2.1.1.9 Syntax: Integer	Read only	Applies to devices running IronWare release 07.1.00 and earlier. Refer to the “Bit Map of LEDs” in Figure 4.1 on page 4-21. It is replaced by the object snAgentBrdTrafficLedString in Release 07.2. and later. The value of this LED can be one of the following: 0 – No traffic. 1 – Traffic is flowing.
snAgentBrdMediaLeds fdry.1.1.2.2.1.1.10 Syntax: Integer	Read only	Applies to devices that have an LED for media type and are running IronWare release 07.1.00 and earlier. Refer to the “Bit Map of LEDs” in Figure 4.1 on page 4-21. It is replaced by the object snAgentBrdMediaLedString in Release 07.2. and later. The value of this LED can be one of the following: 0 – Half duplex. 1 – Full duplex.
snAgentBrdSpeedLeds fdry.1.1.2.2.1.1.11 Syntax: Integer	Read only	Applies to devices that have an LED for board speed and are running IronWare release 07.1.00 and earlier. Refer to the “Bit Map of LEDs” in Figure 4.1 on page 4-21. It is replaced by the object snAgentBrdSpeedLedString in Release 07.2. and later. The value of this LED can be one of the following: 0 – 10 Mbit 1 – 100Mbit
snAgentBrdModuleStatus fdry.1.1.2.2.1.1.12 Syntax: Integer	Read only	Shows the status of a module: • notActivated(0) – The module is not activated. • moduleEmpty(0) – The slot of the chassis is empty. • moduleGoingDown(2) – The module is going down. • moduleRejected(3) – The module is being rejected due to a wrong configuration. • moduleBad(4) – The module hardware is bad. • moduleComingUp(9) – The module is in power-up cycle. • moduleRunning(10) – The module is running. By default, this mode is set to notActivated(0).

Name, OID, and Syntax	Access	Description
snAgentBrdRedundantStatus fdry.1.1.2.2.1.1.13 Syntax: Integer	Read only	Shows the status of the redundant module. Non-management module always returns other(1). Management module returns the rest of the states: • other(1) • active(2) • standby(3) • crashed(4) • comingUp(5)
snAgentBrdAlarmLeds fdry.1.1.2.2.1.1.14 Syntax: Integer	Read only	Applies to devices that have an LED for alarm and are running IronWare release 07.1.00 and earlier. Refer to the “Bit Map of LEDs” in Figure 4.1 on page 4-21. It is replaced by the object snAgentBrdAlarmLedString in Release 07.2. and later. The value of this LED can be one of the following: 0 – No alarm 1 – Alarm
snAgentBrdTxTrafficLeds fdry.1.1.2.2.1.1.15 Syntax: Integer	Read only	Applies only to POS modules that have an LED for transmit traffic and are running Release 07.1.00 and earlier. Refer to the “Bit Map of LEDs” in Figure 4.1 on page 4-21. It is replaced by the object snAgentBrdTxTrafficLedString in Release 07.2. and later. The value of this LED can be one of the following: 0 – No transmit traffic 1 – Transmit traffic
snAgentBrdRxTrafficLeds fdry.1.1.2.2.1.1.16 Syntax: Integer	Read only	Applies only to POS modules that have an LED for transmit traffic and are running Release 07.1.00 and earlier. Refer to the “Bit Map of LEDs” in Figure 4.1 on page 4-21. It is replaced by the object snAgentBrdRxTrafficLedString in Release 07.2. and later. The value of this LED can be one of the following: 0 – No receive traffic (off) 1 – Has receive traffic (on)
snAgentBrdStatusLedString fdry.1.1.2.2.1.1.17 Syntax: Octet string		Applies to devices IronWare release 07.2.00 and later. It contains an octet string that shows the value of the status of the link LED on the front panel. There are 64 bits per slot. The value of each bit can be one of the following: 0 – Link is off 1 – Link is on

Name, OID, and Syntax	Access	Description
snAgentBrdTrafficLedString fdry.1.1.2.2.1.1.18 Syntax: Octet string	Read only	Applies to devices running IronWare release 07.2.00 and later. It contains an octet string that shows the status of the traffic. There are 64 bits per slot. The value of each bit can be one of the following: 0 – No traffic 1 – Traffic is flowing
snAgentBrdMediaLedString fdry.1.1.2.2.1.1.19 Syntax: Octet string	Read only	Applies to devices with an LED for media type and are running Release 07.2.00 and later. It contains an octet string with 64 bits per slot. The value of each bit can be one of the following: 0 – Half duplex 1 – Full duplex
snAgentBrdSpeedLedString fdry.1.1.2.2.1.1.20 Syntax: Octet string	Read only	Applies to devices that have an LED for traffic speed and are running IronWare release 07.2.00 and later. It contains an octet string with 64 bits per slot. The value of each bit can be one of the following: 0 – 10 Mbit 1 – 100 Mbit
snAgentBrdAlarmLedString fdry.1.1.2.2.1.1.21 Syntax: Octet string	Read only	Applies to devices that have an LED for alarm and are running IronWare release 07.2.00 and later. It contains an octet string with 64 bits per slot. The value of each bit can be one of the following: 0 – No alarm 1 – Alarm
snAgentBrdTxTrafficLedString fdry.1.1.2.2.1.1.22 Syntax: Octet string	Read only	Applies only to POS modules running IronWare release 07.2.00 and later. It contains an octet string with 64 bits per slot. The value of each bit can be one of the following: 0 – No transmit traffic 1 – Has transmit traffic
snAgentBrdRxTrafficLedString fdry.1.1.2.2.1.1.23 Syntax: Octet string	Read only	Applies only to POS modules running IronWare release 07.2.00 and later. It contains an octet string with 64 bits per slot. The value of each bit can be one of the following: 0 – No receive traffic 1 – Has receive traffic

Configured Module Table

The Configured Module Table contains systematic informations about modules. It includes the object "snAgentConfigModuleSerialNumber", which contains the serial number of a device. These objects are available in all chassis devices:

- BigIron 4000, BigIron 8000, and BigIron 15000
- FastIron III
- FastIron 400, FastIron 800, and FastIron 1500

- NetIron 400, NetIron 800, and NetIron 1500

Name, OID, and Syntax	Access	Description
snAgentConfigModuleTable fdry.1.1.2.8.1	None	A table of each configured module information.
snAgentConfigModuleEntry fdry.1.1.2.8.1.1	None	A row in the Agent Configured Module table.
snAgentConfigModuleIndex fdry.1.1.2.8.1.1.1 Syntax: Integer	Read only	The index to the Agent Configured Module Table. The modules configured are using the “#module“ command. The “show run” command may list these modules at the beginning of the list, but these modules may not really be existing in the system.

Name, OID, and Syntax	Access	Description
snAgentConfigModuleType fdry.1.1.2.8.1.1.2 Syntax: Integer	Read-write	The module type that has been configured for the device: • bi8PortGigManagementModule(0) • bi4PortGigManagementModule(1) • bi16PortCopperManagementModule(2) • bi4PortGigModule(3) • fi2PortGigManagementModule(4) • fi4PortGigManagementModule(5) • bi8PortGigCopperManagementModule(6) • fi8PortGigManagementModule(7) • bi8PortGigModule(8) • bi24PortCopperModule(10) • fi24PortCopperModule(11) • bi16Port100FXModule(12) • bi8Port100FXModule(13) • bi8PortGigCopperModule(14) • bi2PortGigManagementModule(18) • bi24Port100FXModule(19) • bi0PortManagementModule(20) • pos622MbsModule(21) • pos155MbsModule(22) • bi2PortGigModule(23) • bi2PortGigCopperModule(24) • fi2PortGigModule(25) • fi4PortGigModule(26) • fi8PortGigModule(27) • fi8PortGigCopperModule(28) • fi8PortGigCopperManagementModule(29) • pos155Mbs2PModule(30) • fi4PortGigCopperManagementModule(31) • fi2PortGigCopperManagementModule(32) • bi4PortGigCopperManagementModule(33) • bi2PortGigCopperManagementModule(34)

Name, OID, and Syntax	Access	Description
snAgentConfigModuleType (continued)		• bi8PortGigM4ManagementModule(35) • bi4PortGigM4ManagementModule(36) • bi2PortGigM4ManagementModule(37) • bi0PortGigM4ManagementModule(38) • bi0PortWSMManagementModule(39) • biPos2Port2488MbsModule(40) • bi0PortWSMModule(41) • niPos2Port2488MbsModule(42) • ni4802(43) • bi4PortGigNPAModule(44) • biAtm2Port155MbsModule(45) • biAtm4Port155MbsModule(46) • bi1Port10GigModule(47) • biFiJc48ePort100fxIpcModule(195) • biFiJc48tPort100fxIpcModule(196) • biFiJc8PortGigM4ManagementModule(197) • biFiJc8PortGigIgcModule(198)
snAgentConfigModuleRowStatus fdry.1.1.2.8.1.1.3 Syntax: Integer	Read-write	To create or delete a configured module table entry. • other(1) • valid(2) • delete(3) • create(4)
snAgentConfigModuleDescription fdry.1.1.2.8.1.1.4 Syntax: Display string	Read only	A description of the configured module.
snAgentConfigModuleOperStatus fdry.1.1.2.8.1.1.5 Syntax: Display string	Read only	Module operational status. A blank indicates that the physical module has not been inserted to the chassis.
snAgentConfigModuleSerialNumber fdry.1.1.2.8.1.1.6 Syntax: Display string	Read only	Module serial number. A blank indicates that the serial number has not been programmed in the module's EEPROM or serial number is not supported in the module. In IronWare releases before 07.5.0, this object returns a NULL string, indicating that it is a place holder for a serial number. Beginning with IronWare release 07.5.0 this object returns the device serial number.

Redundant Modules

Use these objects to manage redundant management modules in all Foundry devices except for the ServerIron products. Refer to the chapter "Traps and Objects to Enable Traps" on page 21-1for objects dealing with traps.

Name, OID, and Syntax	Access	Description
snAgentRedunActiveMgmtMod fdry.1.1.2.10.1.1 Syntax: Integer	Read-write	Shows the slot number of the active management module. Setting this object does not take effect immediately. You must save the configuration data to flash storage, then reboot the system before the new value takes effect. Setting a value of 0 requests the system to auto-select an active management module after power up. Default: 0.
snAgentRedunSyncConfig fdry.1.1.2.10.1.2 Syntax: Integer	Read-write	Shows how often the data in the active management module will be copied to the backup management module. The value for this object is in seconds. Setting this object to 0 disables the copy process. Setting it to a negative value starts the process immediately, but runs only once. Default: every 10 seconds
snAgentRedunBkupCopyBootCode fdry.1.1.2.10.1.3 Syntax: Integer	Read-write	If enabled, the backup management module copies the boot code of the active management module to its boot code flash storage after power up, and whenever the active management module's boot code is updated. The backup management module does not copy the boot code if is identical to what is already in its flash storage: • Disabled(0) • Enabled(1) Default: disabled(0)
snAgentRedunBkupBootLoad fdry.1.1.2.10.1.5 Syntax: Integer	Read-write	Downloads a new boot code from boot flash storage of the active management module to the backup management module. In a set operation, enter the value downloadBackup(20) to download the boot code from the active management module to the backup management module. A set operation is rejected during a download until error or normal state is reached. One of the following values are returned by a get operation: • normal(1) – no operation • operationError(17) – error codes • downloadbackup(20) – download boot code from active module to backup to the backup module
snAgentRedunSwitchOver fdry.1.1.2.10.1.6 Syntax: Integer	Read-write	Switches a backup management module to an active management module. • other(1) • reset(2) – Resets the backup module to active.

Stackable Products

The objects in this section are specific to Stackable devices, which include the following models:

- FastIron
- ServerIron
- NetIron

The objects for stackable devices are presented in the following sections:

- “Boards” on page 4-20
- “LEDs” on page 4-21

Refer to the “Agent Board Table” on page 4-7 for objects that apply to chassis devices.

NOTE: The MIB contains objects under the snStackGen (General Stackable Management Information) and snStackSecSwitchInfo (Stackable Management Secondary Switch Information Table) groups are not supported. They include the following objects:

snStackPriSwitchMode

snStackMaxSecSwitch

snStackTotalSecSwitch

snStackSyncAllSecSwitch

snStackSmSlotIndex

snStackFmpSetProcess

snStackSecSwitchTable

snStackSecSwitchEntry

snStackSecSwitchIndex

snStackSecSwitchSlotId

snStackSecSwitchPortCnts

snStackSecSwitchEnabled

snStackSecSwitchAck

snStackSecSwitchMacAddr

snStackSecSwitchSyncCmd

snStackSecSwitchIpAddr

snStackSecSwitchSubnetMask

snStackSecSwitchCfgCmd

Boards

The following objects apply only to stackable ServerIron products.

Name, Identifier, and Syntax	Access	Description
snChasMainBrdDescription fdry.1.1.1.1.5 Syntax: Display string	Read only	Shows the main board. This object can have up to 128 characters.
snChasMainPortTotal fdry.1.1.1.1.6 Syntax: Integer	Read only	Shows the total number of ports on the main board. Valid values: 1 – 24
snChasExpBrdDescription fdry.1.1.1.1.7 Syntax: Display string	Read only	Shows the description of the expansion board. This object can have up to 128 characters.
snChasExpPortTotal fdry.1.1.1.1.8 Syntax: Integer	Read only	Shows the total number of ports ion the expansion board. Valid values: 1 – 24
snChasExpBrdId fdry.1.1.1.1.14 Syntax: Octet string	Read only	Applies only to stackable ServerIron products. It identifies the expansion board, the board that attaches to the main board. It is an encoded octet string. The octets provide the following information: **Octet 0** – Identifies the format of this octet string. If Octet 0 has a value of 1, the value of the remaining octets are: **Octet 1** – Expansion board type: • HUNDRED_MEG_1PORT – 1 • HUNDRED_MEG_2PORT – 2 • HUNDRED_MEG_1PORT_COPPER – 3 • HUNDRED_MEG_2PORT_COPPER – 4 • HUNDRED_MEG_2PORT_LX – 5 • GIGA_1PORT – 8, GIGA_2PORT – 9 **Octet 2** – Fiber port type: • NONFIBER – 0 • SX_FIBER – 1 • LX_FIBER – 2 • LHX_FIBER – 3 • LX_SX_FIBER – 4

LEDs

This section presents the objects that apply to LEDs in stackable ServerIron devices. Figure 4.1 shows a bit map of LEDs in Foundry products. Some objects in the MIB refer to this bit map.

Figure 4.1 Bit Map of LEDs

	Port 1	Port 2	Port 3	Port 4	Port 5	Port 6	Port 7	Port 8
	Bit 0	**Bit 1**	**Bit 2**	**Bit 3**	**Bit 4**	**Bit 5**	**Bit 6**	**Bit 7**
Byte 1	LED 1	LED 2	LED 3	LED 4	LED 5	LED 6	LED 7	LED 8
Byte 2	LED 9	LED 10	LED 11	LED 12	LED 13	LED 14	LED 15	LED 16
Byte 3	LED 17	LED 18	LED 19	LED 20	LED 21	LED 22	LED 23	LED 24
. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .

Each LED contains one bit representing a switch port. Each bit shows the value of the LED. The expansion port number always begins from the last main port number.

Name, OID, and Syntax	Access	Description
snChasStatusLeds fdry.1.1.1.1.9 Syntax: Integer	Read only	Applies to devices running Release 07.1.00 and earlier. It is replaced by the object snAgentBrdStatusLedString in later releases. This LED on the front panel of a device shows the status of the link. It is represented by one bit. There can be up to 32 bits per slot. Refer to the “Bit Map of LEDs” in Figure 4.1 on page 4-21. Status can be one of the following: 0 – Link off 1 – Link on
snChasTrafficLeds fdry.1.1.1.1.10 Syntax: Integer	Read only	Applies to devices running Release 07.1.00 and earlier. It is replaced by the object snAgentBrdTrafficLedString in later releases. This LED on the front panel of a device shows the traffic status. It is represented by one bit. There can be up to 32 bits per slot. Refer to the “Bit Map of LEDs” in Figure 4.1 on page 4-21. Status can be one of the following: 0 – No traffic 1 – Traffic is flowing
snChasMediaLeds fdry.1.1.1.1.11 Syntax: Integer	Read only	Applies to devices that have an LED for media type and are running Release 07.1.00 and earlier. It is replaced by the object snAgentBrdMediaLedString in later releases. It is represented by one bit. There can be up to 32 bits per slot. Refer to the “Bit Map of LEDs” in Figure 4.1 on page 4-21. Status can be one of the following: 0 – Half duplex 1 – Full duplex

Name, OID, and Syntax	Access	Description
snChasSpeedLeds fdry.1.1.1.1.15 Syntax: Integer	Read only	Applies to devices that have an LED for media speed and are running Release 07.1.00 and earlier. It is replaced by the object snAgentBrdSpeedLedString in later releases. It is represented by one bit. There can be up to 32 bits per slot. Refer to the “Bit Map of LEDs” in Figure 4.1 on page 4-21. Status can be one of the following: 0 – 10 Mbit 1 – 100 Mbit

Chassis Products

The objects in this section apply to the following Foundry devices:

- BigIron 4000, BigIron 8000, and BigIron 15000
- FastIron 4802
- FastIron II, and FastIron III
- FastIron 400, FastIron 800, and FastIron 1500
- NetIron 400, NetIron 800, and NetIron 1500
- ServerIron 400 and ServerIron 800
- TurboIron/8

The objects for these devices are presented in the following sections:

- "General Chassis" on page 4-23
- "Power Supply Table" on page 4-23
- "Fan Table" on page 4-24
- "Temperature" on page 4-25
- "Flash Card" on page 4-26

General Chassis

The following objects apply to all chassis-based Foundry devices.

Name, Identifier, and Syntax	Access	Description
snChasType fdry.1.1.1.1.1 Syntax: Display string	Read only	Shows the type of Foundry device being managed. This object can have up to 128 characters. Possible value – 1
snChasSerNum fdry.1.1.1.1.2 Syntax: Display string	Read only	Shows the serial number of the chassis. If the serial number is unknown or unavailable, then the value is a null string. This object can have up to 128 characters.

Power Supply Table

The following table applies to the power supplies in chassis products

Name, OID, and Syntax	Access	Description
snChasPwrSupplyTable fdry.1.1.1.2.1	None	A table containing power supply information. Only installed power supplies appear in the table.
snChasPwrSupplyEntry fdry.1.1.1.2.1.1	None	A row in the power supply table. One row appears for each power supply.

Name, OID, and Syntax	Access	Description
snChasPwrSupplyIndex fdry.1.1.1.2.1.1.1 Syntax: Integer	Read only	The index to power supply table.
snChasPwrSupplyDescription fdry.1.1.1.2.1.1.2 Syntax: Display string	Read only	The power supply description. For example, you may see the description, “right side power supply”. This object can have up to 128 characters.
snChasPwrSupplyOperStatus fdry.1.1.1.2.1.1.3 Syntax: Integer	Read only	Shows the status of the power supply: • other(1) – Status is neither normal(2) or failure(3). This value is not used for stackables including FastIron 4802, BigIron 4000, BigIron 8000, and BigIron 15000. • normal(2) • failure(3)

Fan Table

The following table applies to fans in all chassis products.

Name, Identifier, and Syntax	Access	Description
snChasFanTable fdry.1.1.1.3.1	None	A table containing fan information. Only installed fans appear in the table.
snChasFanEntry fdry.1.1.1.3.1.1	None	A row in the fan table. One row appears for each installed fan.
snChasFanIndex fdry.1.1.1.3.1.1.1 Syntax: Integer	Read only	The index to the fan table.
snChasFanDescription fdry.1.1.1.3.1.1.2 Syntax: Display string	Read only	The fan description. For example, you may see the description “left side panel, back fan”. This object can have up to 128 characters.
snChasFanOperStatus fdry.1.1.1.3.1.1.3 Syntax: Integer	Read only	Shows the status of the fan operation: • other(1) – Beginning with IronWare software release 7.6.01, this value means “not manageable” to refer to Fans 5 and 6 in the BigIron 15000. It has no meaning for other devices. • normal(2) • failure(3)

Temperature

The following objects manage temperature sensors in all Foundry devices, except the ServerIron products. Refer to the chapter “Traps and Objects to Enable Traps” on page 21-1for objects dealing with traps.

Name, OID, and Syntax	Access	Description
snChasActualTemperature fdry.1.1.1.1.18 Syntax: Integer	Read only	Applies only to management modules with temperature sensors. Shows the temperature of the chassis. Each unit is 0.5 degrees Celsius. This object applies only to management module built with temperature sensors. Valid values: 110 – 250
snChasWarningTemperature fdry.1.1.1.1.19 Syntax: Integer	Read-write	Applies only to management modules with temperature sensors. Shows the threshold for the warning temperature. When the actual temperature exceeds this value the switch sends a temperature warning trap. Each unit is 0.5 degrees Celsius. This object applies only to management module built with temperature sensors. Valid values: 0 – 250
snChasShutdownTemperature fdry.1.1.1.1.20 Syntax: Integer	Read-write	Applies only to management modules with temperature sensors. Shows the temperature threshold that triggers the device to shut down. When the actual temperature exceeds this value the switch shuts down a portion of the hardware to cool down the device. Each unit is 0.5 degrees Celsius. This object applies only to management module built with temperature sensors. Valid values: 0 – 250

Flash Card

The following objects manage the flash cards in all Foundry devices, except the ServerIron products.

Name, OID, and Syntax	Access	Description
snChasFlashCard fdry.1.1.1.1.22 Syntax: Integer	Read only	Applies only to M4 management modules. This object is a bit array that contains the flash card status. This is a packed bit string. The status of each flash card is encoded into one bit. There can be up to two flash cards. The bits are: • 2 to 31 – Reserved • 1 – Flash card 2 status • 0 – Flash card 1 status (Bit 0 is the least significant bit.) Flash card status can be one of the following: • 0 – Flash card is absent • 1 – Flash card is present
snChasFlashCardLeds fdry.1.1.1.1.23 Syntax: Integer	Read only	Shows the status of LED on a flash card. This is a 32-bit integer type object. Each bit shows one of the following: • 0 – Flash card is off • 1 – Flash card is on
snchasnumslots fdry.1.1.1.1.24 Syntax: Integer	Read only	Shows the number of slots in the chassis.
snchasarchitectureType fdry.1.1.1.1.25 Syntax: Integer	Read only	Shows the architecture type.
snchasProductType fdry.1.1.1.1.26 Syntax: Integer	Read only	Shows the product type.

Chapter 5
Basic Configuration and Management

This chapter contains objects to manage the software image and configuration in a device: It includes the following sections:

Refer to the *Foundry Switch and Router Installation and Basic Configuration Guide* and the *Foundry ServerIron Installation and Configuration Guide* for detailed explanation on the features discussed in this chapter.

Software Image

Reload

The following object allows you to reload the agent.

Name, OID, and Syntax	Access	Description
snAgReload fdry.1.1.2.1.1 Syntax: Integer	Read-write	Reboots the agent. The following value can be written: • reset(3) – Do a hard reset **NOTE:** To be able to use reset(3), make sure that either the "**no snmp-server pw-check**" CLI command has been configured in the device or the varbind, snAgGblPassword, with the appropriate password has been added to the SetRequest PDU. The default value of snAgGblPassword is the "enable" super-user password. If the CLI command "**aaa authentication snmp-server default ...**" isconfigured, then the method list determines the value expected in the snAgGblPassword MIB object. The agent will return a response before the action occurs. The following values can only be read: • other(1) – Agent is in unknown or other state • running(2) – Agent is running

NVRAM

The objects in this section apply to all devices that use non-volatile random access memory (NVRAM), a type of memory that retains its contents when power is turned off. These objects are available in all Foundry devices.

Name, OID, and Syntax	Access	Description
snAgEraseNVRAM fdry.1.1.2.1.2 Syntax: Integer	Read-write	Erases the NVRAM of the agent. This object can have one of the following values: • normal(1) – NVRAM is not being erased. • error(2) – Either the erase operation failed or the flash memory is bad • erase(3) – NVRAM is set to be erased • erasing(4) – NVRAM is being erased. Once the process starts, you cannot set this object to erase(3) until the process is finished and the value of this object is either normal(1) or error(2)

Name, OID, and Syntax	Access	Description
snAgWriteNVRAM fdry.1.1.2.1.3 Syntax: Integer	Read-write	Saves all configuration information to NVRAM of the agent. The following values can only be read: • normal(1) • error(2) – Operation failed or the flash is bad • writing(4) – Agent is writing NVRAM flash The following value can be written: • write(3) – Write operation The agent will return a response even before the write operation is complete. The read values will be written until write operation is finished. New write requests will be rejected until and error(2) or normal(1) value is obtained. **NOTE:** To be able to use reset(3), make sure that either the "**no snmp-server pw-check**" CLI command has been configured in the device or the varbind, snAgGblPassword, with the appropriate password has been added to the SetRequest PDU. The default value of snAgGblPassword is the "enable" super-user password. If the CLI command "**aaa authentication snmp-server default ...**" is configured, then the method list determines the value expected in the snAgGblPassword MIB object.
snAgConfigFromNVRAM fdry.1.1.2.1.4 Syntax: Integer	None	Configures the switch from NVRAM of the agent. The following value can be written: • config(3) – Do configuration The following values can only be read: • normal(1) • error(2) – Operation failed or bad flash • configing(4) – Configuring from NVRAM flash is in process. The agent returns a response after configuration is done.

File Download and Upload

The following objects manage file downloads and uploads. They are available in all Foundry devices.

NOTE: When uploading or downloading configuration files to and from the TFTP server using SNMP, check the following:

- If the SNMP password check is enabled on the device, the “snAgGblPassword” on page 6-2 object must be sent with the following information in the same PDU as the TFTP objects:
  - If the AAA is used for SNMP authentication and the authentication method is enable or line, then the value of snAgGlbPassword must be in cleartext format.
  - If the AAA is used for SNMP authentication and the authentication method is local, RADIUS, TELNET, TACACS, or TACACS+, then the value of the snAgGlbPassword must be in the `<user> <password>` format. The space between <user> and <password> is the delimiter.
  - If AAA is not used for authentication, then the value of snAgGlbPassword for the enable password must be in cleartext format.
- Make sure that user has administrative access (privilege=0) on the device; otherwise, the user will not be able to upload files to the TFTP server.

NOTE: An atomic set of snAgImgLoad, snAgImgFname and snAgTftpServerIp is required for a successful download or upload.

Name, OID, and Syntax	Access	Description
snAgTftpServerIp fdry.1.1.2.1.5 Syntax: IpAddress	Read-write	Shows the IP address of the TFTP server that will be used for to download and upload image and configuration files.
snAgImgFname fdry.1.1.2.1.6 Syntax: Display string	Read-write	Shows the name of the image file, including path, that is currently associated with the system. When the object is not used, the value is blank. It can have up to 32 characters.

Name, OID, and Syntax	Access	Description
snAgImgLoad fdry.1.1.2.1.7 Syntax: Integer	Read-write	Downloads or uploads a new software image to the agent. Use one of the following values in an SNMP set: • uploadMPPrimary(19) – Uploads the primary image from the management processor flash memory to the TFTP server. • downloadMPPrimary(20) – Downloads the primary image from the TFTP server to management processor flash. • uploadMPSecondary(21) – Uploads the secondary image from the management processor flash memory to the TFTP server. • downloadMPSecondary(22) – Downloads the secondary image from the TFTP server to management processor flash. • downloadSPPrimary(24) – Downloads the secondary image from the TFTP server to secondary processor flash. • downloadSPSecondary(25) – Download the secondary image from the TFTP server to secondary processor flash. The following messages may be displayed: • normal(1) • flashPrepareReadFailure(2) • flashReadError(3) • flashPrepareWriteFailure(4) • flashWriteError(5) • tftpTimeoutError(6) • tftpOutOfBufferSpace(7) • tftpBusy(8) • tftpRemoteOtherErrors(9) • tftpRemoteNoFile(10) • tftpRemoteBadAccess(11) • tftpRemoteDiskFull(12) • tftpRemoteBadOperation(13) • tftpRemoteBadId(14) • tftpRemoteFileExists(15) • tftpRemoteNoUser(16) • operationError(17) • loading(18) – operation is in process • tftpWrongFileType(23)

Name, OID, and Syntax	Access	Description
snAgCfgFname fdry.1.1.2.1.8 Syntax: Display string	Read-write	Shows the name of the configuration file, including its path, that is currently associated with the system. If there are multiple configuration files, the names are separated by semicolons (;). This object can have up to 32 characters.

Name, OID, and Syntax	Access	Description
snAgCfgLoad fdry.1.1.2.1.9 Syntax: Integer	Read-write	Downloads or uploads a configuration file to the agent. Use one of the following values for SNMP set: • uploadFromFlashToServer(20) – Uploads the configuration file from the flash to the TFTP server. • downloadToFlashFromServer(21) – Downloads the configuration file from the TFTP server to flash. • uploadFromDramToServer(22) – Uploads the configuration file from the DRAM to the TFTP server. • downloadToDramFromServer(23) – Downloads the configuration file from the TFTP server to DRAM. • uploadFromFlashToNMS(24) – Uploads the configuration file from flash to the network management system. • downloadToFlashFromNMS(25) – Downloads the configuration file from the network management system to flash. • uploadFromDramToNMS(26) – Uploads the configuration file from DRAM to a network management system. • downloadToDramFromNMS(27) – Downloads the configuration file from the network management system to DRAM. The following values may be read: • normal(1) • flashPrepareReadFailure(2) • flashReadError(3) • flashPrepareWriteFailure(4) • flashWriteError(5) • tftpTimeoutError(6) • tftpOutOfBufferSpace(7) • tftpBusy(8) • tftpRemoteOtherErrors(9) • tftpRemoteNoFile(10) • tftpRemoteBadAccess(11) • tftpRemoteDiskFull(12) • tftpRemoteBadOperation(13) • tftpRemoteBadId(14) • tftpRemoteFileExists(15) • tftpRemoteNoUser(16) • operationError(17) • loading(18) • tftpWrongFileType(29)

Name, OID, and Syntax	Access	Description
snAgCfgLoad (continued)		• operationDoneWithNMS(28) • tftpWrongFileType(29) • downloadToDramFromServerOverwrite(30) **NOTE:** The objects “snAgCfgFname” and “snAgTftpServerIp” are required to allow the download or upload process to occur. No write requests will be allowed while a download or upload process is in progress. The snAgCfgEosTable objects must be sent along in one PDU for network management systems to recognize values from (24) to (27). A separate write memory using the CLI or an SNMP “set snAgWriteNVRAM” is required to save the configuration to NVRAM.

In addition to the objects above, the following objects are available in all Foundry devices except in the ServerIron products.

Name, OID, and Syntax	Access	Description
snAgImgLoadSPModuleType fdry.1.1.2.1.56 Syntax: Integer	Read-write	Shows the switch processor module type that receives the downloaded image: • other(1) • vm1(2) • pos12(3) • pos48(4) • atm(5) • gignpa(6)
snAgImgLoadSPModuleNumber fdry.1.1.2.1.57	Read-write	Shows the slot number of a switch processor module that receives the downloaded image. Setting this object to 0 means that switch processor modules will receive the image.

Software Image Details

The following objects show information about software images in a device. These objects are available in all Foundry devices.

Name, OID, and Syntax	Access	Description
snAgImgVer fdry.1.1.2.1.11 Syntax: Display string	Read only	Shows the version of the running software. The software image file name is displayed in the format: `major.minor.maintenance[letters].` It can have up to 32 characters.

Name, OID, and Syntax	Access	Description
snAgFlashImgVer fdry.1.1.2.1.12 Syntax: Display string	Read only	Shows the version of the software image that has been saved in the local storage, such as the flash memory. The software image file name is displayed in the format: `major.minor.maintenance[letters]` It can have up to 32 characters. If this file is unknown or not available, then this object displays a a null string.
snAgSoftwareFeature fdry.1.1.2.1.41 Syntax: Octet string	Read only	Contains a bit string representing the software feature of the running software image. Each bit can have one of the following values: • 0 – The feature is available • 1 – The feature is available Bit 0 is the least significant bit of an octet, and bit 7 is the most significant bit of an octet. • Octet 0, bit 0 – RMON • Octet 0, bit 1 – IPX switching • Octet 0, bit 2 – Server Load Balancing • Octet 0, bit 3 – Layer 3 filter in switch • Octet 0, bit 4 – IPX routing • Octet 0, bit 5 – AppleTalk routing • Octet 0, bit 6 – IP multicast routing • Octet 0, bit 7 – Local access control • Octet 1, bit 0 – BGP routing • Octet 1, bit 1 – Loopback interface • Octet 1, bit 2 – BigIron multi-management module • Octet 1, bit 3 – BigIron SYSIF II • Octet 1, bit 4 – BigIron POS support • Octet 1, bit 5 – AppleTalk cable VLAN • Octet 1, bit 6 – 64 subnet • Octet 1, bit 7 – multi-slot trunk • Octet 2, bit 0 – TACACS • Octet 2, bit 1 – Gigabit Ethernet port auto-negotiation mode • Octet 2, bit 2 – FSRP • Octet 2, bit 3 – Exodus requested OSPF enhancement • Octet 2, bit 4 – OSPF NSSA • Octet 2, bit 5 – POS • Octet 2, bit 6 – QoS • Octet 2, bit 7 – Single Span

Name, OID, and Syntax	Access	Description
snAgSoftwareFeature (continued)		• Octet 3, bit 0 – Fast Span • Octet 3, bit 1 – Base L3 • Octet 3, bit 2 – static log buffer • Octet 3, bit 3 – L2 POS • Octet 3, bit 4 – BI15K • Octet 3, bit 5 - L2 ATM • Octet 3, bit 6 - ATM • Octet 3, bit 7 - NETFLOW • Octet 4, bit 0 - SFLOW • Octet 4, bit 1 - GVRP • Octet 4, bit 2 - GARP • Octet 4, bit 3 - Dynamic trunk • Octet 4, bit 4 - IGC 8G • Octet 4, bit 5 - Rate limit • Octet 4, bit 6 - IPC rate limit • Octet 4, bit 7 - MPLS • Octet 5, bit 0 - ISIS • Octet 5, bit 1 - Link aggregation • Octet 5, bit 2 - Port dual mode • Octet 5, bit 3 - Private vlan • Octet 5, bit 4 - MBGP • Octet 5, bit 5 - IPV6 protocol vlan • Octet 5, bit 6 - X10G • Octet 5, bit 7 - FastIron Edge switch/router • Octet 6, bit 0 - FDP Additional bits are added for new features. Check the MIB file for the software version you are running.
snAgBuildDate fdry.1.1.2.1.47 Syntax: Display string	Read only	Shows the date when the software was built. It can display up to 32 characters.
snAgBuildtime fdry.1.1.2.1.48 Syntax: Display string	Read only	Shows the time when the software was built. It can display up to 32 characters.
snAgBuildVer fdry.1.1.2.1.49 Syntax: Display string	Read only	Shows the version of the software in the format: `major.minor.maintenance[letters]` It can display up to 32 characters.

Boot Sequence Table

This table shows a list of software image loads. The images are in the sequence that will be used at boot up. When the devices is booted up, the first image in the table will be loaded into the device. If that software image fails, the second image will be tried. The process continues until a successful load is completed.

This table is available in all Foundry devices. The combination of all the objects in this table must be unique. Duplicate instructions are rejected.

NOTE: Make sure that each entry is unique. It is possible to create entries with the same instructions by creating a new sequence index. Duplicate instructions may cause loops.

Name, OID, and Syntax	Access	Description
snAgBootSeqTable fdry.1.1.2.4.1	None	Identifies the Boot Sequence Table
snAgBootSeqEntry fdry.1.1.2.4.1.1	None	A row in the boot sequence table.
snAgBootSeqIndex fdry.1.1.2.4.1.1.1 Syntax: Integer	Read only	The index to the boot sequence table.
snAgBootSeqInstruction fdry.1.1.2.4.1.1.2 Syntax: Integer	Read-write	Shows from which image the device will boot. • fromPrimaryFlash(1) • fromSecondaryFlash(2) • fromTftpServer(3) • fromBootpServer(4).
snAgBootSeqIpAddr fdry.1.1.2.4.1.1.3 Syntax: IpAddress	Read-write	If the object “snAgBootSeqInstruction” is set to “fromTftpServer”, this object shows the IP address of the TFTP server that contains the image that will be used in the boot.
snAgBootSeqFilename fdry.1.1.2.4.1.1.4 Syntax: Display string	Read-write	Shows the name of the image filename on the TFTP server that will be used in the boot. This object applies only if the object “snAgBootSeqInstruction” is set to “fromTftpServer”. This object can have up to 32 characters.
snAgBootSeqRowStatus fdry.1.1.2.4.1.1.5 Syntax: Integer	Read-write	Creates or deletes an entry in the Boot Sequence Table: • other(1) • valid(2) • delete(3) • create(4)

Software Configuration

The following sections control common configurations for devices:

• “Switch IP Configurations” on page 5-12

Switch IP Configurations

Name, OID, and Syntax	Access	Description
snAgGblIfIpAddr fdry.1.1.2.1.13 Syntax: Integer	Read-write	Shows the IP address of the interface.
snAgGblIfIpMask fdry.1.1.2.1.14 Syntax: Integer	Read-write	Shows the IP address mask of the interface.
snAgDefGwayIp fdry.1.1.2.1.10 Syntax: Integer	Read-write	Shows the IP address of the default gateway router.

Agent System Parameters Configuration Table

The Agent System Parameters Configuration Table presents the definition of the configuration system parameters. For example, the table may show the maximum number of VLANs a network can have.

The table is available in the following chassis devices:

- BigIron
- ServerIron 400
- ServerIron 800

Name, OID, and Syntax	Access	Description
snAgentSysParaConfigTable fdry.1.1.2.7.1	None	A table of Agent of each board.
snAgentSysParaConfigEntry fdry.1.1.2.7.1.1	None	A row in the Agent System Parameters Configuration table.

Name, OID, and Syntax	Access	Description
snAgentSysParaConfigIndex fdry.1.1.2.7.1.1.1 Syntax: Integer	Read only	The index to the Agent System Parameters Configuration Table.
snAgentSysParaConfigDescription fdry.1.1.2.7.1.1.2 Syntax: Display string	Read only	The parameter description string. This object can have up to 32 characters.
snAgentSysParaConfigMin fdry.1.1.2.7.1.1.3 Syntax: Integer	Read only	The minimum value of this Agent System Parameter.
snAgentSysParaConfigMax fdry.1.1.2.7.1.1.4 Syntax: Integer	Read only	The maximum value of this Agent System Parameter.
snAgentSysParaConfigDefault fdry.1.1.2.7.1.1.5 Syntax: Integer	Read only	The default value of this Agent System Parameter.
snAgentSysParaConfigCurrent fdry.1.1.2.7.1.1.6 Syntax: Integer	Read-write	The current configured value of this Agent System Parameter.
snAgentConfigModuleNumberOfPorts fdry.1.1.2.7.1.1.7 Syntax: Integer,	Read only	The number of ports in the module.
snAgentConfigModuleMgmtModuleType fdry.1.1.2.7.1.1.8 Syntax: Integer	Read only	The management module type: • other(1) • nonManagementModule(2) • unknownManagementModule(3) • m1ManagementModule(4) • m2ManagementModule(5) • m3ManagementModule(6) • m4ManagementModule(7) • m5ManagementModule(8) • jetcoreStackManagementModule(9)

Name, OID, and Syntax	Access	Description
snAgentConfigModuleNumberOfCpus fdry.1.1.2.7.1.1.9 Syntax: Integer	Read only	The number of CPUs in the module.

Switch Group Configuration

The objects in this group are available in BigIron and in ServerIron devices. Refer to the chapter “Traps and Objects to Enable Traps” on page 21-1 for switch group trap objects.

Name, OID, and Syntax	Access	Description
snSwGroupOperMode fdry.1.1.3.1.1 Syntax: Integer	Read-write	Indicates if switch ports have VLANs defined: • noVLan(1) – All switch ports with no port VLANs and no tag assigned. • vlanByPort(2) – All switch ports with basic port-based VLANs.
snSwGroupIpL3SwMode fdry.1.1.3.1.2 Syntax: Integer	Read-write	Indicates if the Layer 3 IP switch is enabled for the switch group. • disabled(0) • enabled(1)
snSwGroupIpMcastMode fdry.1.1.3.1.3 Syntax: Integer	Read-write	Indicates if the IP multicast pruning mode is enabled for the switch group. • disabled(0) • enabled(1)
snSwGroupDefaultCfgMode fdry.1.1.3.1.4 Syntax: Integer	Read-write	Indicates if the switch group contains a default configuration. If the default configuration is overwritten, the state will change to non-default. • default(1) – Has a default configuration • nonDefault(2) – Has a non-default configuration
snSwGroupSwitchAgeTime fdry.1.1.3.1.5 Syntax: Integer	Read-write	Sets the aging period for ports on the device, defining how long a port address remains active in the address table. Valid values: 0 = no aging, or 67 – 65535 seconds Default: 300 seconds
snVLanGroupVlanCurEntry fdry.1.1.3.1.6 Syntax: Integer	Read only	Shows the number of VLANs that are configured currently.

Name, OID, and Syntax	Access	Description
snVLanGroupSetAllVLan fdry.1.1.3.1.7 Syntax: Integer	Read-write	Shows the VLanIndex of a particular entry in snVLanByPortTable (snVLanByPortVLanIndex). All the attributes of that row except for PortMask will be used to set the same attributes for the entire VLAN group. VLanId and PortMask must be set for that particular entry prior to setting this object. Switch software will be based on that VLAN information to set the entire VLAN. **NOTE:** All the intended attributes of the given row of the table (given VLAN) must be set prior setting this object. When this object is set, Set-All-VLAN action will take place simultaneously. The previous setting will be overwritten by the new one.
snSwPortSetAll fdry.1.1.3.1.8 Syntax: Integer	Read-write	The value of this object is the index number of the snSwPortInfoTable (snSwPortInfoPortIndex). snSwPortInfoMonitorMode, snSwPortInfoTagType, snSwPortInfoChnMode, snSwPortInfoSpeed, snSwPortInfoAdminStatus are all the read-write attributes of that row of table. They will be used to set the same attributes for all the ports in the system. **NOTE:** Before setting this object, all the intended attributes of the given row of the table must be set. Otherwise, the current data of the row will be used to set the entire port-table. The previous setting will be overwritten by the new one.
snFdbTableCurEntry fdry.1.1.3.1.9 Syntax: Integer	Read only	Shows the total number of entries in the Filtering Databse (FDB) that are configured currently.
snFdbTableStationFlush fdry.1.1.3.1.10 Syntax: Integer	Read-write	Shows the state of the flush operation for the FDB table. The following value can be written: • flush(3) – Perform the flush operation. Once the flush operation starts, any new flush requests will be rejected until the operation is complete or failed. The following values can only be read: • normal(1) – Normal state • error(2) – Operation failed • flushing(4) – Operation is in process
snPortStpSetAll fdry.1.1.3.1.11 Syntax: Integer	Read-write	The value of this object is 1, which means that Port STP Set-all command is invoked. The snPortStpPriority and, snPortStpPathCost, which are the read-write STP related attributes of the first row of table, will be used to set the same attributes for all the ports in the system. **NOTE:** Before setting this object, all the intended attributes of the given row of the table must be set. Otherwise, the current data of the row will be used to set the entire port-table. The previous setting will be overwritten by the new one.

Name, OID, and Syntax	Access	Description
snSwProbePortNum fdry.1.1.3.1.12 Syntax: Integer	Read-write	Indicates which chassis port is assigned as the chassis switch probe port. That port operates as a traffic analyzer port. Only one port in the chassis or stackable switch can be assigned as the traffic analyzer port. The value of this object represents the following: • Bit 0 to bit 7 – Port number • Bit 8 to bit 11 – Slot number
snSw8021qTagMode fdry.1.1.3.1.13 Syntax: Integer	Read-write	Indicates whether or not IEEE802.1q has been enabled for the switch group. • disabled(0) • enabled(1) Default: disabled(0)
snSwGlobalStpMode fdry.1.1.3.1.14 Syntax: Integer	Read-write	Indicates whether or not Spanning Tree System Global Mode has been enabled for the switch group. • disabled(0) • enabled(1)
snSwIpMcastQuerierMode fdry.1.1.3.1.15 Syntax: Integer	Read-write	The IP Multicast pruning mode is configured either Non-Querier or Querier mode • querier(1) – Send out host queries. (active) • nonQuerier(2) – Do not send out host queries.(passive) Default: querier(1)
snSwViolatorPortNumber fdry.1.1.3.1.17 Syntax: Integer	Read only	Indicates the port number of the switch or router that receives the violator packet. This number is included in the locked address violation trap. The value of this object contains the following: • Bit 0 to bit 7 – Port number • Bit 8 to bit 11 – Slot number (for chassis devices only)
snSwViolatorMacAddress fdry.1.1.3.1.18 Syntax: MAC address	Read only	Indicates the source MAC address of the violator packet received by the switch or router. This number is included in the locked address violation trap.
snVLanGroupVlanMaxEntry fdry.1.1.3.1.19 Syntax: Integer	Read-write	Shows the maximum number of VLAN entries that can be configured.
snSwEosBufferSize fdry.1.1.3.1.20 Syntax: Integer	Read only	Specifies buffer size for all the different EOS buffers.
snVLanByPortEntrySize fdry.1.1.3.1.21 Syntax: Integer	Read only	Specifies the size of each VLAN table entry..

Name, OID, and Syntax	Access	Description
snSwPortEntrySize fdry.1.1.3.1.22 Syntax: Integer	Read only	Specifies the size of each port table entry..
snFdbStationEntrySize fdry.1.1.3.1.23 Syntax: Integer	Read only	Specifies the size of each FDB station table entry.
snPortStpEntrySize fdry.1.1.3.1.24 Syntax: Integer	Read only	Specifies the size of each port STP table entry..
snSwIpxL3SwMode fdry.1.1.3.1.28 Syntax: Integer	Read-write	Indicates whether or not Layer 3 IPX Switch mode is enabled. • disabled(0) • enabled(1) Default: disabled(0)
snVLanByIpSubnetMaxSubnets fdry.1.1.3.1.29 Syntax: Integer	Read only	Applies only to ServerIron products. Shows the maximum number of subnets for each IP VLAN.
snVLanByIpxNetMaxNetworks fdry.1.1.3.1.30 Syntax: Integer	Read only	Applies only to ServerIron products. Shows the maximum number of networks for each IPX VLAN.
snSwProtocolVLanMode fdry.1.1.3.1.31 Syntax: Integer	Read-write	Indicates whether or not protocol VLAN is enabled • disabled(0) • enabled(1)
snMacStationVLanId fdry.1.1.3.1.32 Syntax: Integer	Read-write	Shows the MAC Station's VLAN ID index in the standard Forwarding Database for Transparent Bridge Table. (dot1dTpFdbTable). Since the dot1dTpFdbTable index is the MAC Address assigned to one of the ports in the bridge (VLAN) and each MAC address can be re-assigned to a different ports belonging to different bridges (VLANs), the snMacStationVLanId can be used by users to specify which bridge(VLAN) MAC Station information of the dot1dTpFdbTable users want to retrieve. If users do not specify the VLAN ID in this MIB, the default VLAN (bridge) ID will be used when dot1dTpFdbTable is retrieved. Valid values: 1 – 4095
snSwClearCounters fdry.1.1.3.1.33 Syntax: Integer	Read-write	Clears software counters: • valid(0) – an SNMP-GET of this MIB shows that it is valid command to use. • clear(1) – Clear counter command of the following counters: Dot3, MIB2, IP and IPX counters for all ports.

Name, OID, and Syntax	Access	Description
snSw8021qTagType fdry.1.1.3.1.34 Syntax: Integer	Read-write	Specifies the IEEE802.1q tag type that is embedded in the length/type field of an Ethernet packet. It specifies that the two octets after the length/type field in an Ethernet packet is the tag value. Default: 33024
snSwBroadcastLimit fdry.1.1.3.1.35 Syntax: Integer	Read-write	Specifies the number of broadcast packets per second. This number limits the number of broadcast packets to forward out of the switch ports. Setting this object to 0 disables the limitation check. Default: 0
snSwMaxMacFilterPerSystem fdry.1.1.3.1.36 Syntax: Integer	Read only	Specifies the maximum number of MAC Filters per system in the MAC Filter table.
snSwMaxMacFilterPerPort fdry.1.1.3.1.37 Syntax: Integer	Read only	Specifies the maximum number of MAC Filters per port in the Port MAC Access Filter table.
snSwDefaultVLanId fdry.1.1.3.1.38 Syntax: Integer	Read-write	Shows the VLAN ID of the default port VLAN. Valid values: 1 – 4095
snSwGlobalAutoNegotiate fdry.1.1.3.1.39 Syntax: Integer	Read-write	Applies only to Gigabit Ethernet ports. Specifies the negotiation mode of the port: • disable(0) – All Gigabit Ethernet ports are in non-negotiation mode. • enable(1) – All Gigabit Ethernet ports will start auto-negotiation indefinitely until they succeed. • negFullAuto(2) – All Gigabit Ethernet ports will start with auto-negotiation. If the negotiation fails, then they will automatically switch to non-negotiation mode. Gigabit Ethernet ports on all stackable products except for TurboIron/8 do not support negFullAuto(2). If the value of the object “snSwPortInfoAutoNegotiate” on page 7-8 is not set to “global”, then this global value for this object does not apply to the negotiation mode of that port. • other(3) Default: negFullAuto(2)

The following objects apply only to all Foundry devices, except ServerIron products.

snSwQosMechanism fdry.1.1.3.1.40 Syntax: Integer	Read-write	Specifies the quality of service (QoS) mechanism: • strict(0) • weighted(1) Default: weighted(1)
snSwSingleStpMode fdry.1.1.3.1.41 Syntax: Integer	Read-write	Specifies if the Single Spanning Tree System Mode in the Switch Group is enabled. • disabled(0) • enabled(1) Default: disabled(0)
snSwFastStpMode fdry.1.1.3.1.42 Syntax: Integer	Read-write	Indicates if Fast Spanning Tree System Mode in the Switch Group is enabled. • disabled(0) • enabled(1)

Switch Configuration Summary Group

The following object applies to all Foundry devices.

Name, OID, and Syntax	Access	Description
snSwSummaryMode fdry.1.1.3.7.1 Syntax: Integer	Read-write	Indicates whether or not the Switch Configuration Summary is enabled. • disabled(0) • enabled(1) Default: disabled(0)

DNS Group

The Domain Name Server (DNS) resolver feature lets you use a host name to perform Telnet, ping, and traceroute commands. You can also define a DNS domain on a Foundry Layer 2 Switch or Layer 3 Switch and thereby recognize all hosts within that domain. For more information on DNS in Foundry devices, refer to *Foundry Enterprise Configuration and Management Guide*.

The following objects provide information on DNS. They apply to all Foundry devices.

Name, OID, and Syntax	Access	Description
snDnsDomainName fdry.1.1.3.9.1 Syntax: Display string	Read-write	Shows the DNS Domain Name. This object can have up to 80 characters.

Name, OID, and Syntax	Access	Description
snDnsGatewayIpAddrList fdry.1.1.3.9.2 Syntax: Octet string	Read-write	Shows the DNS Gateway IP addresses. This list contains up to four IP addresses, represented by octet string. This object has 16 octets.

DHCP Gateway List Table

The following objects provide information on DHCP gateways.

Name, OID, and Syntax	Access	Description
snDhcpGatewayListTable fdry.1.1.3.8.1	None	A table of DHCP gateway list of addresses.
snDhcpGatewayListEntry fdry.1.1.3.8.1.1	None	An entry in the IP Port Address table.
snDhcpGatewayListId fdry.1.1.3.8.1.1.1 Syntax: Integer	Read only	Shows the ID for a DHCP gateway. Valid values: 1 – 32.
snDhcpGatewayListAddrList fdry.1.1.3.8.1.1.2 Syntax: Octet string	Read-write	Lists the DHCP gateway addresses in each DHCP gateway list. This list contains 1 to 8 IP addresses represented by an octet string. This object can have 4 to 32 octets.
snDhcpGatewayListRowStatus fdry.1.1.3.8.1.1.3 Syntax: Integer	Read-write	Controls the management of the table rows. The values that can be written are: • delete(3) – Delete the row • create(4) – Create a new row • modify(5) – Modify an existing row If the row exists, then a SET with a value of create(4) returns a "bad value" error. Deleted rows are removed from the table immediately. The following values can be returned on reads: • noSuch(0) – No such row • invalid(1) – Row is inoperative • valid(2) – Row exists and is valid

NTP General Group

You can configure Layer 2 and Layer 3 Switches to consult Simple Network Time Protocol (SNTP) servers for the current system time and date. Since Foundry Layer 2 and Layer 3 switches do not retain time and date information across power cycles, using the SNTP feature alleviates administrators from reconfiguring time and date after system reset.

The following objects provide information on the network time processor (NTP) server. It applies to all Foundry devices.

Name, OID, and Syntax	Access	Description
snNTPGeneral fdry.1.1.3.11.1	None	Begins the NTP configuration objects.
snNTPPollInterval fdry.1.1.3.11.1.1 Syntax: Integer	Read-write	Specifies how often to poll the NTP server. Each unit is one second. Valid values: 1 – 65535 Default: 1800 seconds

Name, OID, and Syntax	Access	Description
snNTPTimeZone fdry.1.1.3.11.1.2 Syntax: Integer	Read-write	Time zone: • alaska(0) • aleutian(1) • arizona(2) • central(3) • eastIndiana(4) • eastern(5) • hawaii(6) • michigan(7) • mountain(8) • pacific(9) • samoa(10) • gmtPlus12(11) • gmtPlus11(12) • gmtPlus10(13) • gmtPlus9(14) • gmtPlus8(15) • gmtPlus7(16) • gmtPlus6(17) • gmtPlus5(18) • gmtPlus4(19) • gmtPlus3(20) • gmtPlus2(21) • gmtPlus1(22) • gmt(23) – The default • gmtMinus1(24) • gmtMinus2(25) • gmtMinus3(26) • gmtMinus4(27) • gmtMinus5(28) • gmtMinus6(29)

Name, OID, and Syntax	Access	Description
snNTPTimeZone (Continued)		• gmtMinus7(30) • gmtMinus8(31) • gmtMinus9(32) • gmtMinus10(33) • gmtMinus11(34) • gmtMinus12(35)}
snNTPSummerTimeEnable fdry.1.1.3.11.1.3 Syntax: Integer	Read-write	Indicates if daylight savings time is enabled: • disabled(0) • enabled(1) – Enables daylight saving time starting at 02:00:00 on the first Sunday in April and ending at 02:00:00 in last Sunday in October. Default: disabled(0)
snNTPSystemClock fdry.1.1.3.11.1.4 Syntax: Octet string	Read-write	Shows the format of the system clock: • octet 0 – Seconds after the minute [0-60] • octet 1 – Minutes after the hour [0-59] • octet 2 – Hours since midnight [0-23] • octet 3 – Day of the month [1-31] • octet 4 – Months since January [0-11] • octet 5 – Years since 1900 • octet 6 – Days since Sunday [0-6] Octets 0 to 5 must have valid values and Octet 6 must be set to 0. To disable the system clock set all octets to zero.
snNTPSync fdry.1.1.3.11.1.5 Syntax: Integer	Read-write	Initiates the time synchronization to the NTP servers. For set operation, only "synchronize(2)" is accepted. For get operation, always return "other(1)".

NTP Server Table

The following objects apply to all Foundry devices. They provide information on the NTP server.

Name, OID, and Syntax	Access	Description
snNTPServerTable fdry.1.1.3.11.2	None	NTP (Network Time Protocol) server table.
snNTPServerEntry fdry.1.1.3.11.2.1	None	An entry in the NTP server table.

Name, OID, and Syntax	Access	Description
snNTPServerIp fdry.1.1.3.11.2.1.1 Syntax: IpAddress	Read only	Shows the IP address of the NTP server.
snNTPServerVersion fdry.1.1.3.11.2.1.2 Syntax: Integer	Read-write	Shows the version in the NTP server. Default: 1
snNTPServerRowStatus fdry.1.1.3.11.2.1.3 Syntax: Integer	Read-write	Creates or deletes an NTP server table entry: • other(1) • valid(2) • delete(3) • create(4)

Banners

Banners are messages that are displayed when a user logs into the device.

Name, OID, and Syntax	Access	Description
snAgGblBannerExec fdry.1.1.2.1.61 Syntax: Display string	Read-write	Enter a message that will be displayed when a user enters the Privileged EXEC CLI level of a device. Enter up to 2048 characters for this banner. Use the character "\n" within the string to start a new line. Leave this object blank if no message is to be displayed.
snAgGblBannerIncoming fdry.1.1.2.1.62 Syntax: Display string	Read-write	Enter a message that will be displayed on the Console when a user establishes a Telnet session. This message includes the location where the user is connecting from and displays a text message that can be configured. Enter up to 2048 characters for this banner. Use the character "\n" within the string to start a new line. Leave this object blank if no message is to be displayed.
snAgGblBannerMotd fdry.1.1.2.1.63 Syntax: Display string	Read-write	Enter the message of the day that will be displayed on a user's terminal when he or she establishes a Telnet CLI session. Enter up to 2048 characters for this banner. Use the character "\n" within the string to start a new line. Leave this object blank if no message is to be displayed.

Encoded Octet Strings Table

Each row in the Encoded Octet Strings (EOS) Table represents a fragmented configuration file data packet, including its checksum. An SNMP SET represents a configuration file download process, while an SNMP GET represents a configuration file upload.

This action is only if the SNMP-SET of snAgCfgLoad command is sent along with this table consecutively. Consecutive SETs are performed until the network management system has no more packets to send. Likewise, consecutive GETs are done until the agent has no more packets to send.

The applicable snAgCfgLoad command value is as follows:
uploadFromFlashToNMS(23),
downloadToFlashFromNMS(24),
uploadFromDramToNMS(25),
downloadToDramFromNMS(26)

The table is supported in all Foundry products.

Name, OID, and Syntax	Access	Description
snAgCfgEosTable fdry.1.1.2.5.1	None	The EOS table
snAgCfgEosEntry fdry.1.1.2.5.1.1	None	An EOS row in the table of encoded octet strings for table snAgCfgEosTable.
snAgCfgEosIndex fdry.1.1.2.5.1.1.1 Syntax: Integer	Read only	Each VLAN EOS Buffer Identifier have multiple VLAN table entries.
snAgCfgEosPacket fdry.1.1.2.5.1.1.2 Syntax: Octet string	Read-write	An encoded octet string. On reads it contains an integral number of configuration file data packets. The size of each encoded octet string is less than or equal to 1400 bytes. This object can contain up to 1000 octets.
snAgCfgEosChkSum fdry.1.1.2.5.1.1.3 Syntax: Integer	Read-write	A checksum of each configuration file data packet.

Agent's Global Group

Name, OID, and Syntax	Access	Description
snAgGblDataRetrieveMode fdry.1.1.2.1.19 Syntax: Integer	Read-write	Retrieves the VLAN Table and Port-STP Table data as indicated by the selected mode. The mode can be one of the following: • nextbootCfg(0) – Retrieve the next boot configuration data • operationalData(1) – Retrieve the current running data Default: nextbootCfg(0).

Error Management

The following objects are for general resource management in a device. They are available in all Foundry devices.

Name, OID, and Syntax	Access	Description
snAgGblQueueOverflow fdry.1.1.2.1.30 Syntax: Integer	Read only	The device queues are overflowing: • No(0) • Yes(1)
snAgGblBufferShortage fdry.1.1.2.1.31 Syntax: Integer	Read only	There is a shortage in the device buffers: • No(0) • Yes(1)
snAgGblDmaFailure fdry.1.1.2.1.32 Syntax: Integer	Read only	The device DMAs are in good condition • No(0) • Yes(1)
snAgGblResourceLowWarning fdry.1.1.2.1.33 Syntax: Integer	Read only	The device has low resources available: • No(0) • Yes(1)
snAgGblExcessiveErrorWarning fdry.1.1.2.1.34 Syntax: Integer	Read only	The device has excessive collision, FCS errors, alignment warnings, and other excessive warnings. • No(0) • Yes(1)

FDP and CDP

This section presents the MIB objects and tables that can be used to manage FDP/CDP using SNMP.

FDP/CDP Global Configuration Objects

The following objects are used to configure FDP globally.

Name, OID, and Syntax	Access	Description
snFdpGlobalRun fdry.1.1.3.20.1.3.1 Syntax: Integer	Read-write	Indicates if the Foundry Discovery Protocol(FDP) is enabled: • false(0) – FDP is disabled. FDP entries in the snFdpCacheTable are deleted when FDP is disabled. • true(1) – FDP is enabled. Enabling FDP automatically enables CDP globally. Default: false(0)
snFdpGlobalMessageInterval fdry.1.1.3.20.1.3.2 Syntax: Integer	Read-write	Indicates the interval at which FDP messages are to be generated. Valid values: 5 – 900 seconds Default: 60 seconds
snFdpGlobalHoldTime fdry.1.1.3.20.1.3.3 Syntax: Integer	Read-write	Indicates how long the receiving device will hold FDP messages. Valid values: 10 – 255 seconds Default: 180 seconds
snFdpGlobalCdpRun fdry.1.1.3.20.1.3.4 Syntax: Integer	Read-write	Shows if the Cisco Discovery Protocol(CDP) is enabled: • false(0) – CDP is disabled. CDP entries in the snFdpCacheTable are deleted when FDP is disabled. • true(1) – CDP is enabled. Enabling CDP does not automatically enable FDP globally. Default: false (0)

FDP Interface Table

The FDP Interface Table shows whether or not FDP is enabled on a physical interface. You can use this table to disable or enable FDP on individual interfaces.

NOTE: You cannot disable CDP on individual interfaces.

Name, OID, and Syntax	Access	Description
snFdpInterfaceTable fdry.1.1.3.20.1.1.1	None	The FDP Interface table
snFdpInterfaceIfIndex fdry.1.1.3.20.1.1.1.1.1	None	An entry in the FDP Cache Table, showing the ifIndex value of the local interface.

Name, OID, and Syntax	Access	Description
snFdpInterfaceEnable fdry.1.1.3.20.1.1.1.1.2 Syntax: Integer	Read-write	Determines if FDP is enabled on the interface: • false(0) – FDP is disabled. • true(1) – FDP is enabled. Default: true(1)

FDP Cache Table

Each entry in the FDP Cache Table contains information received from FDP/CDP on one interface of one device. This table is available if FDP or CDP is enabled globally. Entries appear when an FDP/CDP advertisement is received from a neighbor device. Entries are deleted when FDP/CDP is disabled on an interface or globally.

Name, OID, and Syntax	Access	Description
snFdpCacheTable fdry.1.1.3.20.1.2.1	None	The FDP Cache Table
snFdpCacheEntry fdry.1.1.3.20.1.2.1.1	None	An entry in the FDP Cache Table.
snFdpCacheIfIndex fdry.1.1.3.20.1.2.1.1.1	None	An entry in the FDP Cache Table, showing the ifIndex value of the local interface.
snFdpCacheDeviceIndex fdry.1.1.3.20.1.2.1.1.2 Syntax: Integer	Read only	A unique value for each device from which FDP or CDP messages are being received. For example, you may see `1`.
snFdpCacheDeviceId fdry.1.1.3.20.1.2.1.1.3 Syntax: Display string	Read only	Shows a description for the device as reported in the most recent FDP or CDP message. For example, you may see `DeviceB`. A zero-length string indicates no Device-ID field (TLV) was reported in the most recent FDP or CDP message.
snFdpCacheAddressType fdry.1.1.3.20.1.2.1.1.4 Syntax: Integer	Read only	Indicates the type of address contained in the “snFdpCacheAddress” object for this entry: • ip(1) • ipx(2) • appletalk(3)

Name, OID, and Syntax	Access	Description
snFdpCacheAddress fdry.1.1.3.20.1.2.1.1.5 Syntax: Octet string	Read only	Shows the network-layer address of the device's SNMP-agent, as reported in the most recent FDP or CDP message. A device may have more than one address. This object shows the first address on the device. The format of this object depends on the value of the snFdpCacheAddressType object: • ip(1) – 4 octets • ipx(2) – 10 octets: Octets 1 – 4: Network number Octets 5 – 10: Host number • appletalk(3) – 3 octets: Octets 1 – 2: Network number Octet 3: Host number
snFdpCacheVersion fdry.1.1.3.20.1.2.1.1.6 Syntax: Display string	Read only	Shows the software version running in the device as reported in the most recent FDP or CDP message. For example, you may see the following: `Foundry Networks, Inc. Router, IronWare Version 07.6.01b1T53 Compiled on Aug 28 2002 at 20:23:58 labeled as B2R07601`
snFdpCacheDevicePort fdry.1.1.3.20.1.2.1.1.7 Syntax: Display string	Read only	Shows the port ID of the device as reported in the most recent FDP or CDP message. This will typically be the value of the ifName object. For example, you may see `Ethe 2/3`. A zero-length string indicates no Port-ID field (TLV) was reported in the most recent FDP or CDP message.
snFdpCachePlatform fdry.1.1.3.20.1.2.1.1.8 Syntax: Display string	Read only	Shows the device's hardware platform as reported in the most recent FDP or CDP message. For example, you may see `BigIron Router`. A zero-length string indicates that no Platform field (TLV) was reported in the most recent FDP or CDP message.
snFdpCacheCapabilities fdry.1.1.3.20.1.2.1.1.9 Syntax: Display string	Read only	Shows the device's functional capabilities as reported in the most recent FDP or CDP message. For example, you may see `Router`.
snFdpCacheVendorId fdry.1.1.3.20.1.2.1.1.10 Syntax: Integer	Read only	Indicates if FDP or CDP received the entry: • fdp(1) • cdp(2)
snFdpCacheDeviceIsAggregateVlan fdry.1.1.3.20.1.2.1.1.11 Syntax: Integer	Read only	Indicates if this entry is from a neighbor device that is in an aggregated VLAN: • false(0) – It is not in an aggregated VLAN • true(1) – It is in an aggregate VLAN

Name, OID, and Syntax	Access	Description
snFdpCacheDeviceTagType fdry.1.1.3.20.1.2.1.1.12 Syntax: Integer	Read only	Shows the tag type of the neighbor device that sent this entry. For example, you may see `0x8100`.
snFdpCacheDevicePortVlanMask fdry.1.1.3.20.1.2.1.1.13 Syntax: Octet string	Read only	Shows the port VLAN masks, in 512-byte octet string, of the neighbor that sent this entry.
snFdpCachePortTagMode fdry.1.1.3.20.1.2.1.1.14 Syntax: Integer	Read only	Shows the port tag mode on the neighbor device: • untagged(1) • tagged(2) • dual(3)
snFdpCacheDefaultTrafficeVlanId ForDualMode fdry.1.1.3.20.1.2.1.1.15 Syntax: Integer	Read only	Shows the default traffic vlan ID for neighbor devices that have dual-mode ports.

FDP Cached Address Entry Table

The FDP Cached Address Entry Table shows all the cached addresses from which FDP or CDP messages are being received. This table is available if FDP or CDP is enabled globally.

Name, OID, and Syntax	Access	Description
snFdpCachedAddressTable fdry.1.1.3.20.1.4.1	None	The FDP Cached Address Entry Table
snFdpCachedAddrIfIndex fdry.1.1.3.20.1.4.1.1.1 Syntax: Integer	None	An entry in the FDP Cached Address Table, showing the ifIndex value of the local interface.
snFdpCachedAddrDeviceIndex fdry.1.1.3.20.1.4.1.1.2 Syntax: Integer	Read only	Shows a unique value for each device from which FDP or CDP messages are being received.
snFdpCachedAddrDeviceAddrEntryIndex fdry.1.1.3.20.1.4.1.1.3 Syntax: Integer	Read only	Shows a unique value for each address on the device from which FDP or CDP messages are being received. A device may have several addresses. There will be one entry for each address.

Name, OID, and Syntax	Access	Description
snFdpCachedAddrType fdry.1.1.3.20.1.4.1.1.4 Syntax: Integer	Read only	Indicates the type of address contained in the "snFdpCachedAddrValue" object for this entry: • ip(1) • ipx(2) • appletalk(3)
snFdpCachedAddrValue fdry.1.1.3.20.1.4.1.1.5 Syntax: Octet string	Read only	Indicates the network-layer address of the device's SNMP-agent as reported in the most recent FDP or CDP message. The format of this object depends on the value of the snFdpCachedAddrValue object: • ip(1) – 4 octets • ipx(2) – 10 octets: Octets 1 – 4: Network number Octets 5 – 10: Host number • appletalk(3) – 3 octets: Octets 1 – 2: Network number Octet 3: Host number

Chapter 6
User Access

This chapter presents the objects used to control user access to devices. It contains the following sections:

Refer to the *Foundry Security Guide* for detailed explanation on the features discussed in this chapter.

Agent User Access Group

The objects in this section apply to user accounts in all Foundry devices.

Name, OID, and Syntax	Access	Description
snAgentUserMaxAccnt fdry.1.1.2.9.1.1 Syntax: Integer	Read only	Shows the maximum number of user accounts that can be configured on the device.

Agent User Account Table

The objects in this table provide information about user accounts. They apply to all Foundry devices.

Name, OID, and Syntax	Access	Description
snAgentUserAccntTable fdry.1.1.2.9.2	None	A table of user account information.
snAgentUserAccntEntry fdry.1.1.2.9.2.1	None	Represents a row in the Agent User table.
snAgentUserAccntName fdry.1.1.2.9.2.1.1 Syntax: Display string	Read only	Displays the user name. This object can have up to 48 characters
snAgentUserAccntPassword fdry.1.1.2.9.2.1.2 Syntax: Display string	Read-write	Contains the user password. Valid values: Up to 48 characters
snAgentUserAccntEncryptCode fdry.1.1.2.9.2.1.3 Syntax: Integer	Read-write	States the password encryption method code. • 0 – no encryption • 1 – simple encryption • 7– MD5 encryption
snAgentUserAccntPrivilege fdry.1.1.2.9.2.1.4 Syntax: Integer	Read-write	Shows the user's privilege. • 0 – administration • 4 – Port configuration • 5 – Read only
snAgentUserAccntRowStatus fdry.1.1.2.9.2.1.5 Syntax: Integer	Read-write	Creates, modifies, or deletes a user account table entry: • other(1) • valid(2) • delete(3) • create(4) • modify(5)

General Security Objects

The following objects are used to manage general security functions in all Foundry devices.

snAgGblPassword fdry.1.1.2.1.15 Syntax: Display string	Read-write	Shows the system security access password, which is used only for setting. An SNMP-Get will return a zero string. Valid values: Up 48 characters.

snAgGblSecurityLevelSet fdry.1.1.2.1.28 Syntax: Integer	Read-write	Shows the security level required to set an “enable” password. This security level can be be from 0 to 5.
snAgGblPasswordChangeMode fdry.1.1.2.1.24 Syntax: Integer	Read only	Specifies which management entity is allowed to change the “enable” password for the device. For security reasons, this object can only be modified using the device’s CLI. Valid values: • anyMgmtEntity(1) – Any SNMP management station, console command line interface or Telnet command line interface can be used to change the password. • consoleAndTelnet(2) – The password can be changed using the console command line interface or the Telnet command line interface • consoleOnly(3) – Only the console command line interface can be used • telnetOnly(4) – Only telnet command line interface can be used. Default: consoleAndTelnet(2)
snAgGblLevelPasswordsMask fdry.1.1.2.1.29 Syntax: Integer	Read only	Shows the bitmap of level passwords which were successfully assigned to the system. • Bit 0 – Level 0 = admin • Bit 4 – Level 4 = port configuration • Bit 5 – Level 5 = read only
snAgGblReadOnlyCommunity fdry.1.1.2.1.25 Syntax: Display string	Read-write	Allows you to configure SNMP read-only community strings for the device. This object can be used in an SNMP-Set, but not SNMP-Get. Get will return a blank. Valid values: Up to 32 characters. **NOTE:** To use this object, make sure that "**password-change any**" has been configured in the device, to allow passwords to be updated from SNMP or any method
snAgGblReadWriteCommunity fdry.1.1.2.1.26 Syntax: Display string	Read-write	Allows you to configure SNMP read-write community strings for the device. This object can be used in an SNMP-Set, but not SNMP-Get. Get will return a blank. Valid values: Up to 32 characters. **NOTE:** To use this object, make sure that "**password-change any**" has been configured in the device, to allow passwords to be updated from SNMP or any method
snAgGblCurrentSecurityLevel fdry.1.1.2.1.27 Syntax: Integer	Read only	Represents the current login security level (0 to 5). Each level of security requires a password to permit users for different system configurations. Levels are defined in the “snAgGblLevelPasswordsMask” object.

snAgSystemLog fdry.1.1.2.1.20 Syntax: Octet string	Read-write	Indicates whether any network management system has login privileges. The agent allows only one network management to be logged in. The value of this object consists of an octet string, with the first byte representing the value described below. The following four bytes contain a secret code. The value of the first byte can be one of the following: • login(1) – Login for a network management system. • heartbeat(2) – a value for the login NMS periodically to check in; Otherwise, the Agent will automatically set this object to logout(3) after a timeout period. • logout(3) – a value for a NMS to logout. • changePassword(4) – a value for the login NMS to change password, only if snAgGblPasswordChangeMode was configured to “anyMgmtEntity”. • changeReadOnlyCommunity(5) – a value for the login NMS to change the read-only community string, only if snAgGblPasswordChangeMode was configured to “anyMgmtEntity”. • changeReadWriteCommunity(6) – a value for the login NMS to change the read-write community string, only if snAgGblPasswordChangeMode was configured to “anyMgmtEntity”.
snAgGblSecurityLevelBinding fdry.1.1.2.1.39 Syntax: Integer	Read only	After a network management system logs in to a device with a user ID and password, the privilege level assigned to that system is saved in this object. Privilege level can be one of the following: • 0 – Administration • 4 – Port configuration • 5 – Read only • 255 – Invalid binding
snAgGblTelnetTimeout fdry.1.1.2.1.37 Syntax: Integer	Read-write	Shows how many minutes a Telnet session can remain idle before it times out. The value of this object can be up to 240 minutes. A value of 0 means that the Telnet session never times out.
snAgGblEnableWebMgmt fdry.1.1.2.1.38 Syntax: Integer	Read-write	Enables or disables access to the device from the Web management interface: • disable(0) • enable(1)
snAgGblEnableSLB fdry.1.1.2.1.40 Syntax: Integer	Read only	Enables or disables Server Load Balancing: • disable(0) • enable(1)

snAgGblEnableTelnetServer fdry.1.1.2.1.45 Syntax: Integer	Read-write	Enables or disables the Telnet server in a device: • Disable(0) • Enable(1) Default: enable(1)
snAgGblTelnetPassword fdry.1.1.2.1.46 Syntax: Display string	Read-write	Contains the Telnet access password, which is only used with SNMP Set. An SNMP-Get produces a zero string. This object can have 48 characters.
snAgGblTelnetLoginTimeout fdry.1.1.2.1.60 Syntax: Integer	Read-write	Indicates how many minutes you have to log in before Telnet is disconnected. Valid values: 1 – 10 minutes. Default: 1 minute

IP Community List Table

This table has been deprecated in IronWare software release 07.5.00 and is no longer supported. It has been replaced by the “IP Community List String Table” on page 6-6

Name, OID, and Syntax	Access	Description
snIpCommunityListTable	None	IP Community List Table.
snIpCommunityListEntry	None	An entry in the IP Community List Table.
snIpCommunityListIndex Syntax: Integer	Read only	An index for an entry in the table.
snIpCommunityListSequence Syntax: Integer	Read only	Identifies the sequence of this entry in this table.
snIpCommunityListAction Syntax: Integer	Read-write	Determines what action to take if the address in the packet matches this filter: • deny(0) • permit(1)
snIpCommunityListCommNum Syntax: Octet string	Read-write	Specifies the community number. This is a number from 1 to 0xFFFFFFFF. There are 20 of them. The number is represented by four octets.
snIpCommunityListInternet Syntax: Integer	Read-write	Indicates if the community is enabled: • disabled(0) • enabled(1)

Name, OID, and Syntax	Access	Description
snIpCommunityListNoAdvertise Syntax: Integer	Read-write	Indicates if routes will not be advertised to any internal or external peer: • false(0) • true(1)
snIpCommunityListNoExport Syntax: Integer	Read-write	Determines if the route will not be advertised to an EBGP peer: • false(0) • true(1)
snIpCommunityListRowStatus Syntax: Integer	Read-write	Controls the management of the table rows. The values that can be written are: • delete(3) – Delete the row • create(4) – Create a new row • modify(5) – Modify an existing row If the row exists, then a SET with a value of create(4) returns a "bad value" error. Deleted rows are removed from the table immediately. The following values can be returned on reads: • noSuch(0) – No such row • invalid(1) – Row is inoperative • valid(2) – Row exists and is valid
snIpCommunityListLocalAs Syntax: Integer	Read-write	Indicates if this route will be sent to peers (advertised) in other sub-autonomous systems within the local confederation: • false(0) – Do not advertise this route to an external system. • true(1) – Advertise this route.

IP Community List String Table

This table contains the list of community strings used.

Beginning with IronWare software release 07.5.00, this table replaces the “IP Community List String Table” on page 6-6.

Name, OID, and Syntax	Access	Description
snIpCommunityListStringTable fdry.1.2.2.17	None	IP Community ListString Table.
snIpCommunityListStringEntry fdry.1.2.2.17.1	None	An entry in the IP Community ListString Table.
snIpCommunityListStringName fdry.1.2.2.17.1.1 Syntax: Octet string	Read only	An index for an entry in the table. This object can have up to 32 octets.

Name, OID, and Syntax	Access	Description
snIpCommunityListStringSequence fdry.1.2.2.17.1. Syntax: Integer	Read only	Indicates the sequence of this entry in the table.
snIpCommunityListStringAction fdry.1.2.2.17.1.3 Syntax: Integer	Read-write	Indicates the action to take if the community string on the packet matches this filter: • deny(0) • permit(1)
snIpCommunityListStringCommNum fdry.1.2.2.17.1.4 Syntax: Integer	Read-write	Shows the community string's number, represented by four octets. This number can be from 1 to 0xFFFFFFFF. There can be up to 20 community string numbers.
snIpCommunityListStringInternet fdry.1.2.2.17.1.5 Syntax: Integer	Read-write	Indicates if the community is enabled: • disabled(0) • enabled(1)
snIpCommunityListStringNoAdvertise fdry.1.2.2.17.1.6 Syntax: Integer	Read-write	Indicates the community string will not be advertised to any internal or external peers: • false(0) • true(1)
snIpCommunityListStringNoExport fdry.1.2.2.17.1.7 Syntax: Integer	Read-write	Indicates if this route is not advertised as an EBGP peer: • false(0) • true(1)
snIpCommunityListStringRowStatus fdry.1.2.2.17.1.8 Syntax: Integer	Read-write	Controls the management of the table rows. The values that can be written are: • delete(3) – Delete the row • create(4) – Create a new row • modify(5) – Modify an existing row If the row exists, then a SET with a value of create(4) returns a "bad value" error. Deleted rows are removed from the table immediately. The following values can be returned on reads: • noSuch(0) – No such row • invalid(1) – Row is inoperative • valid(2) – Row exists and is valid
snIpCommunityListStringLocalAs fdry.1.2.2.17.1.9	Read-write	Determines if this route will be sent to peers in other sub autonomous systems within the local confederation. Do not advertise this route to an external system.

Authorization and Accounting

The following objects are for authorization, and accounting functions. They are available in all Foundry devices.

In releases prior to 07.1.00, a user logging into the device using Telnet or SSH would first enter the User EXEC level. The user could then enter the **enable** command to get to the Privileged EXEC level. Starting with Release 07.1.00, a user who is successfully authenticated by a RADIUS or TACACS+ server is automatically placed at the Privileged EXEC level after login. For more information on the AAA functions, refer to the *Foundry Security Guide*.

Name, OID, and Syntax	Access	Description
snAuthorizationCommand Methods fdry.1.1.3.15.2.1 Syntax: Octet string	Read-write	Specifies the sequence of authorization methods. This object can have zero to three octets. Each octet represents a method to authorize the user command. Each octet has the following value: • radius(2) – Authorize by the requesting RADIUS server • tacplus(5) – Authorize by requesting TACACS server • none(6) – Skip authorization Setting a zero length octet string invalidates all previous authorization methods.
snAuthorizationCommandLevel fdry.1.1.3.15.2.2 Syntax: IpAddress	Read-write	Specifies the commands that need to be authorized. Any command that is equal to or less than the selected level will be authorized: • level(0) – Privilege level 0 • level(4) – Privilege level 4 • level(5) – Privilege level 5
snAuthorizationExec fdry.1.1.3.15.2.3 Syntax: Octet string	Read-write	Shows the sequence of authorization methods for exec programs. This object can have zero to three octets. Each octet represents a method for Telnet or SSH login authorization. Each octet can have one of the following value: • radius(2) – Send EXEC authorization request to RADIUS server • tacplus(5) – Send EXEC authorization request to TACACS+ server • none(6) – No EXEC authorization method Setting a zero length octet string invalidates all authorization methods.

Name, OID, and Syntax	Access	Description
snAccountingCommandMethods fdry.1.1.3.15.3.1 Syntax: Octet string	Read-write	Shows a sequence of accounting methods. This object can have zero to three octets. Each octet represents an accounting method. Each octet can have one of the following value: • radius(2) – Send accounting information to RADIUS server • tacplus(5) – Send accounting information to TACACS+ server • none(6) – No accounting method Setting a zero length octet string invalidates all authorization methods.
snAccountingCommandLevel fdry.1.1.3.15.3.2 Syntax: Integer	Read-write	Specifies the commands that need to be accounted for. Any command that is equal to or less than the selected level will be accounted for: • level(0) – Privilege level 0 • level(4) – Privilege level 4 • level(5) – Privilege level 5.
snAccountingExec fdry.1.1.3.15.3.3 Syntax: Octet string	Read-write	Shows the sequence of accounting methods for exec programs. This object can have zero to three octets. Each octet represents a method for Telnet or SSH login authorization. Each octet can have one of the following value: • radius(2) – Send accounting information to the RADIUS server • tacplus(5) – Send accounting information to the TACACS+ server • none(6) – No accounting method Setting a zero length octet string invalidates all authorization methods.
snAccountingSystem fdry.1.1.3.15.3.4 Syntax: Octet string	Read-write	A sequence of accounting methods. This object can have zero to three octets. Each octet represents a method to account for the system related events. Each octet has the following enumeration value: • radius(2) – send accounting information to the RADIUS server • tacplus(5) – send accounting information to the TACACS+ server • none(6) – skip accounting Setting a zero length octet string invalidates all previous accounting methods.

RADIUS General Group

You can use a Remote Authentication Dial In User Service (RADIUS) server to secure the following types of access to the Foundry switch or router:

- Telnet access
- SSH access
- Web management access
- Access to the Privileged EXEC level and CONFIG levels of the CLI

The following objects provide information on RADIUS authentication. They apply to all Foundry devices.

Name, OID, and Syntax	Access	Description
snRadiusGeneral fdry.1.1.3.12.1		
snRadiusSNMPAccess fdry.1.1.3.12.1.1 Syntax: Integer	Read only	Indicates if the RADIUS group MIB objects can be accessed by an SNMP manager: • disabled(0) – All RADIUS group MIB objects return a "general error" • enabled(1) Default: disabled
snRadiusEnableTelnetAuth fdry.1.1.3.12.1.2 Syntax: Integer	Read-write	Indicates if Telnet authentication as specified by the object "snRadiusLoginMethod" is enabled. • disabled(0) • enabled(1) Default: disabled
snRadiusRetransmit fdry.1.1.3.12.1.3 Syntax: Integer	Read-write	Indicates the number of authentication query retransmissions that can be sent to the RADIUS server. Valid values: 0 – 5 Default: 3
snRadiusTimeOut fdry.1.1.3.12.1.4 Syntax: Integer	Read-write	Specifies the number of seconds to wait for authentication reply from the RADIUS server. Valid values: 0 – 15 Default: 3
snRadiusDeadTime fdry.1.1.3.12.1.5 Syntax: Integer	Read-write	Specifies the RADIUS server dead time, each unit is one minute. Valid values: 0 – 5 Default: 3
snRadiusKey fdry.1.1.3.12.1.6 Syntax: Display string	Read-write	Shows the authentication key as encrypted text. This object can have up to 32 characters.

Name, OID, and Syntax	Access	Description
snRadiusLoginMethod fdry.1.1.3.12.1.7 Syntax: Octet string	Read-write	Shows the sequence of authentication methods for the RADIUS server. Each octet represents a method for authenticating the user at login. Each octet can have one of the following values: • enable(1) – Authenticate by the “Enable” password for the command line interface • radius(2) – Authenticate by requesting the RADIUS server • local(3) – Authenticate by local user account table • line(4) – Authenticate by the Telnet password • tacplus(5) – Authenticate by requesting TACACS Plus server • none(6) – Do not authenticate • tacacs(7) – Authenticate by requesting TACACS server Setting a zero length octet string invalidates all previous authentication methods.
snRadiusEnableMethod fdry.1.1.3.12.1.8 Syntax: Octet string	Read-write	Shows the sequence of authentication methods for the RADIUS server. Each octet represents a method for authenticating the user after login, as the user enters the privilege mode of the command line interface. Each octet can have one of the following values: • enable(1) – Authenticate by the “Enable” password for the command line interface • radius(2) – Authenticate by requesting the RADIUS server • local(3) – Authenticate by local user account table • line(4) – Authenticate by the Telnet password • tacplus(5) – Authenticate by requesting TACACS Plus server • none(6) – Do not authenticate • tacacs(7) – Authenticate by requesting TACACS server Setting a zero length octet string invalidates all previous authentication methods.

Name, OID, and Syntax	Access	Description
snRadiusWebServerMethod fdry.1.1.3.12.1.9 Syntax: Octet string	Read-write	Shows the sequence of authentication methods. Each octet represents a method for authenticating the user who is accessing the Web-server. Each octet can have one of the following values: • enable(1) – Authenticate by the “Enable” password for the command line interface • radius(2) – Authenticate by requesting the RADIUS server • local(3) – Authenticate by local user account table • line(4) – Authenticate by the Telnet password • tacplus(5) – Authenticate by requesting TACACS Plus server • none(6) – Do not authenticate • tacacs(7) – Authenticate by requesting TACACS server Setting a zero length octet string invalidates all previous authentication methods.
snRadiusSNMPServerMethod fdry.1.1.3.12.1.10 Syntax: Octet string	Read-write	Shows the sequence of authentication methods. Each octet represents a method to authenticate the user who is accessing the SNMP server. Each octet can have one of the following values: • enable(1) – Authenticate by the “Enable” password for the command line interface • radius(2) – Authenticate by requesting the RADIUS server • local(3) – Authenticate by local user account table • line(4) – Authenticate by the Telnet password • tacplus(5) – Authenticate by requesting TACACS Plus server • none(6) – Do not authenticate • tacacs(7) – Authenticate by requesting TACACS server Setting a zero length octet string invalidates all previous authentication methods..

RADIUS Server Table

The following objects provide information on the RADIUS server. They apply to all Foundry devices.

Name, OID, and Syntax	Access	Description
snRadiusServerTable fdry.1.1.3.12.2	None	RADIUS server table.
snRadiusServerEntry fdry.1.1.3.12.2.1	None	An entry in the RADIUS server table.

Name, OID, and Syntax	Access	Description
snRadiusServerIp fdry.1.1.3.12.2.1.1 Syntax: IpAddress	Read only	Shows the RADIUS server IP address.
snRadiusServerAuthPort fdry.1.1.3.12.2.1.2 Syntax: Integer	Read-write	Shows the UDP port number for authentication. Default: 1645
snRadiusServerAcctPort fdry.1.1.3.12.2.1.3 Syntax: Integer	Read-write	Shows the UDP port number used for accounting. Default: 1646
snRadiusServerRowStatus fdry.1.1.3.12.2.1.4 Syntax: Integer	Read-write	Creates or deletes a RADIUS server table entry: • other(1) • valid(2) • delete(3) • create(4)
snRadiusServerRowKey fdry.1.1.3.12.2.1.5 Syntax: Display string	Read-write	Shows the authentication key, which is displayed as encrypted text. Valid values: Up to 32 characters.
snRadiusServerUsage fdry.1.1.3.12.2.1.6 Syntax: Integer	Read-write	Allows this server to be dedicated for a particular AAA activity: • default(1) • authentication-only(2) • authorization-only(3) • accounting-only(4)

TACACS General Objects

The Terminal Access Controller Access Control System (TACACS) or security protocols can be used to authenticate the following types of access to Foundry devices:

- Telnet access
- SSH access
- Securing Access to Management Functions
- Web management access
- Access to the Privileged EXEC level and CONFIG levels of the CLI

The TACACS and protocols define how authentication, authorization, and accounting information is sent between a Foundry device and an authentication database on a TACACS server.

The following objects provide information on TACACS authentication. They apply to all Foundry devices. Refer to the *Foundry Security Guide* for more information on TACACS.

Name, OID, and Syntax	Access	Description
snTacacsGeneral fdry.1.1.3.13.1		
snTacacsRetransmit fdry.1.1.3.13.1.1 Syntax: Integer	Read-write	Shows the number of authentication query retransmissions to the TACACS server. Valid values: 0 – 5. Default: 3
snTacacsTimeOut fdry.1.1.3.13.1.2 Syntax: Integer	Read-write	Specifies how many seconds to wait for authentication reply from the TACACS server. Valid values: 0 – 15 Default: 3 seconds
snTacacsDeadTime fdry.1.1.3.13.1.3 Syntax: Integer	Read-write	Specifies the TACACS server dead time in minutes. Valid values: 0 – 5 Default: 3 minutes
snTacacsKey fdry.1.1.3.13.1.4 Syntax: Display string	Read-write	Authentication key displayed as encrypted text. Valid values: Up to 32 characters.
snTacacsSNMPAccess fdry.1.1.3.13.1.5 Syntax: Integer	Read only	Indicates whether the TACACS group MIB objects can be accessed by an SNMP manager. • disabled(0) – All TACACS group MIB objects return "general error" • enabled(1) Default: disabled(0)

TACACS Server Table

The following objects provide information on the TACACS server. They apply to all Foundry devices.

Name, OID, and Syntax	Access	Description
snTacacsServerTable fdry.1.1.3.13.2	None	TACACS server table.
snTacacsServerEntry fdry.1.1.3.13.2.1	None	An entry in the TACACS server table.

Name, OID, and Syntax	Access	Description
snTacacsServerIp fdry.1.1.3.13.2.1.1 Syntax: IpAddress	Read only	Shows the TACACS server IP address.
snTacacsServerAuthPort fdry.1.1.3.13.2.1.2 Syntax: Integer	Read-write	Specifies the UDP port used for authentication. Default: 49
snTacacsServerRowStatus fdry.1.1.3.13.2.1.3 Syntax: Integer	Read-write	Creates or deletes a TACACS server table entry: • other(1) • valid(2) • delete(3) • create(4)
snTacacsServerRowKey fdry.1.1.3.13.2.1.4 Syntax: Display string	Read-write	Authentication key displayed as encrypted text. Valid values: Up to 32 characters.
snTacacsServerUsage fdry.1.1.3.13.2.1.5 Syntax: Integer	Read-write	Allows this server to be dedicated to a particular AAA activity: • default(1) – All AAA functions • authentication-only(2) • authorization-only(3) • accounting-only(4)

Chapter 7
Interfaces

This chapter presents the objects used to define interfaces on a device. It contains the following sections:

Refer to the *Foundry Switch and Router Installation and Basic Configuration Guide* for details on the features discussed in this chapter.

Switch Port Information Table

The following table contains information about the switch port groups.

Name, OID, and Syntax	Access	Description
snSwPortInfoTable fdry.1.1.3.3.1	None	The Switch Port Information Table.
snSwPortInfoEntry fdry.1.1.3.3.1.1	None	An entry in the snSwPortInfo table indicates the configuration for a specified port. An SNMP SET PDU for a row of the snSwPortInfoTable requires the entire sequence of the MIB Objects in each snSwPortInfoEntry stored in one PDU. Otherwise, GENERR return-value will be returned.
snSwPortInfoPortNum fdry.1.1.3.3.1.1.1 Syntax: Integer	Read only	Shows the port index: • Bit 0 to bit 7 – Port number • Bit 8 to bit 11 – Slot number (for slot chassis only).

Name, OID, and Syntax	Access	Description
snSwPortInfoMonitorMode fdry.1.1.3.3.1.1.2 Syntax: Integer	Read-write	Indicates the method used to monitor traffic on a port: • disabled(0) – No traffic monitoring. • input(1) – Traffic monitoring is activated on packets received • output(2) – Traffic monitoring is activated on packets transmitted • both(3) – Traffic monitoring is activated on packets received and transmitted. Default: disabled(0)
snSwPortInfoTagType fdry.1.1.3.3.1.1.3 Syntax: Integer	Read-write	Indicates if the port has an 802.1q tag: • tagged(1) – Ports can have multiple VLAN IDs since these ports can be members of more than one VLAN. • untagged(2) – There is only one VLAN ID per port. • auto(3) – There is only one VLAN ID per port. • disabled(4)
snSwPortInfoChnMode fdry.1.1.3.3.1.1.4 Syntax: Integer	Read-write	Indicates if the port operates in half- or full-duplex mode: • halfDuplex(1) – Half duplex mode. Available only for 10/100 Mbps ports. • fullDuplex(2) – Full duplex mode. 100BaseFx, 1000BaseSx, and 1000BaseLx ports operate only at fullDuplex(2). The read-back channel status from hardware can be: • none(0) – Link down or port disabled. • halfDuplex(1) – Half duplex mode. • fullDuplex(2) – Full duplex mode. The port media type (expansion or regular) and port link type (trunk or feeder) determine the value of this object. The port cannot be set to half duplex mode if the port connect mode is m200e(4). However, the value of this parameter may be automatically set whenever the expansion port is connected, for example, in the case of cascade connecting device.

Name, OID, and Syntax	Access	Description
snSwPortInfoSpeed fdry.1.1.3.3.1.1.5 Syntax: Integer	Read-write	Indicates the speed configuration for a port: • none(0) – Link down or no traffic. • sAutoSense(1) – Auto-sensing 10 or 100Mbits. • s10M(2) – 10Mbits per second. • s100M(3) – 100Mbits per second. • s1G(4) – 1Gbits per second. • s45M(5) – 45Mbits per second (T3) (for expansion board only). • s155M(6) – 155Mbits per second (ATM) (for expansion board only). • s10G(7) – 10Gbits per second. The read-back hardware status are the following: • none(0) – Link down or no traffic. • s10M(2) – 10Mbits per second. • s100M(3) – 100Mbits per second. • s1G(4) – 1Gbits per second. • s45M(5) – 45Mbits per second (T3) (for expansion board only). • s155M(6) – 155Mbits per second (ATM) (for expansion board only). • s10G(7) – 10Gbits per second. The port media type (expansion or regular) and port link type (trunk or feeder) determine whether this object can be written and the valid values for this object. It is not allowed to change speed for trunks ports. For expansion ports, all of the above speeds can be set; however, the value of this parameter may be automatically set whenever the expansion port is connected, for example, in the case of cascade connecting device.

Name, OID, and Syntax	Access	Description
snSwPortInfoMediaType fdry.1.1.3.3.1.1.6 Syntax: Integer	Read only	Shows the media type for the port: • other(1) – other or unknown media. • m100BaseTX(2) – 100Mbits per second copper. • m100BaseFX(3) – 100Mbits per second fiber. • m1000BaseFX(4) – 1Gbits per second fiber. • mT3(5) – 45Mbits per second (T3). • m155ATM(6) – 155Mbits per second (ATM). • m1000BaseTX(7) – 1Gbits per second copper. • m622ATM(8) – 622Mbits per second (ATM). • m155POS(9) – 155Mbits per second (POS). • m622POS(10) – 622Mbits per second (POS). • m2488POS(11) – 2488Mbits per second (POS). • m10000BaseFX(12) – 10Gbits per second fiber.
snSwPortInfoConnectorType fdry.1.1.3.3.1.1.7 Syntax: Integer	Read only	Shows the type of connector that the port offers: • other(1) – Other or unknown connector • copper(2) – Copper connector • fiber(3) – Fiber connector This describes the physical connector type
snSwPortInfoAdminStatus fdry.1.1.3.3.1.1.8 Syntax: Integer	Read-write	Shows the desired state of all ports. • up(1) – Ready to pass packets • down(2) • testing(3) – No operational packets can be passed (same as ifAdminStatus in MIB-II)
snSwPortInfoLinkStatus fdry.1.1.3.3.1.1.9 Syntax: Integer	Read only	Shows the current operational state of the interface. • up(1) – Ready to pass packets • down(2) • testing(3) – No operational packets can be passed (same as ifAdminStatus in MIB-II)

Name, OID, and Syntax	Access	Description
snSwPortInfoPortQos fdry.1.1.3.3.1.1.10 Syntax: Integer	Read-write	Indicates the quality of service level selected for the port. For stackable devices, the QoS can be one of the following: • low(0) – low priority • high(1) – high priority. For chassis devices, the values can be: • level0(0) • level1(1) • level2(2) • level3(3) • level4(4) • level5(5) • level6(6) • level7(7)
snSwPortInfoPhysAddress fdry.1.1.3.3.1.1.11 Syntax: Physical address	Read only	Shows the port's physical address.
snSwPortStatsInFrames fdry.1.1.3.3.1.1.12 Syntax: Counter	Read only	Shows the total number of packets received on the interface.
snSwPortStatsOutFrames fdry.1.1.3.3.1.1.13 Syntax: Counter	Read only	Shows the total number of packets transmitted out of the interface.
snSwPortStatsAlignErrors fdry.1.1.3.3.1.1.14 Syntax: Counter	Read only	Shows the number of dot3StatsAlignmentErrors, which consists of frames received on a particular interface that are not an integral number of octets in length and do not pass the FCS check. The count represented by an instance of this object is incremented when the alignmentError status is returned by the MAC service to the LLC (or other MAC user). According to the conventions of IEEE 802.3 Layer Management, received frames for which multiple error conditions are obtain are counted exclusively according to the error status presented to the LLC.

Name, OID, and Syntax	Access	Description
snSwPortStatsFCSErrors fdry.1.1.3.3.1.1.15 Syntax: Counter	Read only	Shows the number of dot3StatsFCSErrors, which consists of frames received on a particular interface that are an integral number of octets in length but do not pass the FCS check. The count represented by an instance of this object is incremented when the frameCheckError status is returned by the MAC service to the LLC (or other MAC user). According to the conventions of IEEE 802.3 Layer Management, received frames for which multiple error conditions are obtain are counted exclusively according to the error status presented to the LLC
snSwPortStatsMultiColliFrames fdry.1.1.3.3.1.1.16 Syntax: Counter	Read only	Shows the number of dot3StatsMultipleCollisionFrames, which consists of successfully transmitted frames on a particular interface for which transmission is inhibited by more than one collision. A frame that is counted by an instance of this object is also counted by the corresponding instance of either the ifOutUcastPkts, ifOutMulticastPkts, or ifOutBroadcastPkts and is not counted by the corresponding instance of the dot3StatsSingleCollisionFrames object.
snSwPortStatsFrameTooLongs fdry.1.1.3.3.1.1.17 Syntax: Counter	Read only	Shows the number of dot3StatsFrameTooLongs, which consists of frames received on a particular interface that exceed the maximum permitted frame size. The count represented by an instance of this object is incremented when the frameTooLong status is returned by the MAC service to the LLC (or other MAC user). According to the conventions of IEEE 802.3 Layer Management, received frames for which multiple error conditions are obtain are, counted exclusively according to the error status presented to the LLC
snSwPortStatsTxColliFrames fdry.1.1.3.3.1.1.18 Syntax: Counter	Read only	Shows the number of successfully transmitted frames on a particular interface for which transmission is inhibited by more than one collision. This count is a combination of the dot3StatsSingleCollisionFrames and dot3StatsMultipleCollisionFrames objects.
snSwPortStatsRxColliFrames fdry.1.1.3.3.1.1.19 Syntax: Counter	Read only	Shows the number of successfully received frames on a particular interface for which transmission is inhibited by more than one collision. This object is not specified in dot3 but it has the same functionality as the object “snSwPortStatsTxColliFrames”.
snSwPortStatsFrameTooShorts fdry.1.1.3.3.1.1.20 Syntax: Counter	Read only	Shows the number frames received on a particular interface that are below the minimum permitted frame size.
snSwPortLockAddressCount fdry.1.1.3.3.1.1.21 Syntax: Integer	Read-write	Indicates the number of source MAC addresses that are allowed for a port. Writing 0 to this object will allow any number of addresses. Valid values: 0 to 2048. Default: 8

Name, OID, and Syntax	Access	Description
snSwPortStpPortEnable fdry.1.1.3.3.1.1.22 Syntax: Integer	Read-write	Indicates if STP is enabled for the port: • disabled(0) • enabled(1) Refer to the document IEEE 802.1D-1990: Section 4.5.5.2, dot1dStpPortEnable.
snSwPortDhcpGateListId fdry.1.1.3.3.1.1.23 Syntax: Integer	Read-write	Specifies the ID for a DHCP gateway list entry relative to this switch port. Valid values: 0 – 32. A value of 0 means that the ID is unassigned.
snSwPortName fdry.1.1.3.3.1.1.24 Syntax: Display string	Read-write	Indicates the port name or description. This description may have been entered using the CLI. Valid values: Up to 255 characters.
snSwPortStatsInBcastFrames fdry.1.1.3.3.1.1.25 Syntax: Counter	Read-write	Shows the total number of broadcast packets received on the interface.
snSwPortStatsOutBcastFrames fdry.1.1.3.3.1.1.26 Syntax: Counter	Read only	Shows the total number of broadcast packets transmitted out of the interface.
snSwPortStatsInMcastFrames fdry.1.1.3.3.1.1.27 Syntax: Counter	Read only	Shows the total number of multicast packets received on the interface.
snSwPortStatsOutMcastFrames fdry.1.1.3.3.1.1.28 Syntax: Counter	Read only	Shows the total number of multicast packets transmitted out of the interface.
snSwPortStatsInDiscard fdry.1.1.3.3.1.1.29 Syntax: Counter	Read only	Shows the number of inbound packets that will be discarded even though they have no errors. These packets will be discarded to prevent them from being deliverable to a higher-layer protocol. For example, packets may be discarded to free up buffer space.
snSwPortStatsOutDiscard fdry.1.1.3.3.1.1.30 Syntax: Counter	Read only	Shows the number of outbound packets that will be discarded even though they contain no errors. For example, packets may be discarded to free up buffer space.
snSwPortStatsMacStations fdry.1.1.3.3.1.1.31 Syntax: Integer	Read only	Shows the total number of MAC Stations connected to the interface.

Name, OID, and Syntax	Access	Description
snSwPortCacheGroupId fdry.1.1.3.3.1.1.32 Syntax: Integer	Read-write	Applies only to ServerIron products. Indicates the cache Group ID for the interface.
snSwPortTransGroupId fdry.1.1.3.3.1.1.33 Syntax: Integer	Read-write	Applies only to ServerIron products. Indicates the transparent Group ID for the interface.
snSwPortInfoAutoNegotiate fdry.1.1.3.3.1.1.34 Syntax: Integer	Read-write	Applies only to Gigabit Ethernet ports. Indicates if auto-negotiation mode is enabled on the port. • disable(0) – The port will be placed in non-negotiation mode. • enable(1) – The port will start auto-negotiation indefinitely until it succeeds. • negFullAuto(2) – The port will start with auto-negotiation. If the negotiation fails, then it will automatically switch to non-negotiation mode. This option is not supported in stackable products Gigabit Ethernet ports, except for TurboIron/8. • global(3) – The port negotiation mode follows the value of snSwGlobalAutoNegotiate. • other(4) – Non-Gigabit Ethernet. Default: global(3)
snSwPortInfoFlowControl fdry.1.1.3.3.1.1.35 Syntax: Integer	Read-write	Indicates if port flow control is enabled: • disable(0) • enable(1) Default: enabled(1)

Name, OID, and Syntax	Access	Description
snSwPortInfoGigType fdry.1.1.3.3.1.1.36 Syntax: Integer	Read only	Applies only to Gigabit Ethernet ports. Shows the media type for the port: • m1000BaseSX(0) – 1-Gbps fiber, with a short wavelength transceiver • m1000BaseLX(1) – 1-Gbps fiber, with a long wavelength transceiver (3km) • m1000BaseLH(2) – 1-Gbps fiber, with a special wavelength transceiver (50km) • m1000BaseLHB(4) – 1-Gbps fiber, with a special wavelength transceiver (150km). • m1000BaseTX(5) – 1-Gbps copper (100meter). • m10000BaseSR(6) – 10-Gbps fiber, with a short range wavelength transceiver (100m). • m10000BaseLR(7) – 10-Gbps fiber, with a long range wavelength transceiver (10km). • m10000BaseER(8) – 10-Gbps fiber, with a extended range wavelength transceiver (40km). • notApplicable(255) – a non-gigabit port.
snSwPortStatsLinkChange fdry.1.1.3.3.1.1.37 Syntax: Counter	Read only	Shows the total number of link state changes on the interface.
snSwPortIfIndex fdry.1.1.3.3.1.1.38 Syntax: Integer	Read only	Identifies the instance of the ifIndex object in order to identify a particular interface, as defined in RFC 1213 and RFC 1573.
snSwPortDescr fdry.1.1.3.3.1.1.39 Syntax: Display string	Read only	Shows the slot/port information.
snSwPortInOctets fdry.1.1.3.3.1.1.40 Syntax: Octet string	Read only	Shows the total number of octets received on the interface, including framing characters. This object is a 64-bit counter of the ifInOctets object defined in RFC 1213. The octet string is in big-endian byte order. This object has eight octets.
snSwPortOutOctets fdry.1.1.3.3.1.1.41 Syntax: Octet string	Read only	Shows the total number of octets transmitted out of the interface, including framing characters. This object is a 64-bit counter of the ifOutOctets object, defined in RFC 1213. The octet string is in big-endian byte order. This object has eight octets.
snSwPortStatsInBitsPerSec fdry.1.1.3.3.1.1.42 Syntax: Gauge	Read only	Shows the number of bits per second received on the interface over a five-minute interval.

Name, OID, and Syntax	Access	Description
snSwPortStatsOutBitsPerSec fdry.1.1.3.3.1.1.43 Syntax: Gauge	Read only	Shows the number of bits per second transmitted out of the interface over a five-minute interval.
snSwPortStatsInPktsPerSec fdry.1.1.3.3.1.1.44 Syntax: Gauge	Read only	Shows the number of packets per second received on the interface over a five-minute interval.
snSwPortStatsOutPktsPerSec fdry.1.1.3.3.1.1.45 Syntax: Gauge	Read only	Shows the number of packets per second transmitted out of the interface over a five-minute interval.
snSwPortStatsInUtilization fdry.1.1.3.3.1.1.46 Syntax: Integer	Read only	Indentifies the input network utilization in hundredths of a percent over a five-minute interval. Valid values: 0 – 10000.
snSwPortStatsOutUtilization fdry.1.1.3.3.1.1.47 Syntax: Integer	Read only	Shows the output network utilization in hundredths of a percent over a five-minute interval. Valid values: 0 – 10000.
NOTE: Ethernet devices must allow a minimum idle period between transmission of frames known as interframe gap (IFG) or interpacket gap (IPG). The gap provides a brief recovery time between frames to allow devices to prepare to receive the next frame. The minimum IFG is 96 bit times, which is 9.6 microseconds for 10 Mbps Ethernet, 960 nanoseconds for 100 Mbps Ethernet, and 96 nanoseconds for 1 Gbps Ethernet. In addition, to account for the bit rate on the port, port utilization should also account for the IFG, which normally is filtered by the packet synchronization circuitry. Refer to the etherHistoryUtilization objects in the *RFC 1757: Remote Network Monitoring Management Information Base* for details.		
snSwPortFastSpanPortEnable fdry.1.1.3.3.1.1.48 Syntax: Integer	Read-write	Indicates if fast span is enabled on the port. • disable(0) • enable(1)
snSwPortFastSpanUplinkEnable fdry.1.1.3.3.1.1.49 Syntax: Integer	Read-write	Indicates if fast span uplink is enabled on the port. • disable(0) • enable(1)
snSwPortVlanId fdry.1.1.3.3.1.1.50 Syntax: Integer	Read only	Shows the ID of a VLAN of which this port is a member. Port must be untagged. Valid values: 0 – 4095; where 0 means an invalid VLAN ID value, which is returned for tagged ports.

Name, OID, and Syntax	Access	Description
snSwPortRouteOnly fdry.1.1.3.3.1.1.51 Syntax: Integer	Read-write	Indicates if Layer 2 switching is enabled on a routing switch port. • disable(0) – Instructs the routing switch to perform routing first. If that fails, it performs switching. • enable(1) – Instructs the routing switch to perform routing only. For a Layer 2 switching only product, reading this object always returns "disabled". Writing "enabled" to this object takes no effect. Default: disabled(0)
snSwPortPresent fdry.1.1.3.3.1.1.52 Syntax: Integer	Read only	Applies only to M4 modules. Indicates if the port is absent or present. • false(0) • true(1)
snSwPortGBICStatus fdry.1.1.3.3.1.1.53 Syntax: Integer	Read only	Indicates if the Gigabit port has a GBIC or miniGBIC port: • GBIC(1) – GBIC • miniGBIC(2) – MiniGBIC • empty(3) – GBIC is missing • other(4) – Not a removable Gigabit port
snSwPortStatsInKiloBitsPerSec fdry.1.1.3.3.1.1.54 Syntax: Unsigned32	Read-only	Shows the bit rate, in kilobits per second, received on a 10 Gigabit or faster interface within a five minute interval.
snSwPortStatsOutKiloBitsPerSec fdry.1.1.3.3.1.1.55 Syntax: Unsigned32	Read-only	Shows the bit rate, in kilobits per second, transmitted from a 10 Gigabit or faster interface within a five minute interval.
snSwPortLoadInterval fdry.1.1.3.3.1.1.56 Syntax: Integer	Read-write	Shows the number of seconds for which average port utilization should be calculated. Valid values: 30 to 300, in 30 second increments. Default: 300 seconds **NOTE:** This object is implemented in IronWare Release 07.5.04 and TrafficWorks release 8.x.

Interface ID Lookup Table

The Interface ID Lookup Table maps interface ID to the InterfaceIndex (ifIndex) Lookup Table. Given an interface ID, this table returns the ifIndex value. The table is useful for mapping a known interface to the corresponding ifIndex value.

NOTE: The contents of the table can only be accessed using Get operations. Unlike other SNMP tables, this table does not support GetNext operations. If you try to walk the table using GetNext, no rows will be returned.

Name, OID, and Syntax	Access	Description
snInterfaceLookupTable fdry.1.1.3.3.3	None	The Interface Lookup Table
snInterfaceLookupEntry fdry.1.1.3.3.3.1	None	An entry in the Interface Lookup Table
snInterfaceLookupInterfaceId fdry.1.1.3.3.3.1.1 Syntax: InterfaceId	Read only	Shows the interface ID which consists of the following: **Octet 0** – Port type, which can be one of the following: • 1 – Ethernet • 2 – POS • 3 – ATM • 4 – Virtual • 5 – Loopback • 6 – GRE Tunnel • 7 – ATM Subif • 8 – MPLS Tunnel • 9 – ATM PVC **Octet 1** • If the value of Octet 0 is 1,2,3,7 or 9, then this octet shows the device's slot number. • If the value of Octet 0 is 6 or 8, then this octet shows the tunnel ID. • If the value of Octet 0 is 5, then this octet shows the loopback ID. • If the value of Octet 0 is 4, then this octet shows a virtual ID. **Octet 2** – If the value of Octet 0 is 1,2,3,7 or 9, then this octet shows the port number **Octet 3** – If the value of Octet 0 is 7 0r 9, then this octet shows the ATM Subif number) **Octet 4** – If the value of Octet 0 is 9, then this octet shows the ATM VPI number. **Octet 5** – If the value of Octet 0 is 9, then this octet shows the ATM VCI number.
snInterfaceLookupIfIndex fdry.1.1.3.3.3.1.2 Syntax: Integer	Read only	Shows the interface in the ifIndex format.

Interface Index Lookup Table

The Interface Index Lookup Table maps ifindex values to Interface ID Lookup Table. Given an ifIndex, this table returns the interface ID value.

Name, OID, and Syntax	Access	Description
snIfIndexLookupTable fdry.1.1.3.3.4	None	The IF Index Lookup Table
snIfIndexLookupEntry fdry.1.1.3.3.4.1	None	An entry in the IF Index Lookup Table
snIfIndexLookupIfIndex fdry.1.1.3.3.4.1.1 Syntax: Integer	Read only	Shows the interface in the ifIndex format.
snIfIndexLookupInterfaceId fdry.1.1.3.3.4.1.2 Syntax: InterfaceId	Read only	**Octet 0** – Port type, which can be one of the following: • 1 – Ethernet • 2 – POS • 3 – ATM • 4 – Virtual • 5 – Loopback • 6 – GRE Tunnel • 7 – ATM Subif • 8 – MPLS Tunnel • 9 – ATM PVC **Octet 1** • If the value of Octet 0 is 1,2,3,7 or 9, then this octet shows the device's slot number. • If the value of Octet 0 is 6 or 8, then this octet shows the tunnel ID. • If the value of Octet 0 is 5, then this octet shows the loopback ID. • If the value of Octet 0 is 4, then this octet shows a virtual ID. **Octet 2** – If the value of Octet 0 is 1,2,3,7 or 9, then this octet shows the port number **Octet 3** – If the value of Octet 0 is 7 0r 9, then this octet shows the ATM Subif number) **Octet 4** – If the value of Octet 0 is 9, then this octet shows the ATM VPI number. **Octet 5** – If the value of Octet 0 is 9, then this octet shows the ATM VCI number.

Trunk Port Configuration Group

The Trunk Group feature allows you to manually configure multiple high-speed, load-sharing links between two Foundry switches or routers or between a Foundry switch and router and a server. Details on trunk group configuration are discussed in the *Foundry Switch and Router Installation and Basic Configuration Guide*.

The following objects contain configuration of trunk port memberships and apply to all Foundry devices.

Name, OID, and Syntax	Access	Description
snTrunkTable fdry.1.1.3.6.1	None	The Trunk Port Table. A specific snTrunkTable consists of a number of Trunk port-mask.
snTrunkEntry fdry.1.1.3.6.1.1	None	An entry in the trunk Port Table.
snTrunkIndex fdry.1.1.3.6.1.1.1 Syntax: Integer	Read only	Shows the number of the trunk port entries that can be configured. Valid values: 1 – 64.
snTrunkPortMask fdry.1.1.3.6.1.1.2 Syntax: PortMask	Read-write	Shows the trunk port membership of the switch.
snTrunkType fdry.1.1.3.6.1.1.3 Syntax: Integer	Read-write	Indicates if the trunk port is connected to a switch or a server: • switch(1) • server(2).

Multi-Slot Trunk Port Table

The following table applies to multi-slot trunk ports. They show the ports that are members of a trunk group. They apply to all Foundry devices unless otherwise specified in their descriptions.

Name, OID, and Syntax	Access	Description
snMSTrunkTable fdry.1.1.3.6.2	None	The Multi-slot Trunk Port Configuration Table.
snMSTrunkEntry fdry.1.1.3.6.2.1	None	An entry of the Multi-slot Trunk Port Configuration Table.
snMSTrunkPortIndex fdry.1.1.3.6.2.1.1 Syntax: Integer	Read only	Identifies the port that is the primary port of a trunk group. For module with Gigabit ports, the primary port is port 1, 3, 5, or 7. For module with 10/100 ports, the primary port is port 1, 5, 9, 13, 17, or 21.

Name, OID, and Syntax	Access	Description
snMSTrunkPortList fdry.1.1.3.6.2.1.2 Syntax: Octet string	Read-write	Contains a list of port indices that are members of a trunk group. Each port index is a 16-bit integer in big endian order. The first port index must be the index of the primary port.
snMSTrunkType fdry.1.1.3.6.2.1.3 Syntax: Integer	Read-write	Specifies if the ports are connected to a switch or a server: • switch(1) • server(2)
snMSTrunkRowStatus fdry.1.1.3.6.2.1.4 Syntax: Integer	Read-write	Applies to all Foundry devices, except for ServerIron products. Creates, deletes, or modifies an entry in this table: • invalid(1) • valid(2) • delete(3) • create(4) • modify(5)

Packet Port Information Table

Foundry's Packet over SONET (POS) is the serial transmission of data over SONET frames through the use of Point-to-Point Protocol (PPP). The Foundry POS modules allow direct connection to interfaces within SONET. POS is a transport technology that encapsulates packet data such as an IP datagram directly into SONET.

The POS modules are available on NetIron Internet Backbone routers and BigIron Layer 3 Switches with redundant management modules.

The following table presents information about POS ports.

Name, OID, and Syntax	Access	Description
snPOSInfoTable fdry.1.2.14.1.1	None	POS Port Information table.
snPOSInfoEntry fdry.1.2.14.1.1.1	None	An entry in the POS Port Information table.
snPOSInfoPortNum fdry.1.2.14.1.1.1.1 Syntax: Integer	Read only	The chassis slot and port number. • Bit 0 to bit 7 – port number. • Bit 8 to bit 11 – slot number (for chassis devices only).
snPOSIfIndex fdry.1.2.14.1.1.1.2 Syntax: Integer	Read only	Identifies the instance of the ifIndex object as defined in RFC 1213 and RFC 1573.
snPOSDescr fdry.1.2.14.1.1.1.3 Syntax: Display string	Read only	Description of the chassis slot and port.

Name, OID, and Syntax	Access	Description
snPOSName fdry.1.2.14.1.1.1.4 Syntax: Display string	Read-write	Name of the port. Valid values: Up to 255 characters.
snPOSInfoSpeed fdry.1.2.14.1.1.1.5 Syntax: Integer	Read-write	The bandwidth of the interface, which can be one of the following: • s155000(1) bps • s622000(2) bps • other(3) • s2488000(4) bps
snPOSInfoAdminStatus fdry.1.2.14.1.1.1.6 Syntax: Integer	Read-write	The desired state of the interface, which can be one of the following: • up(1) – The port is ready to pass packets. • down(2) – The port is not ready to pass packets. • testing(3) – The port is in test mode. No packets can be passed.
snPOSInfoLinkStatus fdry.1.2.14.1.1.1.7 Syntax: Integer	Read only	The current operational state of the link, which can be one of the following: • up(1) – The port is ready to pass packets. • down(2) – The port is not ready to pass packets. • testing(3) – The port is in test mode. No packets can be passed.
snPOSInfoClock fdry.1.2.14.1.1.1.8 Syntax: Integer	Read-write	The clock source, which can be one of the following: • internal(1) – The interface is using the clock on the POS module. • line(2) – The interface is using the clock source supplied on the network. Default: internal(1)
snPOSInfoLoopBack fdry.1.2.14.1.1.1.9 Syntax: Integer	Read-write	The loopback state of the interface. The loopback state can be one of the following: • line(1) – The loopback path consists of both this POS interface and the POS interface at the remote end of the link. Use this mode to check the POS interface along the link. • internal(2) – The loopback path consists only of the POS circuitry on this interface. Use this mode to check the POS circuitry. • none(3) – The interface is not operating in loopback mode.

Name, OID, and Syntax	Access	Description
snPOSInfoScrambleATM fdry.1.2.14.1.1.1.10 Syntax: Integer	Read-write	The state of the ATM scramble mode, which can be one of the following: • disabled(0) – Scrambling is disabled. • enabled(1) – Scrambling of the Synchronous Payload Envelope (SPE) is enabled. Data in the SONET packet is scrambled for security. Default: disabled(0)
snPOSInfoFraming fdry.1.2.14.1.1.1.11 Syntax: Integer	Read-write	The frame type used on the interface. The frame type can be one of the following: • sonet(1) – Synchronous Optical Network. • sdh(2) – Synchronous Digital Hierarchy. Default: sonet(1)
snPOSInfoCRC fdry.1.2.14.1.1.1.12 Syntax: Integer	Read-write	The length of the CRC field in packets transmitted on the interface. The length can be one of the following: • crc32bits(1) – The field is 8 bits long. • crc16bits(2) – The field is 16 bits long. Default: crc32bits(1)
snPOSInfoKeepAlive fdry.1.2.14.1.1.1.13 Syntax: Integer	Read-write	The time interval when keepalive messages are sent. Default: 10 seconds
snPOSInfoFlagC2 fdry.1.2.14.1.1.1.14 Syntax: Integer	Read-write	The value of the c2 flag in the SONET headers of packets transmitted by the interface. The c2 flag identifies the payload type of the packets transmitted on this interface. Default: 0xcf, which means that the payload is SONET or SDH.
snPOSInfoFlagJ0 fdry.1.2.14.1.1.1.15 Syntax: Integer	Read-write	The value of the j0 flag in the SONET headers of packets transmitted by the interface. This flag sets the trace byte, which is used to trace the origin of an STS-1 frame on a SONET network. Default: 0xcc
snPOSInfoFlagH1 fdry.1.2.14.1.1.1.16 Syntax: Integer	Read-write	The value of the h1 flag in the SONET headers of packets transmitted by the interface. This flag sets the H1 pointer, which is used to indicate where the SPE (Synchronous Payload Envelope) starts within the packet. The SPE contains the packet's payload: • 0x00 – The pointer for SONET frames. • 0x02 – The pointer for SDH frames. Default: 0x00
snPOSStatsInFrames fdry.1.2.14.1.1.1.17 Syntax: Counter	Read only	The total number of packets received on the interface.

Name, OID, and Syntax	Access	Description
snPOSStatsOutFrames fdry.1.2.14.1.1.1.18 Syntax: Counter	Read only	The total number of packets transmitted out of the interface.
snPOSStatsAlignErrors fdry.1.2.14.1.1.1.19 Syntax: Counter	Read only	The number of packets that contained frame alignment errors.
snPOSStatsFCSErrors fdry.1.2.14.1.1.1.20 Syntax: Counter	Read only	The number of packets that contained Frame Check Sequence errors.
snPOSStatsFrameTooLongs fdry.1.2.14.1.1.1.21 Syntax: Counter	Read only	The number of packets that were longer than the configured MTU.
snPOSStatsFrameTooShorts fdry.1.2.14.1.1.1.22 Syntax: Counter	Read only	The number of packets that were shorter than the minimum valid length.
snPOSStatsInDiscard fdry.1.2.14.1.1.1.23 Syntax: Counter	Read only	The number of inbound packets that were discarded to prevent them from being delivered to a higher-layer protocol, even though no errors had been detected. For example, a packet may be discarded to free up buffer space.
snPOSStatsOutDiscard fdry.1.2.14.1.1.1.24 Syntax: Counter	Read only	The number of outbound packets that were discarded to prevent them from being transmitted, even though they contain no errors. For example, a packet may be discarded to free up buffer space.
snPOSInOctets fdry.1.2.14.1.1.1.25 Syntax: Octet string	Read only	The total number of packets in octets that were received on the interface, including framing characters. This object is a 64-bit counter of the ifInOctets object, defined in RFC 1213. The octet string is in big-endian byte order.
snPOSOutOctets fdry.1.2.14.1.1.1.26 Syntax: Octet string	Read only	The total number of packets in octets that were transmitted out of the interface, including framing characters. This object is a 64-bit counter of the ifOutOctets object, defined in RFC 1213. The octet string is in big-endian byte order.
snPOSStatsInBitsPerSec fdry.1.2.14.1.1.1.27 Syntax: Gauge	Read only	The number of bits per second received on the interface over a five-minute interval.
snPOSStatsOutBitsPerSec fdry.1.2.14.1.1.1.28 Syntax: Gauge	Read only	The number of bits per second transmitted out of the interface over a five-minute interval.

Name, OID, and Syntax	Access	Description
snPOSStatsInPktsPerSec fdry.1.2.14.1.1.1.29 Syntax: Gauge	Read only	The number of packets per second received on the interface over a five-minute interval.
snPOSStatsOutPktsPerSec fdry.1.2.14.1.1.1.30 Syntax: Gauge	Read only	The number of packets per second transmitted out of the interface over a five minute interval.
snPOSStatsInUtilization fdry.1.2.14.1.1.1.31 Syntax: Integer	Read only	The network utilization by incoming traffic in hundredths of a percent over a five-minute interval.
snPOSStatsOutUtilization fdry.1.2.14.1.1.1.32 Syntax: Integer	Read only	The network utilization by outgoing traffic in hundredths of a percent over a five-minute interval.
snPOSTagType fdry.1.2.14.1.1.1.33 Syntax: Integer	Read only	Shows whether or not the port has a VLAN tag: • tagged(1) – The port has a VLAN tag. This port can have multiple VLANs. • untagged(2) – The port is not tagged.

Loopback Interface Configuration Table

The following objects apply to all Foundry devices, except ServerIron products.

Name, OID, and Syntax	Access	Description
snLoopbackIntfConfigTable fdry.1.2.13.1	None	The Loopback Interface Configuration table.
snLoopbackIntfConfigEntry fdry.1.2.13.1.1	None	An entry in the Loopback Interface Configuration table.
snLoopbackIntfConfigPortIndex fdry.1.2.13.1.1.1 Syntax: Integer	Read only	Shows the port index for loopback interface configuration entry. There can be up to eight entries in this table.
snLoopbackIntfMode fdry.1.2.13.1.1.2 Syntax: Integer	Read-write	Indicates if loopback interface is enabled: • disabled(0) • enabled(1)

Name, OID, and Syntax	Access	Description
snLoopbackIntfRowStatus fdry.1.2.13.1.1.3 Syntax: Integer	Read-write	Controls the management of the table rows. The values that can be written are: • delete(3) – Delete the row • create(4) – Create a new row • modify(5) – Modify an existing row If the row exists, then a SET with a value of create(4) returns a "bad value" error. Deleted rows are removed from the table immediately. The following values can be returned on reads: • noSuch(0) – No such row • invalid(1) – Row is inoperative • valid(2) – Row exists and is valid

Port STP Configuration Groups

The Spanning Tree Protocol (STP) eliminates Layer 2 loops in networks, by selectively blocking some ports and allowing other ports to forward traffic, based on global (bridge) and local (port) parameters you can configure.

The tables in this section contain information about the ports for STP. This table applies to all Foundry devices.

Name, OID, and Syntax	Access	Description
snPortStpTable fdry.1.1.3.5.1	None	A specific snPortStpTable consists of a number of switch ports. This table only exists if “snVLanByPortTable” on page 11-1 exists and “snVLanByPortStpMode” on page 11-2 is enabled for each VLAN.
snPortStpEntry fdry.1.1.3.5.1.1	None	An entry in this table shows information about the configuration of a specified port. An SNMP SET PDU for a row in this table requires the entire sequence of the MIB objects in each snPortStpEntry to be stored in one PDU. Otherwise, GENERR return-value will be returned.
snPortStpVLanId fdry.1.1.3.5.1.1.1 Syntax: Integer	Read only	Shows the VLAN ID of the VLAN switch community. Valid values: 1 – 65535.
snPortStpPortNum fdry.1.1.3.5.1.1.2 Syntax: Integer	Read only	Shows the port number of the Switch: • Bit 0 to bit 7 – Port number. • Bit 8 to bit 11 – Slot number (slot for chassis only).
snPortStpPortPriority fdry.1.1.3.5.1.1.3 Syntax: Integer	Read-write	Shows the value of the priority field, which is contained in the first (in network byte order) octet of the Port ID. The second octet of the Port ID is given by the value of dot1dStpPort. The two octets combine to form the identity of the root bridge in a spanning tree (instance of STP). The bridge with the lowest value has the highest priority and is the root. Valid values: 8 – 255

Name, OID, and Syntax	Access	Description
snPortStpPathCost fdry.1.1.3.5.1.1.4 Syntax: Integer	Read-write	Shows the value of the dot1dStpPortPathCost, which is the port's path cost to reach the root bridge. When selecting among multiple links to the root bridge, STP chooses the link with the lowest path cost and blocks the other paths. IEEE 802.1D-1990 recommends that the default value of this parameter be in inverse proportion to the speed of the attached LAN. Writing a value of zero to this object sets the path cost to a default value which automatically changes according to port speed. Reading a value of zero indicates an unknown path cost because the port speed cannot be determined due to the speed auto sense that is currently in progress. Each port type has its own default STP path cost. • 10 Mbps – 100 • 100 Mbps – 19 • Gigabit – 4 Valid values: 0 – 65535
snPortStpOperState fdry.1.1.3.5.1.1.5 Syntax: Integer	Read only	Indicates if the port STP entry is activated and is in running mode. • notActivated(0) • activated(1) Default: notActivated(0)
snPortStpPortEnable fdry.1.1.3.5.1.1.6 Syntax: Integer	None	Indicates whether or not the port is enabled: • disabled(0) • enabled(1)
snPortStpPortForwardTransitions fdry.1.1.3.5.1.1.7 Syntax: Integer	None	Shows the number of times this port has transitional from the Learning state to the Forwarding state.

Name, OID, and Syntax	Access	Description
snPortStpPortState fdry.1.1.3.5.1.1.8 Syntax: Integer	Read only	Shows the port's current state as defined by application of the Spanning Tree Protocol. This state controls what action a port takes when it receives a frame. • disabled(1) – The port is not participating in STP. This can occur when the port is disconnected or STP is disabled on the port. • blocking(2) – STP has blocked Layer 2 traffic on this port to prevent a loop. The device or VLAN can reach the root bridge using another port, whose state is forwarding(5). When a port is in this state, the port does not transmit or receive user frames, but the port does continue to receive STP BPDUs. • listening(3) – STP is responding to a topology change and this port is listening for a BPDU from neighboring bridge(s) in order to determine the new topology. No user frames are transmitted or received during this state. • learning(4) – The port has passed the listening state and will change to the blocking or forwarding state, depending on the results of STP's reconvergence. The port does not transmit or receive user frames during this state. However, the device can learn the MAC addresses of frames that the port receives during this state and make corresponding entries in the MAC table. • forwarding(5) – STP is allowing the port to send and receive frames. • broken(6) – Ports that are malfunctioning are placed into this state by the bridge.
snPortStpPortDesignatedCost fdry.1.1.3.5.1.1.9 Syntax: Integer	Read only	The cost to the root bridge as advertised by the designated bridge that is connected to this port. If the designated bridge is the root bridge itself, then the cost is 0. The identity of the designated bridge is shown in the Design Bridge field. This value is compared to the Root Path Cost field in the receivedbridge PDUs.
snPortStpPortDesignatedRoot fdry.1.1.3.5.1.1.10 Syntax: BridgeId	Read only	The root bridge as recognized on this port. The value is the same as the root bridge ID listed in the Root ID field. Shows the unique ID of the root bridge. The root bridge is recorded as the root in the configuration BPDUs, which are transmitted by the designated bridge for the segment to which the port is attached.
snPortStpPortDesignatedBridge fdry.1.1.3.5.1.1.11 Syntax: BridgeId	Read only	Shows the ID of the designated bridge. The designated bridge is the device that connects the network segment to the root bridge.
snPortStpPortDesignatedPort fdry.1.1.3.5.1.1.12 Syntax: Octet string	Read only	Shows the ID of the port on the designated bridge that connects to the root bridge on the network. This object has two octets.

Chapter 8
Filtering Traffic

The objects in this chapter present filters that can be used to control incoming or outgoing traffic. They include the following:

Refer to the *Foundry Switch and Router Installation and Basic Configuration Guide* for details on the features discussed in this chapter.

MAC Filters

MAC layer filtering enables you to build access lists based on MAC layer headers in the Ethernet/IEEE 802.3 frame. You can filter on the source and destination MAC addresses as well as other information such as the EtherType, LLC1 DSAP or SSAP numbers, and a SNAP EtherType. The filters apply to incoming traffic only.

For more information on MAC Layer filtering, refer to the *Foundry Switch and Router Installation and Basic Configuration Guide* and the *Foundry Enterprise Configuration and Management Guide.*

Objects available for MAC filtering are presented in the following sections:

MAC Filter Table

The objects in this table provide information on MAC filters. They apply to all Foundry devices

Name, OID, and Syntax	Access	Description
snMacFilterTable fdry.1.1.3.10.1	None	The MAC filter table.
snMacFilterEntry fdry.1.1.3.10.1.1	None	An entry in the MAC filter table.
snMacFilterIndex fdry.1.1.3.10.1.1.1 Syntax: Integer	Read only	The table index for a filter entry.
snMacFilterAction fdry.1.1.3.10.1.1.2 Syntax: Integer	Read-write	Indicates what action is to be taken if the MAC packet matches this filter: • deny(0) • permit(1)
snMacFilterSourceMac fdry.1.1.3.10.1.1.3 Syntax: MAC address	Read-write	Shows the source MAC address.
snMacFilterSourceMask fdry.1.1.3.10.1.1.4 Syntax: MAC address	Read-write	Shows the source MAC subnet mask.
snMacFilterDestMac fdry.1.1.3.10.1.1.5 Syntax: MAC address	Read-write	Shows the destination MAC address.
snMacFilterDestMask fdry.1.1.3.10.1.1.6 Syntax: MAC address	Read-write	Shows the destination MAC subnet mask.
snMacFilterOperator fdry.1.1.3.10.1.1.7 Syntax: Integer	Read-write	Indicates the type of comparison to perform: • equal(0) • notEqual(1) • less(2) • greater(3)

Name, OID, and Syntax	Access	Description
snMacFilterFrameType fdry.1.1.3.10.1.1.8 Syntax: Integer	Read-write	Indicates the frame type: • notUsed(0) • ethernet(1) • LLC(2) • snap(3)
snMacFilterFrameTypeNum fdry.1.1.3.10.1.1.9 Syntax: Integer	Read-write	Shows the frame type number. Valid values: 0 – 65535, where 0 means that this object is not applicable.
snMacFilterRowStatus fdry.1.1.3.10.1.1.10 Syntax: Integer	Read-write	Controls the management of the table rows. The values that can be written are: • delete(3) – Delete the row • create(4) – Create a new row • modify(5) – Modify an existing row If the row exists, then a SET with a value of create(4) returns a "bad value" error. Deleted rows are removed from the table immediately. The following values can be returned on reads: • noSuch(0) – No such row • invalid(1) – Row is inoperative • valid(2) – Row exists and is valid

MAC Filter Port Access Tables

The tables show information about the MAC Filter Port Access.

Name, OID, and Syntax	Access	Description
snMacFilterPortAccessTable fdry.1.1.3.10.2	None	MAC Filter Port Access table.
snMacFilterPortAccessEntry fdry.1.1.3.10.2.1	None	An entry in the MAC Filter Port Access Table.

Name, OID, and Syntax	Access	Description
snMacFilterPortAccessPortIndex fdry.1.1.3.10.2.1.1 Syntax: Integer	Read only	The port index. For FastIron and NetIron products, port index value is from 1 – 42. For BigIron products, port index is an encoded number: • Bit 0 to bit 7– Port number • Bit 8 to bit 11 – Slot number For virtual router interfaces: • 15 – Slot number • 1 to 60 – Virtual router port, which is the port number. Therefore, port index value for BigIron is from 257 to 3900.
snMacFilterPortAccessFilters fdry.1.1.3.10.2.1.2 Syntax: Octet string	Read-write	Shows the filter numbers of the ports. The first octet correspond to the first filter number, the second octet, to the second filter number, and so on.
snMacFilterPortAccessRowStatus fdry.1.1.3.10.2.1.3 Syntax: Integer	Read-write	Controls the management of the table rows. The values that can be written are: • delete(3) – Delete the row • create(4) – Create a new row • modify(5) – Modify an existing row If the row exists, then a SET with a value of create(4) returns a "bad value" error. Deleted rows are removed from the table immediately. The following values can be returned on reads: • noSuch(0) – No such row • invalid(1) – Row is inoperative • valid(2) – Row exists and is valid

Forwarding Database Static Table Information

This table contains Forwarding Database information for each station known to the system. There is one entry per station. This table applies to all Foundry devices.

Name, OID, and Syntax	Access	Description
snFdbTable fdry.1.1.3.4.1	None	The Forwarding Database Static Table.
snFdbEntry fdry.1.1.3.4.1.1	None	Each entry represents the information of a static MAC station.

Name, OID, and Syntax	Access	Description
snFdbStationIndex fdry.1.1.3.4.1.1.1 Syntax: Integer	Read only	Shows the FDB Station index to the Fdb Station Table.
snFdbStationAddr fdry.1.1.3.4.1.1.2 Syntax: Integer	Read-write	Shows the snFdbs physical address. The physical address represents a MAC Station.
snFdbStationPort fdry.1.1.3.4.1.1.3 Syntax: Integer	Read-write	Indicates the station slot/port number: • Bit 0 to bit 7 – Port number • Bit 8 to bit 11 – Slot number (slot for chassis only).
snFdbVLanId fdry.1.1.3.4.1.1.4 Syntax: Integer	Read-write	Indicates the Station VLAN ID.
snFdbStationQos fdry.1.1.3.4.1.1.5 Syntax: Integer	Read-write	Shows the quality of service values for the station: For stackable stations, the values can be: • low(0) – low priority • high(1) – high priority. For chassis stations, the values can be • level0(0) • level1(1) • level2(2) • level3(3) • level4(4) • level5(5) • level6(6) • level7(7)
snFdbStationType fdry.1.1.3.4.1.1.6 Syntax: Integer	Read-write	Show the station type: • notSupported(0) – a read value only: this product does not support multilayer Switching. • host(1) – any MAC station. • router(2) – a router-typed station.

Name, OID, and Syntax	Access	Description
snFdbRowStatus fdry.1.1.3.4.1.1.7 Syntax: Integer	Read-write	Controls the management of the table rows. The values that can be written are: • delete(3) – Delete the row • create(4) – Create a new row • modify(5) – Modify an existing row If the row exists, then a SET with a value of create(4) returns a "bad value" error. Deleted rows are removed from the table immediately. The following values can be returned on reads: • noSuch(0) – No such row • invalid(1) – Row is inoperative • valid(2) – Row exists and is valid
snFdbStationIfindex fdry.1.1.3.4.1.1.8 Syntax: InterfaceIndex	Read-write	Station interface index number.

ACLs

Access Control Lists (ACL) can be used to permit or deny packets from entering or leaving a Foundry device. For additional information on ACLs in Foundry devices, refer to the *Foundry Enterprise Configuration and Management Guide*.

This chapter contains the following sections:

Global ACL

The following objects are global to ACLs.

Name, OID, and Syntax	Access	Description
snAgAclGblCurRowIndex fdry.1.2.2.15.1.1 Syntax: Integer	Read only	Shows the number of entries in the ACL table.

ACL Table

The ACL Table contains the ACLs defined for the device. The snAgAclGblCurRowIndex object determines the number of ACLs that can be added to this table.

Name, OID, and Syntax	Access	Description
snAgAclTable fdry.1.2.2.15.2	None	Access Control List Table
snAgAclEntry fdry.1.2.2.15.2.1	None	An entry in the Access Control List Table
snAgAclIndex fdry.1.2.2.15.2.1.1 Syntax: Integer	Read only	Shows the index for an ACL entry that is associated with this ACL. This number must be unique among all the entries, even though the value of other objects for an entry maybe the same those of another entry.
snAgAclNumber fdry.1.2.2.15.2.1.2 Syntax: AclNumber	Read-write	The access control list number for an entry: • 1 to 99 – Standard access list • 100 to 199 – Extended access list
snAgAclName fdry.1.2.2.15.2.1.3 Syntax: Display string	Read-write	Shows the ACL name.
snAgAclAction fdry.1.2.2.15.2.1.4 Syntax: Integer	Read-write	Indicates if IP packets that matched this access control list are permitted or denied: • deny(0) • permit(1) The default action when no ACLs are configured on a device is to permit all traffic. However, once you configure an ACL and apply it to a port, the default action for that port is to deny all traffic that is not explicitly permitted on the port. Therefore: • If you want to tightly control access, configure ACLs consisting of permit entries for the access you want to permit. The ACLs implicitly deny all other access. • If you want to secure access in environments with many users, you might want to configure ACLs that consist of explicit deny entries, then add an entry to permit all access to the end of each ACL. The software permits packets that are not denied by the deny entries.

Name, OID, and Syntax	Access	Description
snAgAclProtocol fdry.1.2.2.15.2.1.5 Syntax: IPProtocol	Read-write	Indicates the protocol denied or permitted by the extended ACL. The IP protocol can be one of the following well-known names or any IP protocol number from 0 to 255: • Internet Control Message Protocol (ICMP) • Internet Group Management Protocol (IGMP) • Internet Gateway Routing Protocol (IGRP) • Internet Protocol (IP) • Open Shortest Path First (OSPF) • Transmission Control Protocol (TCP) • User Datagram Protocol (UDP) Entering “0” indicates any protocol.
snAgAclSourceIp fdry.1.2.2.15.2.1.6 Syntax: IpAddress	Read-write	Applies only to extended ACLs. Identifies the source IP address of the packet that will either be permitted or denied.
snAgAclSourceMask fdry.1.2.2.15.2.1.7 Syntax: IpAddress	Read-write	Applies only to extended ACLs. Identifies the source IP subnet mask of the packet that will either be permitted or denied.
snAgAclSourceOperator fdry.1.2.2.15.2.1.8 Syntax: Operator	Read-write	Applies only to TCP or UDP ports in extended ACLs. Indicates how the policy will be compared to the ports specified in the “snAgAclSourceOperand1” and “snAgAclSourceOperand2” objects: • eq(0) – The policy applies only to packets whose source port number matches the port number specified in the objects. • neq(1) – The policy applies only to packets whose source port numbers are not included in the specified range. • lt(2) – The policy applies only to packets whose source port numbers are less than those in the specified range. • gt(3) – The policy applies only to packets whose source port numbers are greater than those in the specified range. • range(4) – The policy applies to packets whose source port numbers fall within the specified range. • undefined(7)
snAgAclSourceOperand1 fdry.1.2.2.15.2.1.9 Syntax: Integer	Read-write	Applies only to TCP or UDP ports in extended ACLs. Shows the source port number to be matched. If used with the “snAgAclSourceOperand2” object, it defines the start of the range of source port numbers to be matched. Valid values: 0 – 65535. A value of 0 means that this object is not applicable.

Name, OID, and Syntax	Access	Description
snAgAclSourceOperand2 fdry.1.2.2.15.2.1.10 Syntax: Integer	Read-write	Applies only to TCP or UDP ports in extended ACLs. Used with the "snAgAclSourceOperand1" object, it defines the end of the range of source port numbers to be matched. Valid values: 0 – 65535. A value of 0 means that this object is not applicable.
snAgAclDestinationIp fdry.1.2.2.15.2.1.11 Syntax: IpAddress	Read-write	Applies only to extended ACLs. Identifies the destination IP address of the packet that will either be permitted or denied.
snAgAclDestinationMask fdry.1.2.2.15.2.1.12 Syntax: IpAddress	Read-write	Applies only to extended ACLs. Identifies the destination subnet mask of the packet that will either be permitted or denied.
snAgAclDestinationOperator fdry.1.2.2.15.2.1.13 Syntax: Operator	Read-write	Applies only to TCP or UDP ports in extended ACLs. Indicates how the policy will be compared to the ports specified in the "snAgAclDestinationOperand1" and "snAgAclDestinationOperand2" objects: • eq(0) – The policy applies only to packets whose destination port number matches the port number specified in the objects. • neq(1) – The policy applies only to packets whose destination port numbers are not included in the specified range. • lt(2) – The policy applies only to packets whose destination port numbers are less than those in the specified range. • gt(3) – The policy applies only to packets whose destination port numbers are greater than those in the specified range. • range(4) – The policy applies to packets whose destination port numbers fall within the specified range. • undefined(7).
snAgAclDestinationOperand1 fdry.1.2.2.15.2.1.14 Syntax: Integer	Read-write	Applies only to TCP or UDP ports in extended ACLs. Shows the destination port number to be matched. If used with the "snAgAclDestinationOperand2" object, it defines the start of the range of destination port numbers to be matched. Valid values: 0 – 65535. A value of 0 means that this object is not applicable.
snAgAclDestinationOperand2 fdry.1.2.2.15.2.1.15 Syntax: Integer	Read-write	Applies only to TCP or UDP ports in extended ACLs. Used with the "snAgAclDestinationOperand1" object, it defines the end of the range of destination port numbers to be matched. Valid values: 0 – 65535. A value of 0 means that this object is not applicable.

Name, OID, and Syntax	Access	Description
snAgAclPrecedence fdry.1.2.2.15.2.1.16 Syntax: PrecedenceValue	Read-write	Applies only to extended ACLs. Indicates the IP precedence value that a packet must have to be permitted or denied. • routine(0) • priority(1) • immediate(2) • flash(3) • flash-override(4) • critical(5) • internet(6) • network(7) The following priorities specify a hardware forwarding queue: routine(0), priority(1), immediate(2), flash(3)
snAgAclTos fdry.1.2.2.15.2.1.17 Syntax: TosValue	Read-write	Applies only to extended ACLs. Indicates the type of service a packet must have to be denied or permitted: • normal(0) – The ACL matches packets that have the normal TOS. If TOS is not defined, packets are matched to this value. • minMonetaryCost(1) – The ACL matches packets that have the minimum monetary cost TOS. • maxReliability(2) – The ACL matches packets that have the maximum reliability TOS. • maxThroughput(4) – The ACL matches packets that have the maximum throughput TOS. • minDelay(8) – The ACL matches packets that have the minimum delay TOS.
snAgAclEstablished fdry.1.2.2.15.2.1.18 Syntax: Integer	Read-write	Applies only to extended ACLs. Enables or disables the filtering of established TCP packets that have the ACK or RESET flag turned on. This additional filter only applies to TCP transport protocol. • disabled(0) • enabled(1)
snAgAclLogOption fdry.1.2.2.15.2.1.19 Syntax: TruthVal	Read-write	Determines if ACL matches are logged: • false(0) – Do not log ACL matches • true(1) – Log ACL matches
snAgAclStandardFlag fdry.1.2.2.15.2.1.20 Syntax: TruthVal	Read-write	Indicates if this is a standard ACL: • false(0) – The ACL is an extended ACL • true(1) – The ACL is a standard ACL

Name, OID, and Syntax	Access	Description
snAgAclRowStatus fdry.1.2.2.15.2.1.21 Syntax: SnRowStatus	Read-write	Creates or deletes an ACL entry. • other(1) • valid(2) • delete(3) • create(4)
snAgAclFlowCounter fdry.1.2.2.15.2.1.22 Syntax: Counter64	Read only	Shows an approximate count of flows that match the individual ACL entry.
snAgAclPacketCounter fdry.1.2.2.15.2.1.23 Syntax: Counter64	Read only	Shows the number of packets that matched the ACL entry.
snAgAclComments fdry.1.2.2.15.2.1.24 Syntax: Display string	Read-write	Shows the description of an individual ACL entry.

ACL Bind to Port Table

The ACL Bind to Port Table contains ACL port bindings for a Layer 3 Switch. Port numbers and bind direction are used to index entries. This table has been deprecated.

Name, OID, and Syntax	Access	Description
snAgAclBindToPortTable fdry.1.2.2.15.3	None	The ACL Bind to Port Table
snAgAclBindToPortEntry fdry.1.2.2.15.3.1	None	An entry in the ACL Bind to Port table
snAgAclPortNum fdry.1.2.2.15.3.1.1 Syntax: Integer	Read only	Shows the format of port number.. • LS octet – port number (max 255) • Next octet – slot number (max 255) • MS Octet: 0 (phy) – 0000 to 0FFFF 1 (ve) – 10000 to 1FFFF
snAgAclPortBindDirection fdry.1.2.2.15.3.1.2 Syntax: Direction	Read only	Shows the traffic direction to which the ACL will be applied: • inbound(0) • outbound(1)

Name, OID, and Syntax	Access	Description
snAgAclNum fdry.1.2.2.15.3.1.3 Syntax: Integer	Read-write	Shows the defined ACL number that will be bound to the port.
snAgAclNameString fdry.1.2.2.15.3.1.4 Syntax: Display string	Read-write	Shows the defined ACL name that will be bound to the port.
snAgBindPortListInVirtualInterface fdry.1.2.2.15.3.1.5 Syntax: Octet string	Read-write	Contains a list of ports for binding virtual interface
snAgAclPortRowStatus fdry.1.2.2.15.3.1.6 Syntax: SnRowStatus	Read-write	Controls the management of the table rows. The values that can be written are: • delete(3) – Delete the row • create(4) – Create a new row • modify(5) – Modify an existing row If the row exists, then a SET with a value of create(4) returns a "bad value" error. Deleted rows are removed from the table immediately. The following values can be returned on reads: • noSuch(0) – No such row • invalid(1) – Row is inoperative • valid(2) – Row exists and is valid

Chapter 9
Traffic Control and Prioritization

This chapter presents the objects that can be used to prioritize traffic. It presents objects for the following features:

Quality of Service

Quality of Service (QoS) provides guaranteed bandwidth for certain traffic flows, by assigning priorities to queues that will be used by the traffic. For more information on QoS, refer to the *Foundry Enterprise Configuration and Management Guide*.

The following tables are available to configure QoS:

QoS Profile Table

The following table contains the configuration of QoS profile groups.

Name, OID, and Syntax	Access	Description
snQosProfileTable fdry.1.1.3.14.1	None	The QoS Profile Table.
snQosProfileEntry fdry.1.1.3.14.1.1	None	An entry of the QoS Profile Table. Each entry represents a queue profile.
snQosProfileIndex fdry.1.1.3.14.1.1.1 Syntax: Integer	Read only	The table index of QoS Profile. There can be up to four profiles in this table.

Name, OID, and Syntax	Access	Description
snQosProfileName fdry.1.1.3.14.1.1.2 Syntax: Display string	Read-write	Shows the name of the QoS profile. Valid values: Up to 32 characters.
snQosProfileRequestedBandwidth fdry.1.1.3.14.1.1.3 Syntax: Integer	Read-write	Shows the requested bandwidth for the QoS profile.
snQosProfileCalculatedBandwidth fdry.1.1.3.14.1.1.4 Syntax: Integer	Read only	Shows the calculated bandwidth of the QoS profile.

QoS Bind Table

The following table binds 802.1p tags to the entries in the “QoS Profile Table” on page 9-1.

Name, OID, and Syntax	Access	Description
snQosBindTable fdry.1.1.3.14.2	None	The QoS Bind Table.
snQosBindEntry fdry.1.1.3.14.2.1	None	An entry of the snQosBindTable.
snQosBindIndex fdry.1.1.3.14.2.1.1 Syntax: Integer	Read only	The table index of QoS Bind.
snQosBindPriority fdry.1.1.3.14.2.1.2 Syntax: Integer	Read only	Shows the QoS bind priority.
snQosBindProfileIndex fdry.1.1.3.14.2.1.3 Syntax: Integer	Read-write	Is an index that serves as a pointer to the index of the “snQosProfileTable”.

CAR

This section presents the objects for Committed Access Rate (CAR), a Rate Limiting feature. Rate Limiting is a method of traffic control. You can configure a set of fixed or adaptive rate limits to regulate network traffic flow on an interface. The objects in this section are for the Fixed Rate Limiting feature.

The following tables are available to configure CAR:

- “CAR Port Table” on page 9-3
- “VLAN CAR Objects” on page 9-5

CAR Port Table

The CAR Port Table shows the definitions of CAR objects. This table is indexed by the “snPortCARifIndex”, “snPortCARDirection”, and “snPortCARRowIndex” objects.

Name, OID, and Syntax	Access	Description
snPortCARTable fdry.1.1.3.16.1.1	None	The CAR Port Table
snPortCAREntry fdry.1.1.3.16.1.1.1	None	An entry in the CAR Port Table
snPortCARifIndex fdry.1.1.3.16.1.1.1.1 Syntax: Integer	Read only	Shows the ifIndex value for this rate limit entry.
snPortCARDirection fdry.1.1.3.16.1.1.1.2 Syntax: Integer	Read only	Specifies the transmission direction of the Rate-Limit object. • input(0) – for inbound traffic • output(1) – for outbound traffic
snPortCARRowIndex fdry.1.1.3.16.1.1.1.3 Syntax: Integer	Read only	Shows the table index for rate limit objects. Rows are numbered in sequential order. When a row is added, it is assigned the next sequential number. When a row is deleted, the row is skipped.
snPortCARType fdry.1.1.3.16.1.1.1.4 Syntax: RateLimitType	Read only	Shows the type of traffic to which the rate limit is applied. • all(3) – all traffic. • standardAcc(1) – traffic matches standard access list. • quickAcc(2) – traffic matches rate-limit’s access list.
snPortCARAccIdx fdry.1.1.3.16.1.1.1.5 Syntax: Integer	Read only	Indicates the index to the access list if rate limit type is one of the following: • standardAcc(1) – traffic matches standard access list. • quickAcc(2) – traffic matches rate-limit’s access list.
snPortCARRate fdry.1.1.3.16.1.1.1.6 Syntax: Integer	Read only	Shows the committed access rate for the long term average transmission rate in bits per second. Traffic that falls under this rate always conforms to this rate.
snPortCARLimit fdry.1.1.3.16.1.1.1.7 Syntax: Integer	Read only	Shows the normal burst size in bytes. Normal burst size is the number of bytes that are guaranteed to be transported by the network at the average rate under normal conditions during the committed time interval.
snPortCARExtLimit fdry.1.1.3.16.1.1.1.8 Syntax: Integer	Read only	Shows the extended burst limit in bytes. The extended burst limit determines how large traffic bursts can be before all the traffic exceeds the rate limit.

Name, OID, and Syntax	Access	Description
snPortCARConformAction fdry.1.1.3.16.1.1.1.9 Syntax: Integer	Read only	Indicates what happens to packets when the traffic is within the Rate Limit. • continue(1) – Continue to evaluate the subsequent rate limits. • drop(2) – Drop the packet. • precedCont(3) – Rewrite the IP precedence and transmit the packet. • precedXmit(4) – Rewrite the IP precedence and transmit the packet. • xmit(5) – Transmit the packet.
snPortCARExceedAction fdry.1.1.3.16.1.1.1.10 Syntax: Integer	Read only	Indicates what happens to packets when the traffic exceeds the Rate Limit. • continue(1) – Continue to evaluate the subsequent rate limits. • drop(2) – Drop the packet. • precedCont(3) – Rewrite the IP precedence and transmit the packet. • precedXmit(4) – Rewrite the IP precedence and transmit the packet. • xmit(5) – Transmit the packet.
snPortCARStatSwitchedPkts fdry.1.1.3.16.1.1.1.11 Syntax: Counter64	Read only	Indicates the number of packets permitted by this rate limit.
snPortCARStatSwitchedBytes fdry.1.1.3.16.1.1.1.12 Syntax: Counter64	Read only	Indicates the number of bytes permitted by this interface.
snPortCARStatFilteredPkts fdry.1.1.3.16.1.1.1.13 Syntax: Counter64	Read only	Indicates the number of packets which exceeded this rate limit.
snPortCARStatFilteredBytes fdry.1.1.3.16.1.1.1.14 Syntax: Counter64	Read only	Indicates the number of bytes which exceeded this rate limit.
snPortCARStatCurBurst fdry.1.1.3.16.1.1.1.15 Syntax: Gauge	Read only	Shows the current burst size of received.

VLAN CAR Objects

The objects in the following table contain the rate limit configuration for VLANs. This table is indexed by the "snVLanCARVLanId", "snVLanCARDirection", and "snVLanCARRowIndex" objects.

Name, OID, and Syntax	Access	Description
snVLanCARTable fdry.1.1.3.17.1.1	None	The VLAN rate limit table.
snVLanCAREntry fdry.1.1.3.17.1.1.1	None	An entry in the VLAN CAR Table.
snVLanCARVLanId fdry.1.1.3.17.1.1.1.1 Syntax: Integer	Read only	Shows the VLAN ID. VLAN ID is one of the indices of this table. Each VLAN ID can have a membership of multiple ports. Valid values: 1 – 4095
snVLanCARDirection fdry.1.1.3.17.1.1.1.2 Syntax: Integer	Read only	Specifies the transmission direction of the Rate-Limit object. • input(0) – for inbound traffic • output(1) – for outbound traffic
snVLanCARRowIndex fdry.1.1.3.17.1.1.1.3 Syntax: Integer	Read only	Shows the table index for rate limit objects for the VLAN. Rows are numbered in sequential order. When a row is added, it is assigned the next sequential number. When a row is deleted, the row is skipped.
snVLanCARType fdry.1.1.3.17.1.1.1.4 Syntax: Integer	Read only	Shows the type of traffic to which the rate limit is applied. • all(3) – all traffic. • standardAcc(1) – traffic matches standard access list. • quickAcc(2) – traffic matches rate-limit's access list.
snVLanCARAccIdx fdry.1.1.3.17.1.1.1.5 Syntax: Integer	Read only	Indicates the index to the access list if rate limit type is one of the following: • standardAcc(1) – traffic matches standard access list. • quickAcc(2) – traffic matches rate-limit's access list.
snVLanCARRate fdry.1.1.3.17.1.1.1.6	Read only	Shows the committed access rate for long term average transmission for this VLAN. This rate is in bits per second. Traffic that falls under this rate always conforms to this rate.
snVLanCARLimit fdry.1.1.3.17.1.1.1.7 Syntax: Integer	Read only	Shows the normal burst size in bytes. Normal burst size is the number of bytes that are guaranteed to be transported by the network at the average rate under normal conditions during the committed time interval.
snVLanCARExtLimit fdry.1.1.3.17.1.1.1.8 Syntax: Integer	Read only	Shows the extended burst limit in bytes. The extended burst limit determines how large traffic bursts can be before all the traffic exceeds the rate limit.

Name, OID, and Syntax	Access	Description
snVLanCARConformAction fdry.1.1.3.17.1.1.1.9 Syntax: Integer	Read only	Indicates what happens to packets when the traffic is within the Rate Limit. • continue(1) – Continue to evaluate the subsequent rate limits. • drop(2) – Drop the packet. • precedCont(3) – Rewrite the IP precedence and transmit the packet. • precedXmit(4) – Rewrite the IP precedence and transmit the packet. • xmit(5) – Transmit the packet.
snVLanCARExceedAction fdry.1.1.3.17.1.1.1.10 Syntax: Integer	Read only	Indicates what happens to packets when the traffic exceeds the Rate Limit. • continue(1) – Continue to evaluate the subsequent rate limits. • drop(2) – Drop the packet. • precedCont(3) – Rewrite the IP precedence and transmit the packet. • precedXmit(4) – Rewrite the IP precedence and transmit the packet. • xmit(5) – Transmit the packet.
snVLanCARStatSwitchedPkts fdry.1.1.3.17.1.1.1.11 Syntax: Counter64	Read only	Indicates the number of packets permitted by this rate limit.
snVLanCARStatSwitchedBytes fdry.1.1.3.17.1.1.1.12 Syntax: Counter64	Read only	Indicates the number of bytes permitted by this interface.
snVLanCARStatFilteredPkts fdry.1.1.3.17.1.1.1.13 Syntax: Counter64	Read only	Indicates the number of packets which exceeded this rate limit.
snVLanCARStatFilteredBytes fdry.1.1.3.17.1.1.1.14 Syntax: Counter64	Read only	Indicates the number of bytes which exceeded this rate limit.
snVLanCARStatCurBurst fdry.1.1.3.17.1.1.1.15 Syntax: Gauge	Read only	Shows the current burst size of received packets.

Chapter 10
Multicasting

The multicast feature allows packets to be simultaneously transmitted to a selected set of destinations, such one or more multicast groups

This chapter presents objects for multicasting protocols in the following sections:

Refer to the *Foundry Enterprise Configuration and Management Guide* for details on the features discussed in this chapter.

IGMP

The Internet Group Membership Protocol (IGMP) allows Foundry Layer 3 Switches to limit the multicast of IGMP packets to only those ports on the Layer 3 Switch that are identified as IP Multicast members. Foundry devices support IGMP versions 1 and 2. The Layer 3 Switch actively sends out host queries to identify IP Multicast groups on the network, inserts the group information in an IGMP packet, and forwards the packet to IP Multicast neighbors.

Objects for IGMP are presented in the following sections:

General IGMP Objects

The following general IGMP objects are available in all Foundry devices.

Object Name and Number	Access	Description
snIgmpQueryInterval fdry.1.2.6.1.1 Syntax: Integer	Read-write	Specifies how often the Layer 3 Switch sends out IGMP host query packets to query an interface for group membership. Valid values: 1 – 3600 seconds. Default: 60 seconds For a Layer 3 Switch, the object “snDvmrpEnable” must have been set to “enabled(1)” before this object can be written. For a Layer 2 Switch, the object “snSwGroupIpMcastMode” must have been set to “enabled(1)” and the object “snSwIpMcastQuerierMode” must have been set to “querier(1)” before this object can be written.
snIgmpGroupMembershipTime fdry.1.2.6.1.2 Syntax: Integer	Read-write	Specifies how many seconds an IP Multicast group can remain on a Layer 3 Switch interface in the absence of a group report. Valid values: 1 – 7200 seconds. Default: 60 seconds For a Layer 3 Switch, the object “snDvmrpEnable” must have been set to “enabled(1)” before this object can be written. For a Layer 2 Switch, the object “snSwGroupIpMcastMode” must have been set to “enabled(1)” before this object can be written.

IGMP Interface Table

The IGMP Interface Table contains the group membership information of a port.

Object Name and Number	Access	Description
snIgmpIfTable fdry.1.2.6.1.3	None	The IGMP Interface Table.
snIgmpIfEntry fdry.1.2.6.1.3.1	None	An entry in the IGMP Interface Table.
snIgmpIfEntryIndex fdry.1.2.6.1.3.1.1 Syntax: Integer	Read only	The table entry index.
snIgmpIfPortNumber fdry.1.2.6.1.3.1.2 Syntax: Integer	Read only	Shows the port number (interface) on which the group was learned.

Object Name and Number	Access	Description
snIgmpIfGroupAddress fdry.1.2.6.1.3.1.3 Syntax: IpAddress	Read only	Shows the group's IP address learned from the interface.
snIgmpIfGroupAge fdry.1.2.6.1.3.1.4 Syntax: Integer	Read only	Specifies how many seconds the Layer 3 Switch will wait for an IGMP response from an interface before concluding that the group member on that interface is down. The switch will then begin to remove the interface from the group. Valid values: 1 – 10 seconds Default: 5 seconds

PIM

Protocol-Independent Multicast (PIM) protocol is one of the multicast routing protocol supported in Foundry Layer 3 Switches such as Foundry's BigIron products. For detailed explanation on PIM, refer to the *Foundry Enterprise Configuration and Management Guide*.

The objects for PIM are presented in the following sections:

Common PIM Objects

The following table presents objects that are common to all PIM interfaces.

Name, OID, and Syntax	Access	Description
snPimEnable fdry.1.2.9.1.1 Syntax: Integer	Read-write	Determines if PIM is enabled on this Layer 3 Switch: • disabled(0) • enabled(1) Default: disabled(0) The remaining object applies only if this object is set to enabled(1).
snPimNeighborRouterTimeout fdry.1.2.9.1.2 Syntax: Integer	Read-write	Specifies the number of seconds the PIM Layer 3 Switch waits before it considers a neighbor to be absent. Absence of PIM hello messages from a neighboring Layer 3 Switch indicates that a neighbor is not present. Valid values: 60 – 8000 seconds Default: 180 seconds

Name, OID, and Syntax	Access	Description
snPimHelloTime fdry.1.2.9.1.3 Syntax: Integer	Read-write	Specifies the number of seconds that periodic hellos are sent out on PIM interfaces. Layer 3 Switches use hello messages to inform neighboring Layer 3 Switches of their presence. Valid values: 10 – 3600 seconds Default: 60 seconds
snPimPruneTime fdry.1.2.9.1.4 Syntax: Integer	Read-write	Specifies the number of seconds that a Foundry PIM Layer 3 Switch will maintain a prune state for a forwarding entry. The first multicast that the Layer 3 Switch receives from an interface is forwarded to all other PIM interfaces on the Layer 3 Switch. If there is no presence of groups on that interface, the leaf node sends a prune message upstream and stores a prune state. This prune state travels up the tree and installs a prune state. A prune state is maintained until the prune timer expires or a graft message is received for the forwarding entry. Valid values: 10 – 3600 seconds Default: 180 seconds
snPimGraftRetransmitTime fdry.1.2.9.1.5 Syntax: Integer	Read-write	Defines the number of seconds between the transmission of graft messages. A graft message is sent by a Layer 3 Switch to cancel a prune state. When a Layer 3 Switch receives a graft message, the Layer 3 Switch responds with a Graft ACK (acknowledge) message. If this Graft ACK message is lost, the Layer 3 Switch that sent the graft message will resend it. Valid values: 10 – 3600 seconds Default: 180 seconds
snPimInactivityTime fdry.1.2.9.1.6 Syntax: Integer	Read-write	Defines how long a forwarding entry can remain unused before the Layer 3 Switch deletes it. The Layer 3 Switch deletes a forwarding entry if the entry is not used to send multicast packets. This object is used only to keep the forwarding entries for the active sessions. Valid values: 10 – 3600 seconds Default: 180 seconds

PIM Virtual Interface Table

The PIM Virtual Interface Table lists the PIM virtual interfaces on a Layer 3 Switch.

Name, OID, and Syntax	Access	Description
snPimVInterfaceTable fdry.1.2.9.1.7	None	The PIM Virtual Interface Table.

Name, OID, and Syntax	Access	Description
snPimVInterfaceEntry fdry.1.2.9.1.7.1	None	An entry in the PIM Virtual Interface Table.
snPimVInterfaceVifIndex fdry.1.2.9.1.7.1.1 Syntax: Integer	Read only	The ifIndex value of this PIM virtual interface. There can be up to 48 entries.
snPimVInterfaceType fdry.1.2.9.1.7.1.2 Syntax: Integer	Read-write	Indicates the type of PIM virtual interface the row represents: • tunnel(1) • subnet(2) or a physical interface
snPimVInterfaceLocalAddress fdry.1.2.9.1.7.1.3 Syntax: IpAddress	Read-write	Indicates the IP address of the local end of the interface being configured. IP tunneling must also be enabled and defined on the destination Layer 3 Switch interface as well..
snPimVInterfaceLocalSubnetMask fdry.1.2.9.1.7.1.4 Syntax: IpAddress	Read only	Shows the network mask for the IP address of the PIM virtual interface. For a tunnel, this should be 0.0.0.0.
snPimVInterfaceRemoteAddress fdry.1.2.9.1.7.1.5 Syntax: IpAddress	Read-write	Shows the IP address of the remote end of this PIM virtual interface.
snPimVInterfaceDR fdry.1.2.9.1.7.1.6 Syntax: IpAddress	Read only	Defines the designated Layer 3 Switch on this PIM virtual interface. For point-to-point interfaces, this object has the value 0.0.0.0.
snPimVInterfaceTtlThreshold fdry.1.2.9.1.7.1.7 Syntax: Integer	Read-write	Determines the minimum time-to-live value to forward the packets out of this interface. Valid values: 1 – 31 Default: 1
snPimVInterfaceStatus fdry.1.2.9.1.7.1.8 Syntax: Integer	Read-write	Controls the management of the table rows. The values that can be written are: • delete(3) – Delete the row • create(4) – Create a new row • modify(5) – Modify an existing row If the row exists, then a SET with a value of create(4) returns a "bad value" error. Deleted rows are removed from the table immediately. The following values can be returned on reads: • noSuch(0) – No such row • invalid(1) – Row is inoperative • valid(2) – Row exists and is valid

Name, OID, and Syntax	Access	Description
snPimVInterfaceMode fdry.1.2.9.1.7.1.9 Syntax: Integer	Read-write	Shows the configured mode of this PIM interface: • dense(1) – Traffic is initially flooded to all PIM interface neighbors. Branches that do not want the data are pruned. • sparse(2) – PIM interface neighbors must join the multicast group if they want to receive the traffic.

PIM Neighbor Table

The PIM Neighbor Table is a conceptual table that lists the Layer 3 Switch's PIM neighbors.

Name, OID, and Syntax	Access	Description
snPimNeighborTable fdry.1.2.9.1.8	None	The PIM Neighbor Table
snPimNeighborEntry fdry.1.2.9.1.8.1	None	An entry in the PIM Neighbor Table
snPimNeighborEntryIndex fdry.1.2.9.1.8.1.1 Syntax: Integer	Read only	The table entry index.
snPimNeighborVifIndex fdry.1.2.9.1.8.1.2 Syntax: Integer	Read only	Shows the value of VifIndex for the virtual interface used to reach this PIM neighbor.
snPimNeighborAddress fdry.1.2.9.1.8.1.3 Syntax: IpAddress	Read only	Shows the IP address of the this PIM neighbor.
snPimNeighborUpTime fdry.1.2.9.1.8.1.4 Syntax: Time ticks	Read only	Indicates the last time when this PIM neighbor became a neighbor of the local Layer 3 Switch.
snPimNeighborExpiryTime fdry.1.2.9.1.8.1.5 Syntax: Time ticks	Read only	Displays the time remaining before this PIM neighbor will be aged out.

PIM Virtual Interface Statistics Table

The PIM Virtual Interface Statistics table lists the Layer 3 Switch's PIM virtual interface statistical counters.

Name, OID, and Syntax	Access	Description
snPimVIfStatTable fdry.1.2.9.1.9	None	The PIM Virtual Interface Statistics Table.

Name, OID, and Syntax	Access	Description
snPimVIfStatEntry fdry.1.2.9.1.9.1	None	An entry in the PIM Virtual Interface Statistics Table.
snPimVIfStatVifIndex fdry.1.2.9.1.9.1.1 Syntax: Integer	Read only	The ifIndex value of this PIM virtual interface. There can be up – 32 entries.
snPimVIfStatInJoinPkts fdry.1.2.9.1.9.1.2 Syntax: Counter	Read only	Shows the number of Join/Prune messages sent or received on the interface. **NOTE:** Unlike PIM dense, PIM Sparse uses the same messages for Joins and Prunes.T
snPimVIfStatOutJoinPkts fdry.1.2.9.1.9.1.3 Syntax: Counter	Read only	Indicates the number of join packets that have been sent on the PIM virtual interface.
snPimVIfStatDiscardJoinPkts fdry.1.2.9.1.9.1.4 Syntax: Counter	Read only	Shows the number of join packets that have been discarded by the PIM virtual interface.
snPimVIfStatInPrunePkts fdry.1.2.9.1.9.1.5 Syntax: Counter	Read only	Shows the number of prune packets that have arrived on the PIM virtual interface.
snPimVIfStatOutPrunePkts fdry.1.2.9.1.9.1.6 Syntax: Counter	Read only	Shows the number of prune packets that have been sent on the PIM virtual interface.
snPimVIfStatDiscardPrunePkts fdry.1.2.9.1.9.1.7 Syntax: Counter	Read only	Shows the number of prune packets that have been discarded by the PIM virtual interface.
snPimVIfStatInAssertPkts fdry.1.2.9.1.9.1.8 Syntax: Counter	Read only	Shows the number of assert packets that have arrived on the PIM virtual interface.
snPimVIfStatOutAssertPkts fdry.1.2.9.1.9.1.9 Syntax: Counter	Read only	Shows the number of assert packets that have been sent on the PIM virtual interface.
snPimVIfStatDiscardAssertPkts fdry.1.2.9.1.9.1.10 Syntax: Counter	Read only	Shows the number of assert packets that have been discarded by the PIM virtual interface.
snPimVIfStatInHelloPkts fdry.1.2.9.1.9.1.11 Syntax: Counter	Read only	Shows the number of hello packets that have arrived on the PIM virtual interface.

Name, OID, and Syntax	Access	Description
snPimVIfStatOutHelloPkts fdry.1.2.9.1.9.1.12 Syntax: Counter	Read only	Shows the number of hello packets that have been sent on the PIM virtual interface.
snPimVIfStatDiscardHelloPkts fdry.1.2.9.1.9.1.13 Syntax: Counter	Read only	Shows the number of hello packets that have been discarded by the PIM virtual interface.
snPimVIfStatInGraftPkts fdry.1.2.9.1.9.1.14 Syntax: Counter	Read only	Shows the number of graft packets that have arrived on the PIM virtual interface.
snPimVIfStatOutGraftPkts fdry.1.2.9.1.9.1.15 Syntax: Counter	Read only	Shows the number of graft packets that have been sent on the PIM virtual interface.
snPimVIfStatDiscardGraftPkts fdry.1.2.9.1.9.1.16 Syntax: Counter	Read only	Shows the number of graft packets that have been discarded by the PIM virtual interface.
snPimVIfStatInGraftAckPkts fdry.1.2.9.1.9.1.17 Syntax: Counter	Read only	Shows the number of graft acknowledge packets that have arrived on the PIM virtual interface.
snPimVIfStatOutGraftAckPkts fdry.1.2.9.1.9.1.18 Syntax: Counter	Read only	Shows the number of graft acknowledge packets that have been sent on the PIM virtual interface.
snPimVIfStatDiscardGraftAckPkts fdry.1.2.9.1.9.1.19 Syntax: Counter	Read only	Shows the number of graft acknowledge packets that have been discarded by the PIM virtual interface.

PIM-SM

The following tables are available for the PIM Sparse feature.

- "PIM Sparse: Candidate BSR Table" on page 10-9
- "PIM RP Set Table" on page 10-10
- "PIM RP Candidate Table" on page 10-10

Name, OID, and Syntax	Access	Description
snPimJoinPruneInterval fdry.1.2.9.2.1 Syntax: Integer	Read-write	Determines the the number of seconds when periodic PIM Spare Join/Prune messages are to be sent. These messages inform other PIM Sparse Layer 3 Switches about clients who want to become receivers (Join) or stop being receivers (Prune) for PIM Sparse groups. Valid values: 10 – 3600 seconds Default: 60 seconds

PIM Sparse: Candidate BSR Table

The Candidate Bootstrap Router (BSR) Table contains information about BSRs that can are candidates to be the active BSR for the domain. The Bootstrap Router (BSR) distributes Rendezvous Point (RP) information to the other PIM Sparse routers within the domain. Each PIM Sparse domain has one active BSR. For redundancy, you can configure ports on multiple routers as candidate BSRs. The PIM Sparse protocol uses an election process to select one of the candidate BSRs as the active BSR for the domain. The BSR with the highest BSR priority is elected. If the priorities result in a tie, then the candidate BSR interface with the highest IP address is elected.

Name, OID, and Syntax	Access	Description
snPimCandidateBSRTable fdry.1.2.9.2.2	None	The Candidate Bootstrap Router Table.
snPimCandidateBSREntry fdry.1.2.9.2.2.1	None	An entry in the Candidate Bootstrap Router Table.
snPimCandidateBSRPortID fdry.1.2.9.2.2.1.1 Syntax: Integer	Read-write	Identifies the IP address of the PIM interface: • Bit 0 to bit 7 – Port number. • Bit 8 to bit 11– Slot number.
snPimCandidateBSRIPAddress fdry.1.2.9.2.2.1.2 Syntax: IpAddress	Read only	Shows the unicast address of the candidate BSR. Valid values: 1 – 32.
snPimCandidateBSRHashMaskLen fdry.1.2.9.2.2.1.3 Syntax: Integer	Read-write	Indicates the hash mask value for this Layer 3 Switch as a candidate bootstrap router.

Name, OID, and Syntax	Access	Description
snPimCandidateBSRPreference fdry.1.2.9.2.2.1.4 Syntax: Integer	Read-write	Indicates the preference value for this Layer 3 Switch as a candidate bootstrap router. Valid values: 0 – 255 Default: 100

PIM RP Set Table

The PIM RP Set Table contains information about candidate Rendezvous Points (RPs) for IP multicast groups. When the local Layer 3 Switch is the BSR, this information is obtained from the advertisements received from the Candidate-RP. When the local Layer 3 Switch is not the BSR, this information is obtained from the received RP-Set messages.

Name, OID, and Syntax	Access	Description
snPimRPSetTable fdry.1.2.9.2.3	None	The PIM RP Set Table
snPimRPSetEntry fdry.1.2.9.2.3.1	None	An entry in the PIM RP Set Table
snPimRPSetGroupAddress fdry.1.2.9.2.3.1.1 Syntax: IpAddress	Read only	Shows the IP multicast group address. This object plus the snPimRPSetGroupMask, form the group prefix for the Candidate-RP.
snPimRPSetMask fdry.1.2.9.2.3.1.2 Syntax: IpAddress	Read only	Shows the IP multicast group address. This object plus the “snPimRPSetGroupAddress” object form the group prefix for the Candidate-RP.
snPimRPSetIPAddress fdry.1.2.9.2.3.1.3 Syntax: IpAddress	Read only	Shows the IP address of the Candidate-RP.
snPimRPSetHoldTime fdry.1.2.9.2.3.1.4 Syntax: Integer	Read only	Shows the holdtime, in seconds, of a Candidate-RP. If the local router is not the BSR, this value is 0.

PIM RP Candidate Table

The PIM Rendezvous Point Table listing the IP multicast groups for which the local router is to advertise itself as a Candidate-RP. If this table is empty, then the local router will advertise itself as a Candidate-RP for all groups snPimEnable must be "enabled" before this table is read or written.

Name, OID, and Syntax	Access	Description
snPimCandidateRPTable fdry.1.2.9.2.4	None	The PIM RP Candidate Table

Name, OID, and Syntax	Access	Description
snPimCandidateRPEntry fdry.1.2.9.2.4.1	None	An entry the PIM RP Candidate Table
snPimCandidateRPGroupAddress fdry.1.2.9.2.4.1.1 Syntax: IpAddress	Read only	Shows the IP multicast group address. This object combined with the snPimCandidateRPGroupMask object forms the group prefix for which the local router will advertise itself as a Candidate-RP.
snPimCandidateRPMask fdry.1.2.9.2.4.1.2 Syntax: IpAddress	Read only	Shows the multicast group address mask. This object combined with snPimCandidateRPGroupMask forms the group prefix for which the local router will advertise itself as a Candidate-RP.
snPimCandidateRPIPAddress fdry.1.2.9.2.4.1.3 Syntax: IpAddress	Read-write	Indicates the unicast IP address of the interface that will be advertised as a Candidate-RP.
snPimCandidateRPRowStatus fdry.1.2.9.2.4.1.4 Syntax: Integer	Read-write	Controls the management of the table rows. The values that can be written are: • delete(3) – Delete the row • create(4) – Create a new row • modify(5) – Modify an existing row If the row exists, then a SET with a value of create(4) returns a "bad value" error. Deleted rows are removed from the table immediately. The following values can be returned on reads: • noSuch(0) – No such row • invalid(1) – Row is inoperative • valid(2) – Row exists and is valid

DVMRP

Distance Vector Multicast Routing Protocol (DVMRP) is one of the multicast routing protocol supported in Foundry's Layer 3 Switches, such as the BigIron products.

The objects in this section apply to the DVMRP feature, if that feature is enabled in the Layer 3 Switch. For additional information on DVMRP, refer to the *Foundry Enterprise Configuration and Management Guide*.

The following sections present the objects and tables for configuring DVMRP:

Global DVMRP Objects

Name, OID, and Syntax	Access	Description
snDvmrpVersion fdry.1.2.5.1.1 Syntax: Display string	Read only	Shows the DVMRP version in the Layer 3 Switch. There can be up to 255 characters in this object.
snDvmrpEnable fdry.1.2.5.1.2 Syntax: Integer	Read-write	Indicates if DVMRP is enabled on this Layer 3 Switch: • disabled(0) • enabled(1) Default: disabled(0)
snDvmrpGenerationId fdry.1.2.5.1.3 Syntax: Integer	Read only	Shows the generation identifier for the routing process. This is used by neighboring Layer 3 Switches to determine if pruning information should be resent.
snDvmrpProbeInterval fdry.1.2.5.1.4 Syntax: Integer	Read-write	Defines how often neighbor probe messages are sent to the ALL-DVMRP-ROUTERS IP multicast group address. A Layer 3 Switch's probe message lists those neighbor DVMRP routers from which it has received probes. Valid values: 5 – 30 seconds Default: 10 seconds
snDvmrpReportInterval fdry.1.2.5.1.5 Syntax: Integer	Read-write	Defines how often Layer 3 Switches propagate their complete routing tables to other DVMRP neighbor routers. Valid values: 10 –2000 seconds Default: 60 seconds
snDvmrpTriggerInterval fdry.1.2.5.1.6 Syntax: Integer	Read-write	Defines how often trigger updates, which reflect changes in the network topology, are sent. For example, changes in a network topology, including router up or down, or changes in the metric, would cause trigger updates to be sent. Valid values: 5 –30 seconds Default: 5 seconds
snDvmrpNeighborRouterTimeout fdry.1.2.5.1.7 Syntax: Integer	Read-write	Specifies the how long a router waits before it determines that an attached DVMRP neighbor router as down. Valid values: 40 – 8000 seconds Default: 180 seconds
snDvmrpRouteExpireTime fdry.1.2.5.1.8 Syntax: Integer	Read-write	Defines how long a route is considered valid in the absence of the next route update. Valid values: 20 – 4000 seconds Default: 200 seconds

Name, OID, and Syntax	Access	Description
snDvmrpRouteDiscardTime fdry.1.2.5.1.9 Syntax: Integer	Read-write	Defines how long a router waits before it deletes a route. Valid values: 40 – 8000 seconds Default: 340 seconds
snDvmrpPruneAge fdry.1.2.5.1.10 Syntax: Integer	Read-write	Defines how long a prune state will remain in effect for a source-routed multicast tree. After the prune age period expires, flooding will resume. Valid values: 20 – 3600 seconds Default: 180 seconds
snDvmrpGraftRetransmitTime fdry.1.2.5.1.11 Syntax: Integer	Read-write	Defines how long a router that is sending a graft message will wait for a the first graft acknowledgement from an upstream router before re-transmitting that message. Subsequent retransmissions are sent at an interval twice that of the preceding interval. Valid values: 5 – 3600 seconds Default: 10 seconds
snDvmrpDefaultRoute fdry.1.2.5.1.12 Syntax: IpAddress	Read-write	This is the IP address of a router that is connected to one of the directly attached subnet. If a multicast route is not present on the local router, this default route will be used for multicast forwarding. “snDvmrpEnable” must be set to “enabled” before this object can be written.

DVMRP Virtual Interface Table

The DVMRP Virtual Interface Table contains the router’s DVMRP virtual interfaces.

Name, OID, and Syntax	Access	Description
snDvmrpVInterfaceTable fdry.1.2.5.1.13	None	The DVMRP Virtual Interface Table
snDvmrpVInterfaceEntry fdry.1.2.5.1.13.1	None	An entry in the The DVMRP Virtual Interface Table. This row augments ipMRouteInterfaceEntry in the IP Multicast MIB, where the threshold object resides.
snDvmrpVInterfaceVifIndex fdry.1.2.5.1.13.1.1 Syntax: Integer	Read only	The ifIndex value of this DVMRP virtual interface.
snDvmrpVInterfaceType fdry.1.2.5.1.13.1.2 Syntax: Integer	Read-write	Indicates the type of this DVMRP virtual interface: • tunnel(1) – Tunnel interface, for which the interface is a querier. • subnet(3) – Physical interface, for which the interface is not a querier.

Name, OID, and Syntax	Access	Description
snDvmrpVInterfaceOperState fdry.1.2.5.1.13.1.3 Syntax: Integer	Read only	Shows the current state of this DVMRP virtual interface: • up(1) • down(2)
snDvmrpVInterfaceLocalAddress fdry.1.2.5.1.13.1.4 Syntax: IpAddress	Read-write	Shows the IP address of the local end of this DVMRP virtual interface.
snDvmrpVInterfaceRemoteAddress fdry.1.2.5.1.13.1.5 Syntax: IpAddress	Read-write	Shows the IP address of the remote end of this DVMRP virtual interface. For a tunnel, enter the IP address of the neighboring router. For a subnet, enter the subnet address.
snDvmrpVInterfaceRemoteSubnetMask fdry.1.2.5.1.13.1.6 Syntax: IpAddress	Read only	Shows the subnet mask for a directly connected subnet. For a tunnel, this should be 0.0.0.0.
snDvmrpVInterfaceMetric fdry.1.2.5.1.13.1.7 Syntax: Integer	Read-write	Defines the distance metric for this DVMRP virtual interface. The router uses the metric when establishing reverse paths to some networks on directly attached interfaces. Valid values: 1 – 31 hops Default: 1
snDvmrpVInterfaceTtlThreshold fdry.1.2.5.1.13.1.8 Syntax: Integer	Read-write	Defines the minimum value required in a packet in order for the packet to be forwarded out of the interface. For example, if the TTL for an interface is set at 10, then only those packets with a TTL value of 10 or more are forwarded. Likewise, if an interface is configured with a TTL Threshold value of 1, all packets received on that interface are forwarded. Valid values: 1 – 64 Default: 1
snDvmrpVInterfaceAdvertiseLocal fdry.1.2.5.1.13.1.9 Syntax: Integer	Read-write	Determines if advertising of this local route is enabled: • disabled(0) • enabled(1) Default: enabled(1)
snDvmrpVInterfaceEncapsulation fdry.1.2.5.1.13.1.10 Syntax: Integer	Read-write	Indicates if the encapsulation of the DVMRP control packets when using IPINIP encapsulation is enabled: • disabled(0) • enabled(1) Default: disabled(0)

Name, OID, and Syntax	Access	Description
snDvmrpVInterfaceStatus fdry.1.2.5.1.13.1.11 Syntax: Integer	Read-write	Controls the management of the table rows. The values that can be written are: • delete(3) – Delete the row • create(4) – Create a new row • modify(5) – Modify an existing row If the row exists, then a SET with a value of create(4) returns a "bad value" error. Deleted rows are removed from the table immediately. The following values can be returned on reads: • noSuch(0) – No such row • invalid(1) – Row is inoperative • valid(2) – Row exists and is valid

DVMRP Neighbor Table

The DVMRP Neighbor Table lists the router's DVMRP neighbors, as discovered by the receiving Neighbor Probe messages.

Name, OID, and Syntax	Access	Description
snDvmrpNeighborTable fdry.1.2.5.1.14	None	The DVMRP Neighbor Table.
snDvmrpNeighborEntry fdry.1.2.5.1.14.1	None	An entry in the DVMRP Neighbor Table.
snDvmrpNeighborEntryIndex fdry.1.2.5.1.14.1.1 Syntax: Integer	Read only	The table entry index.
snDvmrpNeighborVifIndex fdry.1.2.5.1.14.1.2 Syntax: Integer	Read only	The value of VifIndex for the virtual interface used to reach this DVMRP neighbor.
snDvmrpNeighborAddress fdry.1.2.5.1.14.1.3 Syntax: IpAddress	Read only	Shows the IP address of the DVMRP neighbor for which this entry contains information.
snDvmrpNeighborUpTime fdry.1.2.5.1.14.1.4 Syntax: Time ticks	Read only	Shows the last time since this DVMRP neighbor became a neighbor of the local router.
snDvmrpNeighborExpiryTime fdry.1.2.5.1.14.1.5 Syntax: Time ticks	Read only	Shows the number of seconds remaining before this DVMRP neighbor will be aged out.

Name, OID, and Syntax	Access	Description
snDvmrpNeighborGenerationId fdry.1.2.5.1.14.1.6 Syntax: Integer	Read only	Shows the neighboring router's generation identifier.
snDvmrpNeighborMajorVersion fdry.1.2.5.1.14.1.7 Syntax: Integer	Read only	Shows the neighboring router's major DVMRP version number. Valid values: 0 – 255
snDvmrpNeighborMinorVersion fdry.1.2.5.1.14.1.8 Syntax: Integer	Read only	Shows the neighboring router's minor DVMRP version number. Valid values: 0 – 255
snDvmrpNeighborCapabilities fdry.1.2.5.1.14.1.9 Syntax: Integer	Read only	Describes the neighboring router's capabilities. The following shows the position of each bit: **Bit position** – **Meaning** 3 – mtrace bit. If on, neighbor can handle mtrace requests 2 – generationID bit. If on, the neighbor sends its generationID in Probe messages 1 – prune bit. If on, he neighbor supports pruning 0 – leaf bit. If on, the neighbor has only one interface with other neighbors

DVMRP Route Table

DVMRP uses a routing table instead of the unicast routing table. The DVMRP Route Table contains information on the DVMRP source and destination routes.

Name, OID, and Syntax	Access	Description
snDvmrpRouteTable fdry.1.2.5.1.15	None	The DVMRP Route Table
snDvmrpRouteEntry fdry.1.2.5.1.15.1	None	An entry in the DVMRP Route Table
snDvmrpRouteEntryIndex fdry.1.2.5.1.15.1.1 Syntax: Integer	Read only	The table entry index.
snDvmrpRouteSource fdry.1.2.5.1.15.1.2 Syntax: IpAddress	Read only	Shows the network address of the source. This object plus the value of the "snDvmrpRouteSourceMask" object identifies the sources of this entry.

Name, OID, and Syntax	Access	Description
snDvmrpRouteSourceMask fdry.1.2.5.1.15.1.3 Syntax: IpAddress	Read only	Shows the network mask of the source. This object plus the value of the “snDvmrpRouteSource” object identifies the sources of this entry.
snDvmrpRouteUpstreamNeighbor fdry.1.2.5.1.15.1.4 Syntax: IpAddress	Read only	Shows the address of the upstream neighbor (for example, RPF neighbor) from which IP datagrams were received.
snDvmrpRouteVifIndex fdry.1.2.5.1.15.1.5 Syntax: Integer	Read only	The value of snDvmrpVInterfaceVifIndex for the virtual interface on which IP datagrams sent by these sources are received.
snDvmrpRouteMetric fdry.1.2.5.1.15.1.6 Syntax: Integer	Read only	Shows the number of hops to the source subnet.
snDvmrpRouteExpiryTime fdry.1.2.5.1.15.1.7 Syntax: Time ticks	Read only	Shows the amount of time remaining before this entry will be aged out.

DVMRP Routing Next Hop Table

The DVMRP Routing Next Hop Table contains information on the nex hop for routing IP multicast datagrams.

Name, OID, and Syntax	Access	Description
snDvmrpRouteNextHopTable fdry.1.2.5.1.16	None	The DVMRP Routing Next Hop Table
snDvmrpRouteNextHopEntry fdry.1.2.5.1.16.1	None	An entry the DVMRP Routing Next Hop Table.
snDvmrpRouteNextHopSource fdry.1.2.5.1.16.1.1 Syntax: IpAddress	Read only	Shows the network mask of the source. This object plus the “snDvmrpRouteNextHopSourceMask” object identify the source of the next hop.
snDvmrpRouteNextHopSourceMask fdry.1.2.5.1.16.1.2 Syntax: IpAddress	Read only	Shows the network mask of the source. This object plus the “snDvmrpRouteNextHopSource” object identify the sources of the next hop.
snDvmrpRouteNextHopVifIndex fdry.1.2.5.1.16.1.3 Syntax: Integer	Read only	The snDvmrpVInterfaceVifIndex value of the virtual interface for the outgoing interface for this next hop.

Name, OID, and Syntax	Access	Description
snDvmrpRouteNextHopType fdry.1.2.5.1.16.1.4 Syntax: Integer	Read only	Identifies the type of router for the next hop: • leaf(1) – There are no neighbors at the next hop • branch(2) – Neighbors are attached to the next hop

DVMRP Virtual Interface Statistics Table

The DVMRP Virtual Interface Statistics Table provides information about the DVMRP routes.

Name, OID, and Syntax	Access	Description
snDvmrpVIfStatTable fdry.1.2.5.1.17	None	The DVMRP Virtual Interface Statistics Table
snDvmrpVIfStatEntry fdry.1.2.5.1.17.1	None	An entry in the DVMRP Virtual Interface Statistics Table
snDvmrpVIfStatVifIndex fdry.1.2.5.1.17.1.1 Syntax: Integer	Read only	The ifIndex value of this DVMRP virtual interface.
snDvmrpVIfStatInPkts fdry.1.2.5.1.17.1.2 Syntax: Counter	Read only	Shows the number of packets that have arrived on the DVMRP virtual interface.
snDvmrpVIfStatOutPkts fdry.1.2.5.1.17.1.3 Syntax: Counter	Read only	Shows the number of packets that have been sent on the DVMRP virtual interface.
snDvmrpVIfStatInOctets fdry.1.2.5.1.17.1.4 Syntax: Counter	Read only	Shows the number of octets that have arrived on the DVMRP virtual interface.
snDvmrpVIfStatOutOctets fdry.1.2.5.1.17.1.5 Syntax: Counter	Read only	Shows the number of octets that have been sent on the DVMRP virtual interface.
snDvmrpVIfStatInProbePkts fdry.1.2.5.1.17.1.6 Syntax: Counter	Read only	Shows the number of probe packets that have arrived on the DVMRP virtual interface.
snDvmrpVIfStatOutProbePkts fdry.1.2.5.1.17.1.7 Syntax: Counter	Read only	Shows the number of probe packets that have been sent on the DVMRP virtual interface.

Name, OID, and Syntax	Access	Description
snDvmrpVIfStatDiscardProbePkts fdry.1.2.5.1.17.1.8 Syntax: Counter	Read only	Shows the number of probe packets that have been discarded by the DVMRP virtual interface.
snDvmrpVIfStatInRtUpdatePkts fdry.1.2.5.1.17.1.9 Syntax: Counter	Read only	Shows the number of route update packets that have arrived on the DVMRP virtual interface.
snDvmrpVIfStatOutRtUpdatePkts fdry.1.2.5.1.17.1.10	Read only	Shows the number of route update packets that have been sent on the DVMRP virtual interface.
snDvmrpVIfStatDiscardRtUpdate Pkts fdry.1.2.5.1.17.1.11 Syntax: Counter	Read only	Shows the number of route update packets that have been discarded by the DVMRP virtual interface.
snDvmrpVIfStatInGraftPkts fdry.1.2.5.1.17.1.12 Syntax: Counter	Read only	Shows the number of graft packets that have arrived on the DVMRP virtual interface.
snDvmrpVIfStatOutGraftPkts fdry.1.2.5.1.17.1.13 Syntax: Counter	Read only	Shows the number of graft packets that have been sent on the DVMRP virtual interface.
snDvmrpVIfStatDiscardGraftPkts fdry.1.2.5.1.17.1.14 Syntax: Counter	Read only	Shows the number of graft packets that have been discarded by the DVMRP virtual interface.
snDvmrpVIfStatInGraftAckPkts fdry.1.2.5.1.17.1.15 Syntax: Counter	Read only	Shows the number of graft acknowledge packets that have arrived on the DVMRP virtual interface.
snDvmrpVIfStatOutGraftAckPkts fdry.1.2.5.1.17.1.16 Syntax: Counter	Read only	Shows the number of graft acknowledge packets that have been sent on the DVMRP virtual interface.
snDvmrpVIfStatDiscardGraftAckP kts fdry.1.2.5.1.17.1.17 Syntax: Counter	Read only	Shows the number of graft acknowledge packets that have been discarded by the DVMRP virtual interface.
snDvmrpVIfStatInPrunePkts fdry.1.2.5.1.17.1.18 Syntax: Counter	Read only	Shows the number of prune packets that have arrived on the DVMRP virtual interface.

Name, OID, and Syntax	Access	Description
snDvmrpVIfStatOutPrunePkts fdry.1.2.5.1.17.1.19 Syntax: Counter	Read only	Shows the number of prune packets that have been sent on the DVMRP virtual interface.
snDvmrpVIfStatDiscardPrunePkts fdry.1.2.5.1.17.1.20 Syntax: Counter	Read only	Shows the number of prune packets that have been discarded by the DVMRP virtual interface.

Chapter 11
VLANs

Refer to the following sections to determine what MIB objects are available for VLANs:

- “VLAN By Port Information Table” on page 11-1
- “VLAN by Port Membership Table” on page 11-6
- “Port VLAN Configuration Table” on page 11-7
- “VLAN by Protocol Configuration Table” on page 11-11
- “VLAN by IP Subnet Configuration Table” on page 11-14
- “VLAN by IPX Network Configuration Table” on page 11-16
- “VLAN by AppleTalk Cable Configuration Table” on page 11-18

Refer to the *Foundry Switch and Router Installation and Basic Configuration Guide* for details on the features discussed in this chapter.

VLAN By Port Information Table

This table is applies to a Layer 2 device if the object “snSwGroupOperMode” on page 5-14 is configured with a value of vlanByPort(2), allowing switch ports to be configured with a VLAN ID. Each VLAN switch port could have a number of VLAN IDs. Unless indicated below, the objects in this table applies to all Foundry devices.

Name, OID, and Syntax	Access	Description
snVLanByPortTable fdry.1.1.3.2.1	None	The VLAN by Port Information Table for Layer 2 switches.
snVLanByPortEntry fdry.1.1.3.2.1.1	None	An entry in the VLAN By Port Information table.
snVLanByPortVLanIndex fdry.1.1.3.2.1.1.1 Syntax: Integer	Read only	Shows the index to this table. The VLAN ID number must not be greater than the value of the object “snVLanGroupVlanMaxEntry” on page 5-16. Each VLAN Identifier can be a member of multiple ports.

Name, OID, and Syntax	Access	Description
snVLanByPortVLanId fdry.1.1.3.2.1.1.2	Read-write	The VLAN ID index to the this table. Each VLAN Identifier can be a member of multiple ports. Valid values: 1 – 4095.
snVLanByPortPortMask fdry.1.1.3.2.1.1.3 Syntax: PortMask	Read-write	Applies only to ServerIron stackable devices. Shows the standalone switch VLAN port membership. This object was obsoleted for Chassis devices.
snVLanByPortQos fdry.1.1.3.2.1.1.4 Syntax: Integer	Read-write	Shows the QoS settings for the devices. For Stackable device, the values can be one of the following: • low(0) – low priority • high(1) – high priority The Chassis devices, the value can be one of the following: • level0(0) • level1(1) • level2(2) • level3(3) • level4(4) • level5(5) • level6(6) • level7(7)
snVLanByPortStpMode fdry.1.1.3.2.1.1.5 Syntax: Integer	Read-write	Indicates whether or not Spanning Tree Protocol (STP) is enabled: • disabled(0) • enabled(1)
snVLanByPortStpPriority fdry.1.1.3.2.1.1.6 Syntax: Integer	Read-write	Shows the value of the dot1dStpPriority, which is the first two octets of the STP bridge ID. The STP bridge ID is eight octets long. This object contains the writable portion of the bridge ID. The last six octets are contained in the dot1dBaseBridgeAddress of the object “snVLanByPortBaseBridgeAddress”. Valid values: 1 – 65535.

Name, OID, and Syntax	Access	Description
snVLanByPortStpGroupMaxAge fdry.1.1.3.2.1.1.7 Syntax: Integer	Read-write	Shows the value of dot1dStpBridgeMaxAge, which is the last six octets or the STP bridge ID. All bridges use this object for MaxAge when this bridge is acting as the root. **NOTE:** 802.1D-1990 specifies that the range for this parameter is related to the value of dot1dStpBridgeHelloTime in the object "snVLanByPortStpGroupHelloTime" . The granularity of this timer is specified by 802.1D-1990 to be one second. An agent may return a badValue error if a set is attempted to a value which is not a whole number of seconds. (Refer to RFC 1493 Bridge MIB.) Valid values: 6 – 40.
snVLanByPortStpGroupHello Time fdry.1.1.3.2.1.1.8 Syntax: Integer	Read-write	Shows the value of the dot1dStpBridgeHelloTime, which is the value used by all bridges HelloTime when this bridge is acting as the root. The granularity of this timer is specified by 802.1D-1990 to be one second. An agent may return a badValue error if a set is attempted to a value which is not a whole number of seconds. (Refer to RFC1493 Bridge MIB). Valid values: 1 – 10
snVLanByPortStpGroupForwardDelay fdry.1.1.3.2.1.1.9 Syntax: Integer	Read-write	Shows the value of dot1dStpBridgeForwardDelay, which is the value used by all bridges for ForwardDelay when this bridge is acting as the root. **NOTE:** 802.1D-1990 specifies that the range for this parameter is related to the value of dot1dStpBridgeMaxAge, which is in the object "snVLanByPortStpGroupMaxAge". The granularity of this timer is specified by 802.1D-1990 to be one second. An agent may return a badValue error if a set is attempted to a value which is not a whole number of seconds. (Refer to RFC1493 Bridge MIB). Valid values: 2 –30.

Name, OID, and Syntax	Access	Description
snVLanByPortRowStatus fdry.1.1.3.2.1.1.10 Syntax: Integer	Read-write	Controls the management of the table rows. The values that can be written are: • delete(3) – Delete the row • create(4) – Create a new row • modify(5) – Modify an existing row If the row exists, then a SET with a value of create(4) returns a "bad value" error. Deleted rows are removed from the table immediately. The following values can be returned on reads: • noSuch(0) – No such row • invalid(1) – Row is inoperative • valid(2) – Row exists and is valid
snVLanByPortOperState fdry.1.1.3.2.1.1.11 Syntax: Integer	Read only	Activates the VLAN entry and sets it to running mode. • notActivated(0) – The VLAN entry is not activated and not in running mode • activated(1) – The VLAN entry is activated and in running mode Default: notActivated(0)
snVLanByPortBaseNumPorts fdry.1.1.3.2.1.1.12 Syntax: Integer	Read only	Indicates the number of ports controlled by this bridging entity.
snVLanByPortBaseType fdry.1.1.3.2.1.1.13 Syntax: Integer	Read only	Indicates what type of bridging this bridge can perform. If a bridge is actually performing a certain type of bridging this will be indicated by entries in the port table for the given type. • unknown(1) • transparent-only(2) • sourceroute-only(3) • srt(4)
snVLanByPortStpProtocolSpecification fdry.1.1.3.2.1.1.14 Syntax: Integer	Read only	Shows what version of STP is being run: • unknown(1) • decLb100(2) – Indicates the DEC LANbridge 100 Spanning Tree protocol • ieee8021d(3) – Returns "ieee8021d(3)". If future versions of the IEEE Spanning Tree Protocol are released that are incompatible with the current version, a new value will be defined

Name, OID, and Syntax	Access	Description
snVLanByPortStpMaxAge fdry.1.1.3.2.1.1.15 Syntax: Integer	Read only	Shows the value of dot1dStpMaxAge, which is the maximum age that the STP information can exist before it is discarded. The STP information is the information learned from the network. The value of this object is in hundredths of a second, and is the actual value that this bridge is currently using. (Refer to RFC1493 Bridge MIB.)
snVLanByPortStpHelloTime fdry.1.1.3.2.1.1.16 Syntax: Timeout	Read only	Shows the value of dot1dStpHelloTime, which is the interval between the transmission of Configuration bridge PDUs by this node. This value applies to any port when it is the root of the spanning tree or is trying to become the root. This is the actual value that this bridge is currently using. This value is in hundredths of a second. (Refer to RFC1493 Bridge MIB.)
snVLanByPortStpHoldTime fdry.1.1.3.2.1.1.17 Syntax: Integer	Read only	Shows the value of dot1dStpHoldTime, which is the interval when no more than two Configuration bridge PDUs shall be transmitted by this node. The interval is in units of hundredths of a second. (Refer to RFC1493 Bridge MIB.)
snVLanByPortStpForwardDelay fdry.1.1.3.2.1.1.18 Syntax: Timeout	Read only	Shows the value of dot1dStpForwardDelay, which is the time that controls how long a port stays in the listening and learning states as its spanning state moves towards the Forwarding state. This value is also used when a topology change has been detected and is underway. The value is used to age all dynamic entries in the Forwarding Database. This value is the one that this bridge is currently using, in contrast to dot1dStpBridgeForwardDelay in the object “snVLanByPortStpGroupForwardDelay”, which is the value that this bridge and all others would start using when this bridge becomes the root. This time value is in hundredths of a second, (Refer to RFC1493 Bridge MIB.)
snVLanByPortStpTimeSinceTopologyChange fdry.1.1.3.2.1.1.19 Syntax: Time ticks	Read only	Shows the time since the last time the bridge detected a topology change. This time is in hundredths of a second.
snVLanByPortStpTopChanges fdry.1.1.3.2.1.1.20 Syntax: Counter	Read only	Shows the total number of topology changes detected by this bridge since the management entity was last reset or initialized.
snVLanByPortStpRootCost fdry.1.1.3.2.1.1.21 Syntax: Integer	Read only	Shows the value of dot1dStpRootCost, which is the cost of the path to the root as seen from this bridge. (Refer to RFC1493 Bridge MIB.)

Name, OID, and Syntax	Access	Description
snVLanByPortStpRootPort fdry.1.1.3.2.1.1.22 Syntax: Integer	Read only	Shows the value of dot1dStpRootPort, which is the number of the port that offers the lowest cost path from this bridge to the root bridge. (Refer to RFC1493 Bridge MIB.)
snVLanByPortStpDesignatedRoot fdry.1.1.3.2.1.1.23 Syntax: BridgeId	Read only	Shows the value of dot1dStpDesignatedRoot, which is the bridge ID of the root of the spanning tree as determined by STP as executed by this node. This value is used as the Root Identifier parameter in all Configuration Bridge PDUs originated by this node. (Refer to RFC1493 Bridge MIB.)
snVLanByPortBaseBridgeAddress fdry.1.1.3.2.1.1.24 Syntax: BridgeId	Read only	Indicates the value of the dot1dBaseBridgeAddress, which is the MAC address used by this bridge when it must be referred to in a unique fashion. It is recommended that this is the smallest MAC address of all ports that belong to this bridge; however it must be unique. When concatenated with dot1dStpPriority a unique BridgeIdentifier is formed which is used in the STP.
snVLanByPortVLanName fdry.1.1.3.2.1.1.25 Syntax: Display string	Read-write	Indicates the name of the community string that is allowed to access the VLAN. Valid values: Up to 32 characters.
snVLanByPortRouterIntf fdry.1.1.3.2.1.1.26 Syntax: Integer	Read-write	Is optional and applies only to routers. It shows the ID of the virtual interface of a router to the VLAN. If an SNMP-Get value is zero, then this object was not configured. Valid values: 1 – 60.
snVLanByPortChassisPortMask fdry.1.1.3.2.1.1.27 Syntax: Octet string	Read-write	Applies only to devices running Release 07.1.00 and earlier. It is replaced by “snVLanByPortPortList” for later releases. It shows the VLAN switch port membership. This object has 32 octets.
snVLanByPortPortList fdry.1.1.3.2.1.1.28 Syntax: Octet string	Read-write	Applies to all Foundry devices, except ServerIron products. It lists the membership of a VLAN By Port. Each port index is a 16-bit integer in big endian order. The first 8-bit is the slot number, the other 8-bit is the port number.

VLAN by Port Membership Table

The following table is the Port VLAN (Layer 2 VLAN) port membership table.

Name, OID, and Syntax	Access	Description
snVLanByPortMemberTable fdry.1.1.3.2.6	None	This table is used to create or delete a port VLAN (Layer 2 VLAN) entry.

Name, OID, and Syntax	Access	Description
snVLanByPortMemberEntry fdry.1.1.3.2.6.1	None	An entry in the Port VLAN Port Membership table.
snVLanByPortMemberVLanId fdry.1.1.3.2.6.1.1 Syntax: Integer	Read only	The VLAN identifier (VLAN ID). There can be up to 4095 VLAN IDs.
snVLanByPortMemberPortId fdry.1.1.3.2.6.1.2 Syntax: Integer	Read only	The ifIndex which is a member of the port VLAN.
snVLanByPortMemberRowStatus fdry.1.1.3.2.6.1.3 Syntax: Integer	Read-write	Controls the management of the table rows. The values that can be written are: • delete(3) – Delete the row • create(4) – Create a new row • modify(5) – Modify an existing row If the row exists, then a SET with a value of create(4) returns a "bad value" error. Deleted rows are removed from the table immediately. The following values can be returned on reads: • noSuch(0) – No such row • other(1) – Some other case • valid(2) – Row exists and is valid

Port VLAN Configuration Table

Name, OID, and Syntax	Access	Description
snVLanByPortCfgTable fdry.1.1.3.2.7	None	The Port VLAN (Layer 2 VLAN) configuration table.
snVLanByPortCfgEntry fdry.1.1.3.2.7.1	None	An entry of the port VLAN configuration table.
snVLanByPortCfgVLanId fdry.1.1.3.2.7.1.1 Syntax: Integer	Read-write	The VLAN ID index to this table. Each VLAN Identifier can be a member of multiple ports. Valid values: 1 – 4095.

Name, OID, and Syntax	Access	Description
snVLanByPortCfgQos fdry.1.1.3.2.7.1.2 Syntax: Integer	Read-write	Shows the quality of service settings for the devices. For Stackable device, the values can be one of the following: • low(0) – low priority • high(1) – high priority The Chassis devices, the value can be one of the following: • level0(0) • level1(1) • level2(2) • level3(3) • level4(4) • level5(5) • level6(6) • level7(7)
snVLanByPortCfgStpMode fdry.1.1.3.2.7.1.3 Syntax: Integer	Read-write	Indicates whether or not Spanning Tree Protocol (STP) is enabled: • disabled(0) • enabled(1)
snVLanByPortCfgStpPriority fdry.1.1.3.2.7.1.4 Syntax: Integer	Read-write	Shows the value of the dot1dStpPriority, which is the first two octets of the STP bridge ID. The STP bridge ID is eight octets long. This object contains the the writable portion of the bridge ID. The last six octets are contained in the dot1dBaseBridgeAddress of the object “snVLanByPortBaseBridgeAddress”. Valid values: 1 – 65535.
snVLanByPortCfgStpGroupMaxAge fdry.1.1.3.2.7.1.5 Syntax: Integer	Read-write	Shows the value of dot1dStpBridgeMaxAge, which is the last six octets or the STP bridge ID. All bridges use this object for MaxAge when this bridge is acting as the root. **NOTE:** 802.1D-1990 specifies that the range for this parameter is related to the value of dot1dStpBridgeHelloTime in the object “snVLanByPortStpGroupHelloTime” . The granularity of this timer is specified by 802.1D-1990 to be one second. An agent may return a badValue error if a set is attempted to a value which is not a whole number of seconds. (Refer to RFC 1493 Bridge MIB.) Valid values: 6 – 40.

Name, OID, and Syntax	Access	Description
snVLanByPortCfgStpGroupHello Time fdry.1.1.3.2.7.1.6 Syntax: Integer	Read-write	Shows the value of the dot1dStpBridgeHelloTime, which is the value used by all bridges HelloTime when this bridge is acting as the root. The granularity of this timer is specified by 802.1D-1990 to be one second. An agent may return a badValue error if a set is attempted to a value which is not a whole number of seconds. (Refer to RFC1493 Bridge MIB). Valid values: 1 – 10
snVLanByPortCfgStpGroupForwa rdDelay fdry.1.1.3.2.7.1.7 Syntax: Integer	Read-write	Shows the value of dot1dStpBridgeForwardDelay, which is the value used by all bridges for ForwardDelay when this bridge is acting as the root. **NOTE:** 802.1D-1990 specifies that the range for this parameter is related to the value of dot1dStpBridgeMaxAge, which is in the object "snVLanByPortStpGroupMaxAge". The granularity of this timer is specified by 802.1D-1990 to be one second. An agent may return a badValue error if a set is attempted to a value which is not a whole number of seconds. (Refer to RFC1493 Bridge MIB). Valid values: 2 – 30.
snVLanByPortCfgBaseNumPorts fdry.1.1.3.2.7.1.8 Syntax: Integer	Read only	The number of ports controlled by this bridging entity.
snVLanByPortCfgBaseType fdry.1.1.3.2.7.1.9 Syntax: Integer	Read only	Indicates what type of bridging this bridge can perform. If a bridge is actually performing a certain type of bridging this will be indicated by entries in the port table for the given type. • unknown(1) • transparent-only(2) • sourceroute-only(3) • srt(4)
snVLanByPortCfgStpProtocolSpe cification fdry.1.1.3.2.7.1.10 Syntax: Integer	Read only	Shows what version of STP is being run: • unknown(1) • decLb100(2) – Indicates the DEC LANbridge 100 Spanning Tree protocol • ieee8021d(3) – Return "ieee8021d(3)". If future versions of the IEEE Spanning Tree Protocol are released that are incompatible with the current version, a new value will be defined

Name, OID, and Syntax	Access	Description
snVLanByPortCfgStpMaxAge fdry.1.1.3.2.7.1.11 Syntax: Integer	Read only	Shows the value of dot1dStpMaxAge, which is the maximum age that the STP information can exist before it is discarded. The STP information is the information learned from the network. The value of this object is in hundredths of a second, and is the actual value that this bridge is currently using. (Refer to RFC1493 Bridge MIB.)
snVLanByPortCfgStpHelloTime fdry.1.1.3.2.7.1.12 Syntax: Timeout	Read only	Shows the value of dot1dStpHelloTime, which is the interval between the transmission of Configuration bridge PDUs by this node. This value applies to any port when it is the root of the spanning tree or is trying to become the root. This is the actual value that this bridge is currently using. This value is in hundredths of a second. (Refer to RFC1493 Bridge MIB.)
snVLanByPortCfgStpHoldTime fdry.1.1.3.2.7.1.13 Syntax: Integer	Read only	Shows the value of dot1dStpHoldTime, which is the interval when no more than two Configuration bridge PDUs shall be transmitted by this node. The interval is in units of hundredths of a second. (Refer to RFC1493 Bridge MIB.)
snVLanByPortCfgStpForwardDelay fdry.1.1.3.2.7.1.14 Syntax: Timeout	Read only	Shows the value of dot1dStpForwardDelay, which controls how fast a port changes its spanning state when moving towards the forwarding state. The value determines how long the port stays in each of the listening and learning states, which precede the forwarding state. This value is also used, when a topology change has been detected and is underway, to age all dynamic entries in the forwarding database. **NOTE:** This value is the one that this bridge is currently using in contrast to dot1dStpBridgeForwardDelay, which is the value that this bridge and all others would start using when this bridge were to become the root. This time value is measured in hundredths of a second. (Refer to RFC1493 Bridge MIB.)
snVLanByPortCfgStpTimeSinceTopologyChange fdry.1.1.3.2.7.1.15 Syntax: Time ticks	Read only	Shows the time since the last time a topology change was detected by the bridge entity. This time is in hundredths of a second.
snVLanByPortCfgStpTopChanges fdry.1.1.3.2.7.1.16 Syntax: Counter	Read only	Shows the total number of topology changes detected by this bridge since the management entity was last reset or initialized.
snVLanByPortCfgStpRootCost fdry.1.1.3.2.7.1.17 Syntax: Integer	Read only	Shows the value of dot1dStpRootCost, which is the cost of the path to the root as seen from this bridge. (Refer to RFC1493 Bridge MIB.)

Name, OID, and Syntax	Access	Description
snVLanByPortCfgStpRootPort fdry.1.1.3.2.7.1.18 Syntax: Integer	Read only	Shows the value of dot1dStpRootPort, which is the port number of the port which offers the lowest cost path from this bridge to the root bridge. (Refer to RFC1493 Bridge MIB.)
snVLanByPortCfgStpDesignated Root fdry.1.1.3.2.7.1.19 Syntax: BridgeId	Read only	Shows the dot1dStpDesignatedRoot, which is the bridge identifier of the root of the spanning tree as determined by the Spanning Tree Protocol as executed by this node. This value is used as the root identifier parameter in all configuration bridge PDUs originated by this node. (Refer to RFC1493 Bridge MIB.)
snVLanByPortCfgBaseBridgeAdd ress fdry.1.1.3.2.7.1.20 Syntax: MAC address	Read only	Shows the MAC address used by this bridge when it must be referred to in a unique fashion. It is recommended that this be the numerically smallest MAC address of all ports that belong to this bridge.; however, it is only required to be unique. When concatenated with dot1dStpPriority a unique bridge identifier is formed which is used in the Spanning Tree Protocol.
snVLanByPortCfgVLanName fdry.1.1.3.2.7.1.21 Syntax: Display string	Read-write	Shows the name of the VLAN community string. Valid values: Up to 32 characters.
snVLanByPortCfgRouterIntf fdry.1.1.3.2.7.1.22 Syntax: Integer	Read-write	This object is optional. It identifies the virtual interface for the router to the VLAN, and applies only to the router. If an SNMP-Get value is zero, that means this object was not configured.
snVLanByPortCfgRowStatus fdry.1.1.3.2.7.1.23 Syntax: Integer	Read-write	Determines whether or not the VLAN will be deleted: • other(1) • valid(2) • delete(3)

VLAN by Protocol Configuration Table

The following table applies to protocol VLANs. Unless otherwise specified in the description for an object, all objects in the table applies to all Foundry devices.

Name, OID, and Syntax	Access	Description
snVLanByProtocolTable fdry.1.1.3.2.2	None	The VLAN by Protocol Configuration Table.
snVLanByProtocolEntry fdry.1.1.3.2.2.1	None	An entry in the VLAN By Protocol Configuration Table.
snVLanByProtocolVLanId fdry.1.1.3.2.2.1.1	Read only	Shows the VLAN ID index to both the VLAN By Port Info Table and this table.

Name, OID, and Syntax	Access	Description
snVLanByProtocolIndex fdry.1.1.3.2.2.1.2 Syntax: Integer	Read only	Shows the protocol used by this VLAN. The following IP/IPX protocols are used by VLANs in Layer 3 VLAN: • IP(1) • IPX(2) The following protocols are used in Layer 2 bridging: • appleTalk(3) • decNet(4) • netBios(5) • others(6) – other protocols which are defined here.
snVLanByProtocolDynamic fdry.1.1.3.2.2.1.3 Syntax: Integer	Read-write	Applies to only to switches. Indicates whether or not dynamic port inclusion is enabled: • disabled(0) • enabled(1)
snVLanByProtocolStaticMask fdry.1.1.3.2.2.1.4 Syntax: PortMask	Read-write	Applies to ServerIron stackable devices. It indicates the Standalone switch Protocol VLAN port membership (portmask) applied in static mode.
snVLanByProtocolExcludeMask fdry.1.1.3.2.2.1.5 Syntax: PortMask	Read-write	Applies to ServerIron stackable devices. It indicates the Standalone switch Protocol VLAN port membership (portmask) applied in exclusive mode.
snVLanByProtocolRouterIntf fdry.1.1.3.2.2.1.6 Syntax: Integer	Read-write	Applies to routers only and is optional. It shows the virtual interface of a router to the VLAN This object is not configured if an SNMP-Get is equal to zero
snVLanByProtocolRowStatus fdry.1.1.3.2.2.1.7 Syntax: Integer	Read-write	Applies to all Foundry devices, except for ServerIron products. Controls the management of the table rows. The values that can be written are: • delete(3) – Delete the row • create(4) – Create a new row • modify(5) – Modify an existing row If the row exists, then a SET with a value of create(4) returns a "bad value" error. Deleted rows are removed from the table immediately. The following values can be returned on reads: • noSuch(0) – No such row • invalid(1) – Row is inoperative • valid(2) – Row exists and is valid

Name, OID, and Syntax	Access	Description
snVLanByProtocolDynamicMask fdry.1.1.3.2.2.1.8 Syntax: PortMask	Read only	Applies only to stackable ServerIron products. It shows the portmask, which is the Standalone switch Protocol VLAN active port membership. This object was obsoleted for Chassis devices.
snVLanByProtocolChassisStaticMask fdry.1.1.3.2.2.1.9 Syntax: Octet string	Read-write	Applies to all Foundry devices, except for ServerIron products. This object has 32 octets. It has been obsoleted after Release 07.1.00 and replaced by the object “snVLanByProtocolStaticPortList”. For Release 07.1.00 and earlier, this object shows the Chassis Protocol VLAN port membership applied in static mode.
snVLanByProtocolChassisExcludeMask fdry.1.1.3.2.2.1.10 Syntax: Octet string	Read-write	Applies to all Foundry devices, except for ServerIron products. This object has 32 octets. It has been obsoleted after Release 07.1.00 and replaced by the object “snVLanByProtocolExcludePortList” . For Release 07.1.00 and earlier, this object shows the Chassis Protocol VLAN port membership applied in exclusive mode.
snVLanByProtocolChassisDynamicMask fdry.1.1.3.2.2.1.11 Syntax: Octet string	Read-write	Applies to all Foundry devices, except for ServerIron products. This object has 32 octets. It has been obsoleted after Release 07.1.00 and replaced by the object “snVLanByProtocolDynamicPortList”. For Release 07.1.00 and earlier, this object shows the Chassis Protocol VLAN active port membership.
snVLanByProtocolVLanName fdry.1.1.3.2.2.1.12 Syntax: Display string	Read-write	Shows the name of the community string that is allowed to access the VLAN. Valid values: Up to 32 characters.
snVLanByProtocolStaticPortList fdry.1.1.3.2.2.1.13 Syntax: Octet string	Read-write	Applies to all Foundry devices, except for ServerIron products. This object is an index of ports that are the configured to be members of the Protocol VLAN. Each port index is a 16-bit integer in big endian order. The first 8-bits show the slot number; the other 8-bit form the port number.
snVLanByProtocolExcludePortList fdry.1.1.3.2.2.1.14 Syntax: Octet string	Read-write	Applies to all Foundry devices, except for ServerIron products. This object is an index of ports that are excluded from port membership of the Protocol VLAN. Each port index is a 16-bit integer in big endian order. The first 8-bits show the slot number; the other 8-bit form the port number.
snVLanByProtocolDynamicPortList fdry.1.1.3.2.2.1.15 Syntax: Octet string	Read only	Applies to all Foundry devices, except for ServerIron products. This object is an index of ports that can dynamically join the port membership of the Protocol VLAN. Each port index is a 16-bit integer in big endian order. The first 8-bits show the slot number; the other 8-bit form the port number.

VLAN by IP Subnet Configuration Table

The following table applies to protocol VLANs that use the IP routing protocol. Unless otherwise stated in the object description, all objects in this table apply to all Foundry devices.

The remaining objects for IP are presented in the chapter “Global Router and IP” on page 13-1.

Name, OID, and Syntax	Access	Description
snVLanByIpSubnetTable fdry.1.1.3.2.3	None	The VLAN by IP Subnet Configuration Table.
snVLanByIpSubnetEntry fdry.1.1.3.2.3.1	None	An entry in the VLAN By IP Subnet Configuration table.
snVLanByIpSubnetVLanId fdry.1.1.3.2.3.1.1 Syntax: Integer	Read only	Shows the VLAN ID index to both of the VLAN By Port Info Table and this table. Valid values: 1 – 4095.
snVLanByIpSubnetIpAddress fdry.1.1.3.2.3.1.2 Syntax: IpAddress	Read only	Shows the IP address for the subnet of the protocol-based IP VLAN.
snVLanByIpSubnetSubnetMask fdry.1.1.3.2.3.1.3 Syntax: IpAddress	Read only	Subnet mask associated with the subnet IP address.
snVLanByIpSubnetDynamic fdry.1.1.3.2.3.1.4 Syntax: Integer	Read-write	Applies only to switches. Indicates whether or not dynamic port inclusion is enabled: • disabled(0) • enabled(1)
snVLanByIpSubnetStaticMask fdry.1.1.3.2.3.1.5 Syntax: PortMask	Read-write	Applies only to stackable ServerIron products. It shows the port membership of the standalone switch VLAN by Subnet in static mode.
snVLanByIpSubnetExcludeMask fdry.1.1.3.2.3.1.6 Syntax: PortMask	Read-write	Applies only to stackable ServerIron products. It shows the port membership of the standalone switch VLAN by Subnet in exclusive mode.
snVLanByIpSubnetRouterIntf fdry.1.1.3.2.3.1.7 Syntax: Integer	Read-write	Applies only to routers and is optional. It shows the virtual interface of a router to the VLAN. Valid values: 0 – 60. It is not configured if an SNMP-Get is equal to zero.

Name, OID, and Syntax	Access	Description
snVLanByIpSubnetRowStatus fdry.1.1.3.2.3.1.8 Syntax: Integer	Read-write	Controls the management of the table rows. The values that can be written are: • delete(3) – Delete the row • create(4) – Create a new row • modify(5) – Modify an existing row If the row exists, then a SET with a value of create(4) returns a "bad value" error. Deleted rows are removed from the table immediately. The following values can be returned on reads: • noSuch(0) – No such row • invalid(1) – Row is inoperative • valid(2) – Row exists and is valid
snVLanByIpSubnetDynamicMask fdry.1.1.3.2.3.1.9 Syntax: PortMask	Read only	Applies only to ServerIron stackable products. It shows the standalone switch VLAN by Subnet active port membership.
snVLanByIpSubnetChassisStaticMask fdry.1.1.3.2.3.1.10 Syntax: Octet string	Read-write	Applies to all Foundry devices, except ServerIron products, running Release 07.1.00. This object has 32 octets. It is replaced by the object “snVLanByIpSubnetStaticPortList” in later releases. It shows the chassis VLAN by Subnet port membership applied in static mode.
snVLanByIpSubnetChassisExcludeMask fdry.1.1.3.2.3.1.11 Syntax: Octet string	Read-write	Applies to all Foundry devices, except ServerIron products, running Release 07.1.00. This object has 32 octets. It is replaced by the object “snVLanByIpSubnetExcludePortList” in later releases. It shows the chassis VLAN by Subnet port membership applied in exclusive mode.
snVLanByIpSubnetChassisDynamicMask fdry.1.1.3.2.3.1.12 Syntax: Octet string	Read-write	Applies to all Foundry devices, except ServerIron products, running Release 07.1.00. This object has 32 octets. It is replaced by the object “snVLanByIpSubnetDynamicPortList” in later releases. It shows the chassis VLAN by Subnet port membership applied in exclusive mode.
snVLanByIpSubnetVLanName fdry.1.1.3.2.3.1.13 Syntax: Display string	Read-write	Shows the name of the community string that is allowed to access the VLAN. Valid values: Up to 32 characters.
snVLanByIpSubnetStaticPortList fdry.1.1.3.2.3.1.14 Syntax: Octet string	Read-write	Applies to all Foundry devices, except for ServerIron products. This object is an index of ports that are the configured to be members of the VLAN by IP Subnet. Each port index is a 16-bit integer in big endian order. The first 8-bits show the slot number; the other 8-bit form the port number.

Name, OID, and Syntax	Access	Description
snVLanByIpSubnetExcludePortList fdry.1.1.3.2.3.1.15 Syntax: Octet string	Read-write	Applies to all Foundry devices, except for ServerIron products. This object is an index of ports that are excluded from port membership of the VLAN by IP Subnet. Each port index is a 16-bit integer in big endian order. The first 8-bits show the slot number; the other 8-bit form the port number.
snVLanByIpSubnetDynamicPortList fdry.1.1.3.2.3.1.16 Syntax: Octet string	Read only	Applies to all Foundry devices, except for ServerIron products. This object is an index of ports that can dynamically join the port membership of the VLAN By IP Subnet. Each port index is a 16-bit integer in big endian order. The first 8-bits show the slot number; the other 8-bit form the port number.

VLAN by IPX Network Configuration Table

The following table applies to protocol VLANs that use the IPX routing protocol. Unless otherwise stated in the object description, all objects in this table apply to all Foundry devices.

The remaining objects for IP are presented in the chapter “IPX” on page 17-1.

Name, OID, and Syntax	Access	Description
snVLanByIpxNetTable fdry.1.1.3.2.4	None	An entry of the VLAN By IPX Network Number Table.
snVLanByIpxNetEntry fdry.1.1.3.2.4.1	None	An entry in the VLAN by IPX Network Configuration table.
snVLanByIpxNetVLanId fdry.1.1.3.2.4.1.1 Syntax: Integer	Read only	The VLAN ID index to both of the VLAN By Port Info Table and this table. Valid values: 1 – 4095.
snVLanByIpxNetNetworkNum fdry.1.1.3.2.4.1.2 Syntax: Octet string	Read only	Shows the IPX Network Number. This object has four octets.
snVLanByIpxNetFrameType fdry.1.1.3.2.4.1.3 Syntax: Integer	Read only	Shows the frame type for the Layer 3 VLAN: • notApplicable(0) – If none of the options below is selected. • ipxEthernet8022(1) • ipxEthernet8023(2) • ipxEthernetII(3) • ipxEthernetSnap(4) Each IPX Network Number must be assigned with one unique Frame type; otherwise an SNMP-SET error will be returned.

Name, OID, and Syntax	Access	Description
snVLanByIpxNetDynamic fdry.1.1.3.2.4.1.4 Syntax: Integer	Read-write	Applies only to switches. It indicates whether or not dynamic port inclusion is enabled. • disabled(0) • enabled(1)
snVLanByIpxNetStaticMask fdry.1.1.3.2.4.1.5 Syntax: PortMask	Read-write	Applies only to stackable ServerIron products. It shows the VLAN by IPX network port membership applied in static mode.
snVLanByIpxNetExcludeMask fdry.1.1.3.2.4.1.6 Syntax: PortMask	Read-write	Applies only to stackable ServerIron products. It shows the VLAN by IPX network port membership applied in exclusive mode.
snVLanByIpxNetRouterIntf fdry.1.1.3.2.4.1.7 Syntax: Integer	Read-write	Applies only to routers and is optional. It shows the virtual interface of a router to the VLAN. Valid values: 0 – 60; however, if this object is not configured if an SNMP-Get is equal to zero.
snVLanByIpxNetRowStatus fdry.1.1.3.2.4.1.8 Syntax: Integer	Read-write	Controls the management of the table rows. The values that can be written are: • delete(3) – Delete the row • create(4) – Create a new row • modify(5) – Modify an existing row If the row exists, then a SET with a value of create(4) returns a "bad value" error. Deleted rows are removed from the table immediately. The following values can be returned on reads: • noSuch(0) – No such row • invalid(1) – Row is inoperative • valid(2) – Row exists and is valid
snVLanByIpxNetDynamicMask fdry.1.1.3.2.4.1.9 Syntax: PortMask	Read only	Applies only to stackable ServerIron products. It shows the VLAN By IPX network active port membership.
snVLanByIpxNetChassisStaticMask fdry.1.1.3.2.4.1.10 Syntax: Octet string	Read-write	Applies to all Foundry devices running Release 07.1.00 and earlier, except for ServerIron products. This object has 32 octets. It is replaced by snVLanByIpxNetStaticPortList in later releases. It shows the chassis VLAN by IPX network port membership applied in static mode.

Name, OID, and Syntax	Access	Description
snVLanByIpxNetChassisExclude Mask fdry.1.1.3.2.4.1.11 Syntax: Octet string	Read-write	Applies to all Foundry devices running Release 07.1.00 and earlier, except for ServerIron products. This object has 32 octets. It is replaced by snVLanByIpxNetExcludePortList in later releases. It shows the chassis VLAN by IPX network port membership applied in exclusive mode.
snVLanByIpxNetChassisDynamic Mask fdry.1.1.3.2.4.1.12 Syntax: Octet string	Read only	Applies to all Foundry devices running Release 07.1.00 and earlier, except for ServerIron products. This object has 32 octets. It is replaced by snVLanByIpxNetDynamicPortList in later releases. It shows the chassis VLAN by IPX network port membership.
snVLanByIpxNetVLanName fdry.1.1.3.2.4.1.13 Syntax: Display string	Read-write	Applies to all Foundry devices except for ServerIron products. It shows the name of the community string that can access this VLAN. Valid values: Up to 32 characters.
snVLanByIpxNetStaticPortList fdry.1.1.3.2.4.1.14 Syntax: Octet string	Read-write	Applies to all Foundry devices, except ServerIron products. It lists the membership of a VLAN By IPX network. Each port index is a 16-bit integer in big endian order. The first 8-bit is the slot number, the other 8-bit is the port number.
snVLanByIpxNetExcludePortList fdry.1.1.3.2.4.1.15 Syntax: Octet string	Read-write	Applies to all Foundry devices, except ServerIron products. It lists the ports that are excluded from the VLAN by IPX network membership. Each port index is a 16-bit integer in big endian order. The first 8-bit is the slot number, the other 8-bit is the port number.
snVLanByIpxNetDynamicPortList fdry.1.1.3.2.4.1.16 Syntax: Octet string	Read only	Applies to all Foundry devices, except ServerIron products. It lists the ports that can dynamically join the membership of the VLAN by IPX network. Each port index is a 16-bit integer in big endian order. 8-bit is the slot number, the other 8-bit is the port number.

VLAN by AppleTalk Cable Configuration Table

The following table applies to protocol VLANs that use AppleTalk the routing protocol. Objects in this table apply to all Foundry devices, except ServerIron products.

The remaining objects for IP are presented in the chapter “AppleTalk” on page 18-1.

Name, OID, and Syntax	Access	Description
snVLanByATCableTable fdry.1.1.3.2.5	None	A table Of VLAN by AppleTalk Network Number.

Name, OID, and Syntax	Access	Description
snVLanByATCableEntry fdry.1.1.3.2.5.1	None	An entry of the AppleTalk Cable VLAN table.
snVLanByATCableVLanId fdry.1.1.3.2.5.1.1 Syntax: Integer	Read only	The VLAN ID of a port VLAN to which the AppleTalk Cable VLAN attaches. Valid values: 1 – 4095.
snVLanByATCableIndex fdry.1.1.3.2.5.1.2 Syntax: Integer	Read only	AppleTalk Cable VLAN index number.
snVLanByATCableRouterIntf fdry.1.1.3.2.5.1.3 Syntax: Integer	Read-write	It shows the virtual interface of a router to the AppleTalk CAble VLAN Valid values: 0 – 60; however, an SNMP-Get will equal to zero if this object is not configured. Only router products accept the SNMP-SET operation.
snVLanByATCableRowStatus fdry.1.1.3.2.5.1.4 Syntax: Integer	Read-write	Controls the management of the table rows. The values that can be written are: • delete(3) – Delete the row • create(4) – Create a new row • modify(5) – Modify an existing row If the row exists, then a SET with a value of create(4) returns a "bad value" error. Deleted rows are removed from the table immediately. The following values can be returned on reads: • noSuch(0) – No such row • invalid(1) – Row is inoperative • valid(2) – Row exists and is valid
snVLanByATCableChassisStatic Mask fdry.1.1.3.2.5.1.5 Syntax: Octet string	Read-write	Applies only to Foundry devices running Release 07.1.00 and earlier. It is replaced in earlier releases by the object snVLanByATCableStaticPortList. Shows a list of ports that are statically configured to become port members of a VLAN. It has 32 octets.
snVLanByATCableVLanName fdry.1.1.3.2.5.1.6 Syntax: Display string	Read-write	Shows the community string that can access this VLAN. Valid values: Up to 32 characters.
snVLanByATCableStaticPortList fdry.1.1.3.2.5.1.7 Syntax: Octet string	Read-write	Shows a list of port indices that configured to be membership of the AppleTalk Cable VLAN. Each port index is a 16-bit integer in big endian order. The first 8-bits contain the slot number, the other 8-bits contain the port number.

Chapter 12
Router Redundancy Protocols

The objects in this chapter are for the following protocols:

- Foundry Standby Routing Protocol (FSRP) allows alternate paths to be provided to a host using a virtual router. FSRP is a proprietary router redundancy protocol that was available in Foundry devices before the other router redundancy protocols. The protocol has been retired in B2R flash images, starting with IronWare release 07.6.01. (Refer to “FSRP Objects” on page 12-1.)
- Virtual Router Redundancy Protocol (VRRP) is a standard router redundancy protocol described in RFC 2338. VRRP is a protocol that provides redundancy to routers within a LAN. VRRP allows you to provide alternate router paths for a host without changing the IP address or MAC address by which the host knows its gateway. The VRRP feature is available in Foundry Layer 3 Switches. (Refer to the sections “VRRP Global Variables” on page 12-4, “VRRP Interface Tables” on page 12-5, and “VRRP Virtual Router Parameters Tables” on page 12-7.)
- VRRP Extended (VRRPE) is an enhanced version of VRRP that overcomes limitations in the standard protocol. The VRRPE feature is also available in Foundry Layer 3 Switches. (Refer to the sections “VRRP Global Variables” on page 12-4, “VRRP Interface Tables” on page 12-5, and “VRRP Virtual Router Parameters Tables” on page 12-7.)
- Virtual Switch Redundancy Protocol (VSRP), which is a Foundry proprietary protocol that provides redundancy and sub-second failover in Layer 2 and Layer 3 mesh topologies. Based on the Foundry Virtual Router Redundancy Protocol Extended (VRRPE), VSRP provides one or more backups for a Layer 2 Switch or Layer 3 Switch. If the active Layer 2 Switch or Layer 3 Switch becomes unavailable, one of the backups takes over as the active device and continues forwarding traffic for the network. (Refer to “VSRP” on page 12-18.)

NOTE: VRRP, VRRPE, and VSRP are separate protocols. You cannot use them together.

This chapter presents the objects for the protocols. Traps for FSRP and VRRP are discussed in the section “Traps and Objects to Enable Traps” on page 21-1.

Refer to the *Foundry Enterprise Configuration and Management Guide* for details on the features discussed in this chapter.

FSRP Objects

The Foundry Standby Routing Protocol (FSRP) allows alternate paths to be provided to a host. To provide path redundancy between given hosts, a virtual router is created. To create a virtual router, unique IP addresses are assigned to ports on existing routers in the network—routers that could provide a path between the given hosts.

For more information on FSRP, refer to the *Foundry Enterprise Configuration and Management Guide*. This chapter presents the objects for FSRP. They are available in all Foundry devices, except ServerIron products.

For objects referring to FSRP traps, refer to the chapter “Traps and Objects to Enable Traps” on page 21-1.

This section presents the following objects:

FSRP Global Variables

The following object applies to all FSRP interfaces.

Name, OID, and Syntax	Access	Description
snFsrpGroupOperMode fdry.1.2.7.1.1 Syntax: Integer	Read-write	Indicates if FSRP is enabled: • disabled(0) • enabled(1) **NOTE:** Do not enable both FSRP and VRRP. Foundry Networks recommends that you use only one of these router redundancy protocols on a Layer 3 Switch. Default: disabled(0)

FSRP Interface Table

The FSRP Interface Table describes the configuration of FSRP interfaces.

Name, OID, and Syntax	Access	Description
snFsrpIfTable fdry.1.2.7.2.1	None	The FSRP Interface Table.
snFsrpIfEntry fdry.1.2.7.2.1.1	None	An entry in the FSRP Interface Table.
snFsrpIfPort fdry.1.2.7.2.1.1.1 Syntax: Integer	Read only	Identifies the physical router port number of this FSRP interface.
snFsrpIfIpAddress fdry.1.2.7.2.1.1.2 Syntax: IpAddress	Read only	Identifies the IP address of the physical router port of this interface.
snFsrpIfVirRtrIpAddr fdry.1.2.7.2.1.1.3 Syntax: IpAddress	Read-write	Identifies the IP address of the virtual router for the interface. The Virtual Router IP address needs to be configured on the interface before the Redundant Router Function can operate on the interface. This address has to be same on all the routers that are going to participate in the Redundant Router Function on a given subnet.

Name, OID, and Syntax	Access	Description
snFsrpIfOtherRtrIpAddr fdry.1.2.7.2.1.1.4 Syntax: IpAddress	Read-write	Identifies the IP address of the other router on this IP subnet. The other router is the router that operates FSRP and to which the keep alive message needs to be sent by this router. This object must be configured in order for FSRP to work correctly
snFsrpIfPreferLevel fdry.1.2.7.2.1.1.5 Syntax: Integer	Read-write	Decides which router should become the active router for the interface. The active router is the one with the higher priority. A higher number indicates a higher priority. Valid values: 1 – 255 Default: 100
snFsrpIfTrackPortMask Syntax: PortMask	Read-write	This object is not supported in Foundry devices.
snFsrpIfRowStatus fdry.1.2.7.2.1.1.7 Syntax: Integer	Read-write	Controls the management of the table rows. The values that can be written are: • delete(3) – Delete the row • create(4) – Create a new row • modify(5) – Modify an existing row If the row exists, then a SET with a value of create(4) returns a "bad value" error. Deleted rows are removed from the table immediately. The following values can be returned on reads: • noSuch(0) – No such row • invalid(1) – Row is inoperative • valid(2) – Row exists and is valid
snFsrpIfState fdry.1.2.7.2.1.1.8 Syntax: Integer	Read only	Specifies the state of the FSRP Router interface: • init(0) – initialization state • negotiating(1) – negotiating state • standby(2) – standby state • active(3) – active state
snFsrpIfKeepAliveTime fdry.1.2.7.2.1.1.9 Syntax: Integer	Read-write	Defines the heartbeat of the interface. Valid values: 1 – 120 seconds. Default: 3 seconds
snFsrpIfRouterDeadTime fdry.1.2.7.2.1.1.10 Syntax: Integer	Read-write	Defines the hold time of the FSRP router. Valid values: 3 – 255 seconds Default: nine seconds

Name, OID, and Syntax	Access	Description
snFsrpIfChassisTrackPortMask fdry.1.2.7.2.1.1.11 Syntax: Octet string	Read-write	Applies only to chassis products running Release 07.1.00 software. This object is replaced by the “snFsrpIfTrackPortList” object in later releases. For chassis products running Release 07.1.00, this object shows the chassis router FSRP Track port membership. It specifies the identity of the physical port whose state is to be monitored. Each bit is a port of the system. Valid values: Up to 32 octets Default: 0 If this object is configured, then the preference level of this interface will be adjusted dynamically, depending on the state of the track port. The preference level is configured in the “snFsrpIfPreferLevel” object. The interface’s preference level is reduced by the value of the preference level parameter when the track port states first changes from UP to DOWN. When the track port comes up, the interface’s preference level is increased by the amount specified by the preference level.
snFsrpIfTrackPortList fdry.1.2.7.2.1.1.12 Syntax: Octet string	Read-write	Shows the router FSRP physical track port membership. It specifies the identity of the physical port whose state is to be monitored. Each port index is a 16-bit integer in big endian order. 8-bit is the slot number, the other 8-bit is the port number. Default: 0 length octet string If this object is configured, then the preference level of this interface will be adjusted dynamically, depending on the state of the track port. The preference level is configured in the “snFsrpIfPreferLevel” object. The interface’s preference level is reduced by the value of the preference level parameter when the track port states first changes from UP to DOWN. When the track port comes up, the interface’s preference level is increased by the amount specified by the preference level.

VRRP Global Variables

The following table contains the global objects that applies to VRRP, VRRPE, and VSRP protocol.

Name, OID, and Syntax	Access	Description
snVrrpGroupOperMode fdry.1.2.12.1.1 Syntax: Integer	Read-write	Indicates if VRRP is enabled for this system: • disabled(0) – Disable VRRP • enabled(1) – Activate VRRP Default: disabled(0)

Name, OID, and Syntax	Access	Description
snVrrpIfMaxNumVridPerIntf fdry.1.2.12.1.3 Syntax: Integer	Read only	Indicates the maximum number of Virtual Router ID (VRID) that can be configured per interface.
snVrrpIfMaxNumVridPerSystem fdry.1.2.12.1.4 Syntax: Integer	Read only	Indicates the maximum number of VRID per system.
snVrrpClearVrrpStat fdry.1.2.12.1.5 Syntax: Integer	Read-write	Indicates if the system has been configured to clear VRRP statistics: • normal(0) • clear(1)
snVrrpGroupOperModeVrrpextended fdry.1.2.12.1.6 Syntax: Integer	Read-write	A new object in the snVrrpGroupOperMode group. It indicates if VRRPE is enabled on this device: • disabled(0) • enabled(1) Default: disabled(0).

VRRP Interface Tables

This section presents:

- “VRRP Interface Table” on page 12-5
- “VRRP and VRRPE Interface Table 2” on page 12-6

VRRP Interface Table

The objects in this section apply to VRRP, VRRPE, and VSRP, depending on which protocol is enabled in the device. This table has been replaced by the “snVrrpIf2Table” table, which is presented in the “VRRP and VRRPE Interface Table 2” on page 12-6

Name, OID, and Syntax	Access	Description
snVrrpIfTable fdry.1.2.12.2.1	None	The VRRP Interface Table.
snVrrpIfEntry fdry.1.2.12.2.1.1	None	An entry in the VRRP Interface Table.
snVrrpIfPort fdry.1.2.12.2.1.1.1 snVrrpIfPort	Read only	Shows the IP port of this VRRP or VRRPE interface.

Name, OID, and Syntax	Access	Description
snVrrpIfAuthType fdry.1.2.12.2.1.1.2 snVrrpIfPort	Read-write	Indicates the authentication type of this interface. • noAuth(0) • simpleTextPasswd(1) • ipAuthHeader(2)
snVrrpIfAuthPassword fdry.1.2.12.2.1.1.3 Syntax: Octet string	Read-write	Shows the simple text password for this interface. You can use a simple text password if the object "snVrrpIfAuthType" object is set to simpleTextPasswd(1).
snVrrpIfRxHeaderErrCnts fdry.1.2.12.2.1.1.4 Syntax: Counter	Read only	Shows the number of VRRP or VRRPE packets received by the interface that had a header error.
snVrrpIfRxAuthTypeErrCnts fdry.1.2.12.2.1.1.5 Syntax: Counter	Read only	Shows the number of VRRP or VRRPE packets received by the interface that had an authentication error.
snVrrpIfRxAuthPwdMismatchErrCnts fdry.1.2.12.2.1.1.6 Syntax: Counter	Read only	Shows the number of VRRP or VRRPE packets received by the interface that had a password value that does not match the password used by the interface for authentication.
snVrrpIfRxVridErrCnts fdry.1.2.12.2.1.1.7 Syntax: Counter	Read only	Shows the number of VRRP or VRRPE packets received by the interface that contained a VRID that is not configured on this interface.

VRRP and VRRPE Interface Table 2

The following table replaces the "snVrrpIfTable" (presented in the section "VRRP Interface Table" on page 12-5), which uses the slot/port number to index an entry. This new table uses the ifindex to present the configuration and statistics of VRRP and VRRPE interfaces. Each entry in the table describes one VRRP or VRRPE interface.

Name, OID, and Syntax	Access	Description
snVrrpIf2Table fdry.1.2.12.4.1	None	The VRRP and VRRPE table 2 for interfaces, using the ifindex
snVrrpIf2Entry fdry.1.2.12.4.1.1	None	An entry in the table
snVrrpIf2AuthType fdry.1.2.12.4.1.1.1 Syntax: Integer	Read-write	The authentication type of the interface: • noAuth(0) • simpleTextPasswd(1) • ipAuthHeader(2)

Name, OID, and Syntax	Access	Description
snVrrpIf2AuthPassword fdry.1.2.12.4.1.1.2 Syntax: Octet string	Read-write	Password for the interface if the snVrrpIf2AuthType type is set to simpleTextPasswd(1).
snVrrpIf2RxHeaderErrCnts fdry.1.2.12.4.1.1.3 Syntax: Counter	Read only	The number of packets received by the interface that had a header error.
snVrrpIf2RxAuthTypeErrCnts fdry.1.2.12.4.1.1.4 Syntax: Counter	Read only	The number of packets received by the interface that had an authentication error.
snVrrpIf2RxAuthPwdMismatchErr Cnts fdry.1.2.12.4.1.1.5 Syntax: Counter	Read only	The number of packets received by the interface that had a password value that does not match the password used by the interface for authentication.
snVrrpIf2RxVridErrCnts fdry.1.2.12.4.1.1.6 Syntax: Counter	Read only	The number of packets received by the interface that contained a VRID that is not configured on this interface.

VRRP Virtual Router Parameters Tables

There are two types of VRRP Virtual Router Parameters Table:

- “VRRP Virtual Router Table” on page 12-7
- “VRRP and VRRPE Parameter Table 2” on page 12-13

VRRP Virtual Router Table

This table has been replaced by the “snVrrpVirRtr2Table” in IronWare release 07.6.01. The new table is presented in the section “VRRP and VRRPE Parameter Table 2” on page 12-13.

Name, OID, and Syntax	Access	Description
snVrrpVirRtrTable fdry.1.2.12.3.1	None	The VRRP Virtual Router Table
snVrrpVirRtrEntry fdry.1.2.12.3.1.1	None	An entry in the VRRP Virtual Router Table.
snVrrpVirRtrPort fdry.1.2.12.3.1.1.1 Syntax: Integer	Read only	Shows the port number of this VRRP interface.

Name, OID, and Syntax	Access	Description
snVrrpVirRtrId fdry.1.2.12.3.1.1.2 Syntax: Integer	Read only	Shows the VRID that has been configured on this interface. If multiple VRIDs are configured, there is an entry for each VRID.
snVrrpVirRtrOwnership fdry.1.2.12.3.1.1.3 Syntax: Integer	Read-write	Indicates the owner of the router interface. The owner or master router owns the IP addresses associated with the VRID: • incomplete(0) – no IP address has been assigned to this VRRP router interface. • owner(1) – The owner or the master router is the owner of the VRRP router interface. • backup(2) – The backup router is the owner of the interface.
snVrrpVirRtrCfgPriority fdry.1.2.12.3.1.1.4 Syntax: Integer	Read-write	Applies only if the object “snVrrpVirRtrOwnership” is set to backup(2). It indicates the backup router’s preferability to becoming the active router for the interface. The higher the number, the higher the priority. If two or more devices are tied with the highest priority, the Backup interface with the highest IP address becomes the active router for the VRID. Valid values: 3 – 254 Default: 100
snVrrpVirRtrTrackPriority fdry.1.2.12.3.1.1.5 Syntax: Integer	Read-write	Applies to interfaces that are configured with track ports. It indicates the priority of the track ports. A higher the number indicates a higher priority. Track port priority is always lower than the “snVrrpVirRtrCfgPriority” priority. This object is adjusted dynamically with the “snVrrpVirRtrCurrPriority” object when the Track Port state first changes from up to down. Valid values: 1 – 254
snVrrpVirRtrCurrPriority fdry.1.2.12.3.1.1.6 Syntax: Integer	Read only	The current VRRP priority of this Layer 3 Switch for the VRID. The current priority can differ from the configured priority for the following reasons: • The VRID is still in the initialization stage and has not yet become a Master or Backup. In this case, the current priority is 0. • The VRID is configured with track ports and the link on a tracked interface has gone down. A higher the number indicates a higher priority. This object is adjusted dynamically with the “snVrrpVirRtrTrackPriority” object. Valid values: 1 – 254

Name, OID, and Syntax	Access	Description
snVrrpVirRtrHelloInt fdry.1.2.12.3.1.1.7 Syntax: Integer	Read-write	Shows the number of seconds between hello messages that are sent between the master and the backup. Valid values: 1 – 84 seconds Default: 1 second
snVrrpVirRtrDeadInt fdry.1.2.12.3.1.1.8 Syntax: Integer	Read-write	Applies only to VRRP backups. It shows the configured value for the dead interval. The dead interval is the number of seconds that a backup router waits for a Hello message from the VRID master before determining that the Master is no longer active. If the Master does not send a Hello message before the dead interval expires, the backups negotiate (compare priorities) to select a new Master for the VRID. Valid values: 0 – 84 seconds. A value of 0 means that this object has not been configured. Default: 0 seconds
snVrrpVirRtrPreemptMode fdry.1.2.12.3.1.1.9 Syntax: Integer	Read-write	Indicates if the backup preempt mode is enabled. The Backup preempt mode prevents a backup router with a higher VRRP priority from taking control of the VRID from another backup router that has a lower priority, but has already assumed control of the VRID: • disabled(0) – Prohibit preemption • enabled(1) – Allow preemption Default: enabled(1)
snVrrpVirRtrState fdry.1.2.12.3.1.1.10 Syntax: Integer	Read only	Specifies the state of the VRRP Router's interface: • init(0) – Initialization state. • master(1) – Master state. • backup(2) – Backup state.
snVrrpVirRtrActivate fdry.1.2.12.3.1.1.11 Syntax: Integer	Read-write	Indicates if the VRRP Router feature is enabled. • disabled(0) – The VRRP Router is deactivated • enabled(1) – The VRRP Router has been activated
snVrrpVirRtrIpAddrMask fdry.1.2.12.3.1.1.12 Syntax: Octet string	Read-write	The number of IP addresses of this virtual router of this interface.

Name, OID, and Syntax	Access	Description
snVrrpVirRtrTrackPortMask fdry.1.2.12.3.1.1.13 Syntax: Octet string	Read-write	This object was obsoleted after release 07.1.00 and replaced by “snVrrpVirRtrTrackPortList”. It specifies the identity of the physical port whose state is to be monitored. Each bit represents a port on a device. Valid values: There can be up to 64 octets in this object: • Chassis devices can have up to 32 octets. • Stackable devices can have up to 4 octets. Default: 0 octets If this object is configured on an interface, then the Preference Level for the interface will be adjusted dynamically, depending on the state of the Track Port: • When the Track Port states first changes from up to down, the interface’s Preference Level is reduced by the value of the Preference Level parameter. • The next time the Track Port state changes from down to up, the interface’s Preference Level is increased by the amount specified by the Preference Level.
snVrrpVirRtrTrackVifMask fdry.1.2.12.3.1.1.14 Syntax: Octet string	Read-write	This object was obsoleted after release 07.1.00 and replaced by “snVrrpVirRtrTrackVifPortList”. It specifies the identity of the virtual interface whose state is to be monitored. Each bit represents a port on a device. Valid values: • Chassis devices can have up to 32 octets. • Stackable devices can have up to 4 octets. Default: 0 octets If this object is configured on an interface, then the Preference Level for the interface will be adjusted dynamically, depending on the state of the Track Port: • When the Track Port states first changes from up to down, the interface’s Preference Level is reduced by the value of the Preference Level parameter. • The next time the Track Port state changes from down to up, the interface’s Preference Level is increased by the amount specified by the Preference Level.

Name, OID, and Syntax	Access	Description
snVrrpVirRtrRowStatus fdry.1.2.12.3.1.1.15 Syntax: Integer	Read-write	Controls the management of the table rows. The values that can be written are: • delete(3) – Delete the row • create(4) – Create a new row • modify(5) – Modify an existing row If the row exists, then a SET with a value of create(4) returns a "bad value" error. Deleted rows are removed from the table immediately. The following values can be returned on reads: • noSuch(0) – No such row • invalid(1) – Row is inoperative • valid(2) – Row exists and is valid
snVrrpVirRtrRxArpPktDropCnts fdry.1.2.12.3.1.1.16 Syntax: Counter	Read only	Shows the number of ARP packets addressed to the interface that were dropped.
snVrrpVirRtrRxIpPktDropCnts fdry.1.2.12.3.1.1.17 Syntax: Counter	Read only	Shows the number of IP packets addressed to the interface that were dropped.
snVrrpVirRtrRxPortMismatchCnts fdry.1.2.12.3.1.1.18 Syntax: Counter	Read only	Shows the number of packets received that did not match the configuration for the receiving interface.
snVrrpVirRtrRxNumOfIpMismatch Cnts fdry.1.2.12.3.1.1.19 Syntax: Counter	Read only	Shows the number of packets received that did not match the configured IP addresses.
snVrrpVirRtrRxIpMismatchCnts fdry.1.2.12.3.1.1.20 Syntax: Counter	Read only	Shows the number of receive VRRP IP addresses that did not match the configured VRRP addresses.
snVrrpVirRtrRxHelloIntMismatch Cnts fdry.1.2.12.3.1.1.21 Syntax: Counter	Read only	Shows the number of packets received that did not match the configured Hello interval.
snVrrpVirRtrRxPriorityZeroFromM asterCnts fdry.1.2.12.3.1.1.22 Syntax: Counter	Read only	Shows the counts of the virtual router interface with priority zero from the master.

Name, OID, and Syntax	Access	Description
snVrrpVirRtrRxHigherPriorityCnts fdry.1.2.12.3.1.1.23	Read only	Shows the number of VRRP packets received by the interface that had a higher backup priority for the VRID than what this interface's backup priority is.
snVrrpVirRtrTransToMasterStateCnts fdry.1.2.12.3.1.1.24 Syntax: Counter	Read only	Shows the number of times this interface has changed from the backup state to the master state for the VRID.
snVrrpVirRtrTransToBackupStateCnts fdry.1.2.12.3.1.1.25 Syntax: Counter	Read only	Shows the number of times this interface has changed from the master state to the backup state for the VRID.
snVrrpVirRtrCurrDeadInt fdry.1.2.12.3.1.1.26 Syntax: Integer	Read only	Shows the number of seconds a backup waits for a Hello message from the master before determining that the Master is no longer active. If the Master does not send a Hello message before the dead interval expires, the backups negotiate (compare priorities) to select a new master.
snVrrpVirRtrTrackPortList fdry.1.2.12.3.1.1.27 Syntax: Octet string	Read-write	This object is available Foundry devices running IronWare release later than 07.1.00. It specifies the identity of the physical port whose state is to be monitored. Each port index is a 16-bit integer in big endian order. The first 8-bit is the slot number; the next 8-bit is the port number. Default value is 0 length octet string. If this object is configured on an interface, then the Preference Level for the interface will be adjusted dynamically, depending on the state of the Track Port: • When the Track Port state first changes from up to down, the interface's Preference Level is reduced by the value of the Preference Level parameter. • The next time the Track Port state changes from down to up, the interface's Preference Level is increased by the amount specified by the Preference Level.

Name, OID, and Syntax	Access	Description
snVrrpVirRtrTrackVifPortList fdry.1.2.12.3.1.1.28 Syntax: Octet string	Read-write	This object is available in Foundry devices running IronWare release later than 07.1.00. This object specifies the identity of the virtual interface whose state is to be monitored. Each port index is a 16-bit integer in big endian order. The first 8-bit is the slot number; the next 8-bit is the port number. Default value is 0 length octet string. If this object is configured on an interface, then the Preference Level for the interface will be adjusted dynamically, depending on the state of the Track Port: • When the Track Port states first changes from up to down, the interface's Preference Level is reduced by the value of the Preference Level parameter. • The next time the Track Port state changes from down to up, the interface's Preference Level is increased by the amount specified by the Preference Level.

VRRP and VRRPE Parameter Table 2

In IronWare Release 07.6.01, the following table replaces the "snVrrpVirRtrTable", which uses slot/port number to index entries. This new table uses the ifindex method to present the configuration and statistics for VRRP and VRRPE. Each entry in the table describes one VRRP or VRRPE router.

Name, OID, and Syntax	Access	Description
snVrrpVirRtr2Table fdry.1.2.12.5.1	None	The VRRP Virtual Router Table 2.
snVrrpVirRtr2Entry fdry.1.2.12.5.1.1	None	An entry in the VRRP Virtual Router Table 2.
snVrrpVirRtr2Id fdry.1.2.12.5.1.1.1 Syntax: Integer	Read only	Shows one of the VRID configured on this interface. If multiple VRIDs are configured on the interface, there is an entry for each VRID.
snVrrpVirRtr2Ownership fdry.1.2.12.5.1.1.2 Syntax: Integer	Read-write	Indicates the owner of the VRRP router interface. The owner or master router owns the IP addresses associated with the VRID: • incomplete(0) – No IP address has been assigned to this VRRP or VRRPE interface. • owner(1) – The owner or the master router is the owner of the VRRP router interface. This applies only to VRRP. • backup(2) – The backup router (VRRP or VRRPE) is the owner of the interface. This is the only value that can be assigned to a VRRPE router interface.

Name, OID, and Syntax	Access	Description
snVrrpVirRtr2CfgPriority fdry.1.2.12.5.1.1.3 Syntax: Integer	Read-write	Indicates the preferability of a router for becoming the active router for the interface. A higher number indicates a higher priority. If two or more devices are tied with the highest priority, the Backup interface with the highest IP address becomes the active router for the VRID. Valid values: 0 – 255, where: • 0 – The master no longer participates in the VRRP and a backup router should transition to be the new master • 255 – The router is the Owner Default: 100.
snVrrpVirRtr2TrackPriority fdry.1.2.12.5.1.1.4 Syntax: Integer	Read-write	Applies to interfaces that are configured with track ports. It indicates the priority of the track ports. The higher the number the higher the priority. Track port priority is always lower than the “snVrrpVirRtrCfgPriority” priority. This object dynamically adjusts the value of the “snVrrpVirRtr2CfgPriority” object when the Track Port state first changes from Up to Down. Valid values: 1 – 254.
snVrrpVirRtr2CurrPriority fdry.1.2.12.5.1.1.5 Syntax: Integer	Read only	The current VRRP or VRRPE priority of this Layer 3 Switch for the VRID. The current priority can differ from the configured priority for the following reasons: • The VRID is still in the initialization stage and has not become a Master or Backup yet. In this case, the current priority is 0. • The VRID is configured with track ports and the link on a tracked interface has gone down. A higher number indicates a higher priority. This object is adjusted dynamically when the tracked port first changes from Up to Down. Valid values: 1 – 254.
snVrrpVirRtr2HelloInt fdry.1.2.12.5.1.1.6 Syntax: Integer	Read-write	Shows the number of seconds between hello advertisements from the master and the backup. Valid values: 1 – 84. Default: 1 second.

Name, OID, and Syntax	Access	Description
snVrrpVirRtr2DeadInt fdry.1.2.12.5.1.1.7 Syntax: Integer	Read-write	Applies only to VRRP or VRRPE backups. It shows the configured value for the dead interval. The dead interval is the number of seconds that a backup router waits for a Hello message from the VRID master before determining that the Master is no longer active. If the Master does not send a Hello message before the dead interval expires, the backups negotiate (compare priorities) to select a new Master for the VRID. Valid values: 1 – 84. Default: 0, which means that this object has not been configured.
snVrrpVirRtr2PreemptMode fdry.1.2.12.5.1.1.8 Syntax: Integer	Read-write	Indicates if the backup preempt mode is enabled: • disabled(0) – prohibit preemption • enabled(1) – allow preemption Default: enabled(1). The Backup preempt mode prevents a backup router with a higher VRRP priority from taking control of the VRID from another backup router that has a lower priority, but has already assumed control of the VRID.
snVrrpVirRtr2State fdry.1.2.12.5.1.1.9 Syntax: Integer	Read only	Specifies the VRRP or VRRPE router's interface state: • init(0) – Initialization state. • master(1) – Master state. • backup(2) – Backup state.
snVrrpVirRtr2IpAddrMask fdry.1.2.12.5.1.1.10 Syntax: Octet string	Read-write	The number of IP Addresses of this virtual router of this interface
snVrrpVirRtr2Activate fdry.1.2.12.5.1.1.11 Syntax: Integer	Read-write	Indicates if VRRP or VRRPE router is enabled. • disabled(0) – The router is deactivated • enabled(1) – The router has been activated

Name, OID, and Syntax	Access	Description
snVrrpVirRtr2RowStatus fdry.1.2.12.5.1.1.12 Syntax: Integer	Read-write	Controls the management of the table rows. The values that can be written are: • delete(3) – Delete the row • create(4) – Create a new row • modify(5) – Modify an existing row • If the row exists, then a SET with a value of create(4) returns a "bad value" error. Deleted rows are removed from the table immediately. • The following values can be returned on reads: • noSuch(0) – No such row • invalid(1) – Row is inoperative • valid(2) – Row exists and is valid
snVrrpVirRtr2RxArpPktDropCnts fdry.1.2.12.5.1.1.13 Syntax: Counter	Read only	Shows the number of ARP packets addressed to the interface that were dropped.
snVrrpVirRtr2RxIpPktDropCnts fdry.1.2.12.5.1.1.14 Syntax: Counter	Read only	Shows the number of IP packets addressed to the interface that were dropped.
snVrrpVirRtr2RxPortMismatchCnts fdry.1.2.12.5.1.1.15 Syntax: Counter	Read only	Shows the number of packets received that did not match the configuration for the receiving interface.
snVrrpVirRtr2RxNumOfIpMismatchCnts fdry.1.2.12.5.1.1.16 Syntax: Counter	Read only	Shows the number of packets received that did not match the configured IP addresses.
snVrrpVirRtr2RxIpMismatchCnts fdry.1.2.12.5.1.1.17 Syntax: Counter	Read only	Shows the number of VRRP IP addresses received that did not match the VRRP or VRRPE addresses
snVrrpVirRtr2RxHelloIntMismatchCnts fdry.1.2.12.5.1.1.18 Syntax: Counter	Read only	Shows the number of packets received that did not match the configured Hello interval.
snVrrpVirRtr2RxPriorityZeroFromMasterCnts fdry.1.2.12.5.1.1.19 Syntax: Counter	Read only	Shows the count of the virtual router interface that received priority zero from the master.

Name, OID, and Syntax	Access	Description
snVrrpVirRtr2RxHigherPriorityCnts fdry.1.2.12.5.1.1.20 Syntax: Counter	Read only	Shows the number of packets received by the interface that had a higher backup priority for the VRID than this interface's backup priority for the VRID.
snVrrpVirRtr2TransToMasterStateCnts fdry.1.2.12.5.1.1.21 Syntax: Counter	Read only	Shows the number of times this interface has changed from the master state to the backup state for the VRID.
snVrrpVirRtr2TransToBackupStateCnts fdry.1.2.12.5.1.1.22 Syntax: Counter	Read only	Shows the number of times this interface has changed from the master state to the backup state.
snVrrpVirRtr2CurrDeadInt fdry.1.2.12.5.1.1.23 Syntax: Integer	Read only	Shows the current dead interval in 100 milliseconds for the virtual router. This is the time period that a backup waits for a Hello message from the master before determining that the Master is no longer active. If the Master does not send a Hello message before the dead interval expires, the backups negotiate (compare priorities) to select a new master for the VRID.
snVrrpVirRtr2TrackPortList fdry.1.2.12.5.1.1.24 Syntax: Octet string	Read-write	Specifies the router's physical track port membership. The membership includes physical port and virtual ports whose state is to be monitored. Each port index is an ifIndex. If there are four or more consecutive ifIndexes, then encoding and decoding scheme is range based, as follows: • Each range prefix with 0000 (2 octets) is not a valid ifIndex. • The first two octets in a set of four octets indicate the beginning of the range. The next two octets show the end of the range. • IfIndexes that are not in a range are displayed as it is. For example, you may see the following lists: • Port list: 0001..0005 0015 0032..0047 0001..0005 and 0032..0047 show ranges of ifindexes; whereas, 0015 is one ifindex • Port list in PDU: 0000 0001 0005 000f 0000 0020 002f The list contains ifindexes not in a range. If this object is configured, then the Preference Level of this interface will be adjusted dynamically depending on the state of the Track Port. The interface's Preference Level is reduced by the value of Preference Level parameter when the Track Port states first changes from Up to Down. When the Track Port returns to the Up state, the interface's Preference Level is increased by the amount specified by the Preference Level.

Name, OID, and Syntax	Access	Description
snVrrpVirRtr2AdvertiseBackup fdry.1.2.12.5.1.1.25 Syntax: Integer	Read-write	Indicates if the ability for this Backup to advertise itself to the current Master is enabled: • disabled(0) • enabled(1) Default: disabled(0}.
snVrrpVirRtr2MasterIpAddr fdry.1.2.12.5.1.1.26 Syntax: IpAddress	Read only	Shows the Master's real or virtual (primary) IP address. This IP address is listed as the source in VRRP and VRRPE advertisement that was last received by this virtual router.
snVrrpVirRtr2IpAddrCount fdry.1.2.12.5.1.1.27 Syntax: Integer	Read only	Shows the number of IP addresses that are associated with this virtual router. This number is equal to the number or rows in the vrrpAssoIpAddrTable of the standard MIB that corresponds to a given ifindex and VRID pair.
snVrrpVirRtr2VirtualMacAddr fdry.1.2.12.5.1.1.28 Syntax: MAC address	Read only	Shows the virtual MAC address of the virtual router.

VSRP

Virtual Switch Redundancy Protocol (VSRP) is a Foundry proprietary protocol that provides redundancy and sub-second failover in Layer 2 and Layer 3 mesh topologies. Based on the Foundry Virtual Router Redundancy Protocol Extended (VRRPE), VSRP provides one or more backups for a Layer 2 Switch or Layer 3 Switch. If the active Layer 2 Switch or Layer 3 Switch becomes unavailable, one of the backups takes over as the active device and continues forwarding traffic for the network.

Refer to the *Foundry Switch and Router Installation and Basic Configuration Guide* for detailed discussion on VSRP. The MIB objects in the sections following have been added to the Foundry MIB in IronWare release 07.6.01 to provide SNMP support for VSRP.

The following objects are available for VSRP:

- "Global VSRP Objects" on page 12-18
- "VSRP Interface Table" on page 12-19
- "VSRP Virtual Router Table" on page 12-20

Global VSRP Objects

The following are the global objects for VSRP.

NOTE: Only one of the virtual router protocols can be enabled at any one time.

Name, OID, and Syntax	Access	Description
snVsrpGroupOperModeVsrp fdry.1.1.3.21.1.1 Syntax: Integer	Read-write	Indicates if VSRP is enabled or disable on this system: • disabled(0) • enabled(1)

Name, OID, and Syntax	Access	Description
snVsrpIfStateChangeTrap fdry.1.1.3.21.1.2 Syntax: Integer	Read-write	Indicates if the SNMP agent will generate a trap when an interface state change occur: • disabled(0) – No trap will be generated. • enabled(1) – The TRAP_VRRP_IF_STATE_CHANGE will be generated. Since only one of the virtual router protocols (VRRP, VRRPE, or VSRP) can be enabled at any one time, they all generate the same trap. Default is enabled(1).
snVsrpIfMaxNumVridPerIntf fdry.1.1.3.21.1.3 Syntax: Integer	Read only	Indicates the maximum number of VRID that an interface can have.
snVsrpIfMaxNumVridPerSystem fdry.1.1.3.21.1.4 Syntax: Integer	Read only	Indicates the maximum number of VRID that a system can have.
snVsrpClearVrrpStat fdry.1.1.3.21.1.5 Syntax: Integer	Read-write	Clears the VSRP statistics.

VSRP Interface Table

The following table contains objects used to configure VSRP interfaces.

NOTE: Make sure that “snVsrpGroupOperModeVsrp” is set to enable(1).

Name, OID, and Syntax	Access	Description
snVsrpIfTable fdry.1.1.3.21.2.1	None	The VSRP Interface Table
snVsrpIfEntry fdry.1.1.3.21.2.1.1	None	An entry in the VSRP Interface Table.
snVsrpIfVlanId fdry.1.1.3.21.2.1.1.1 Syntax: Integer	Read-write	VLAN ID used to index the entries in this table.
snVsrpIfAuthType fdry.1.1.3.21.2.1.1.2 Syntax: Integer	Read-write	Indicates the authorization type used to verify access to the interface: • noAuth(0) • simpleTextPasswd(1) • ipAuthHeader(2)

Name, OID, and Syntax	Access	Description
snVsrpIfAuthPassword fdry.1.1.3.21.2.1.1.3 Syntax: Octet string	Read-write	Defines the password required if the “snVsrpIfAuthType” object is set to simpleTextPasswd(1). This object can contain 1 – 7 octets.

VSRP Virtual Router Table

The VSRP Virtual Router Table describes the configuration of the VSRP virtual router.

Name, OID, and Syntax	Access	Description
snVsrpVirRtrTable fdry.1.1.3.21.3.1	None	The VSRP Virtual Router Table
snVsrpVirRtrEntry fdry.1.1.3.21.3.1.1	None	An entry in the VSRP Virtual Router Table.
snVsrpVirRtrVlanId fdry.1.1.3.21.3.1.1.1 Syntax: Integer	Read only	VLAN index of the VSRP router.
snVsrpVirRtrId fdry.1.1.3.21.3.1.1.2 Syntax: Integer	Read only	Shows a virtual router ID for the interface.
snVsrpVirRtrOwnership fdry.1.1.3.21.3.1.1.3 Syntax: Integer	Read-write	Indicates the owner of the VSRP router interface. The owner or master router owns the IP addresses associated with the VRID: • incomplete(0) – No IP address has been assigned to this interface. • owner(1) – This does not apply to VSRP. • backup(2) – The backup router is the owner of the interface. This is the only value that can be assigned to a VSRP router interface.
snVsrpVirRtrCfgPriority fdry.1.1.3.21.3.1.1.4 Syntax: Integer	Read-write	Indicates the preferability of a router for becoming the active router for the interface. A higher number indicates a higher priority. If two or more devices are tied with the highest priority, the Backup interface with the highest IP address becomes the active router for the VRID. This object can be set only if “snVsrpVirRtrCfgPriority” is set to backup(2) Valid values: 1 – 254 Default: 100.

Name, OID, and Syntax	Access	Description
snVsrpVirRtrTrackPriority fdry.1.1.3.21.3.1.1.5 Syntax: Integer	Read-write	Applies to interfaces that are configured with track ports. It indicates the priority of the track ports. A higher number indicates a higher priority. This object dynamically adjusts the value of the "snVrrpVirRtr2CfgPriority" object when the Track Port state first changes from Up to Down. Valid values: 1 – 254.
snVsrpVirRtrCurrPriority fdry.1.1.3.21.3.1.1.6 Syntax: Integer	Read only	The current VSRP priority of this Layer 3 Switch for the VRID. The current priority can differ from the configured priority for the following reasons: • The VRID is still in the initialization stage and has not become a Master or Backup. In this case, the current priority is 0. • The VRID is configured with track ports and the link on a tracked interface has gone down. A higher number indicates a higher priority. This object is adjusted dynamically when the tracked port first changes from Up to Down. Valid values: 1 – 254.
snVsrpVirRtrHelloInt fdry.1.1.3.21.3.1.1.7 Syntax: Integer	Read-write	Shows the number of seconds between hello advertisements sent from the master and the backup. Valid values: 1 – 84. Default: 1 second.
snVsrpVirRtrDeadInt fdry.1.1.3.21.3.1.1.8 Syntax: Integer	Read-write	Shows the number of seconds a Backup waits for a Hello message from the Master for the VRID before determining that the Master is no longer active. If the Master does not send a Hello messages before the dead interval expires and the backups negotiate (compare priorities) to select a new master for the Valid values: 1 – 84. Default: 1 second.
snVsrpVirRtrPreemptMode fdry.1.1.3.21.3.1.1.9 Syntax: Integer	Read-write	Indicates if the backup preempt mode is enabled: • disabled(0) – prohibit preemption • enabled(1) – allow preemption Default: enabled(1). The Backup preempt mode prevents a backup router with a higher priority from taking control of the VRID from another backup router that has a lower priority, but has already assumed control of the VRID.

Name, OID, and Syntax	Access	Description
snVsrpVirRtrState fdry.1.1.3.21.3.1.1.10 Syntax: Integer	Read only	Specifies the virtual router's interface state: • init(0) – Initialization state • master(1) – Master state • backup(2) – Backup state
snVsrpVirRtrIpAddrMask fdry.1.1.3.21.3.1.1.11 Syntax: Octet string	Read-write	Specifies the number of IP addresses for this virtual router on the interface.
snVsrpVirRtrActivate fdry.1.1.3.21.3.1.1.12 Syntax: Integer	Read-write	Indicates if VRRP or VRRPE router has been activated. • disabled(0) – The router has not been activated • enabled(1) – The router has been activated
snVsrpVirRtrTrackPortList fdry.1.1.3.21.3.1.1.13 Syntax: Octet string	Read-write	Specifies the router's physical track port membership. The membership includes physical port and virtual ports whose state is to be monitored. Each port index is an ifIndex. If there are four or more consecutive ifIndexes, then encoding and decoding scheme is range based, as follows: • Each range prefix with 0000 (2 octets) is not a valid ifIndex. • The first two octets in a set of four octets indicate the beginning of the range. The next two octets show the end of the range. • Ifindexes that are not in a range are displayed as individual indexes. For example, you may see the following lists: • Port list: 0001..0005 0015 0032..0047 0001..0005 and 0032..0047 show ranges of ifindexes; whereas, 0015 is one ifindex • Port list in PDU: 0000 0001 0005 000f 0000 0020 002f The list contains ifindexes not in a range. If this object is configured, then the Preference Level of this interface will be adjusted dynamically depending on the state of the Track Port. The interface's Preference Level is reduced by the value of Preference Level parameter when the Track Port states first changes from Up to Down. When the Track Port returns to the Up state, the interface's Preference Level is increased by the amount specified by the Preference Level.
snVsrpVirRtrAdvertiseBackup fdry.1.1.3.21.3.1.1.14 Syntax: Integer	Read-write	Indicates if the ability for this Backup to advertise itself to the current Master is enabled: • disabled(0) • enabled(1) Default: disabled(0}.

Name, OID, and Syntax	Access	Description
snVsrpVirRtrHoldDownInt fdry.1.1.3.21.3.1.1.15 Syntax: Integer	Read-write	The amount of time a Backup that has sent a Hello packet announcing its intent to become Master waits before beginning to forward traffic for the VRID. The hold-down interval prevents Layer 2 loops from occurring during VSRP's rapid failover. The interval can from 1 – 84 seconds. Default: 2 seconds.
snVsrpVirRtrInitTtl fdry.1.1.3.21.3.1.1.16 Syntax: Integer	Read-write	Indicates the time-to-live value (TTL) in the hello packets. TTL is the maximum number of hops a VSRP Hello packet can traverse before being dropped. TTL in a packet helps regulate the distance that a hello packet can travel. It prevents the flooding of VSRP hello packets in the network. Valid values: 1 – 84 seconds. Default: 1 second.
snVsrpVirRtrIncPortList fdry.1.1.3.21.3.1.1.17 Syntax: Octet string	Read-write	Groups all free ports of a VLAN into their control ports.
snVsrpVirRtrSave fdry.1.1.3.21.3.1.1.18 Syntax: Integer	Read-write	Indicates if the ability of VSRP to save its current parameter values has been enabled: • disabled(0) • enabled(1) Default: disabled(0}.
snVsrpVirRtrRowStatus fdry.1.1.3.21.3.1.1.19 Syntax: Integer	Read-write	Controls the management of the table rows. The values that can be written are: • delete(3) – Delete the row • create(4) – Create a new row • modify(5) – Modify an existing row If the row exists, then a SET with a value of create(4) returns a "bad value" error. Deleted rows are removed from the table immediately. • The following values can be returned on reads: • noSuch(0) – No such row • invalid(1) – Row is inoperative • valid(2) – Row exists and is valid
snVsrpVirRtrRxArpPktDropCnts fdry.1.1.3.21.3.1.1.20 Syntax: Counter	Read only	Shows the number of ARP packets addressed to the interface that were dropped.
snVsrpVirRtrRxIpPktDropCnts fdry.1.1.3.21.3.1.1.21 Syntax: Counter	Read only	Shows the number of IP packets addressed to the interface that were dropped.

Name, OID, and Syntax	Access	Description
snVsrpVirRtrRxPortMismatchCnts fdry.1.1.3.21.3.1.1.22 Syntax: Counter	Read only	Shows the number of packets received that did not match the configuration for the receiving interface.
snVsrpVirRtrRxNumOfIpMismatchCnts fdry.1.1.3.21.3.1.1.23 Syntax: Counter	Read only	Shows the number of packets received that did not match the configured IP addresses.
snVsrpVirRtrRxIpMismatchCnts fdry.1.1.3.21.3.1.1.24 Syntax: Counter	Read only	Shows the number of receive VSRP IP addresses that did not match the VSRP addresses
snVsrpVirRtrRxHelloIntMismatchCnts fdry.1.1.3.21.3.1.1.25 Syntax: Counter	Read only	Shows the number of packets received that did not match the configured Hello interval.
snVsrpVirRtrRxPriorityZeroFromMasterCnts fdry.1.1.3.21.3.1.1.26 Syntax: Counter	Read only	Shows the count of the virtual router interface with priority zero from the master.
snVsrpVirRtrRxHigherPriorityCnts fdry.1.1.3.21.3.1.1.27 Syntax: Counter	Read only	Shows the number of VSRP packets received by the interface that had a higher backup priority for the VRID than this interface's backup priority for the VRID.
snVsrpVirRtrTransToMasterStateCnts fdry.1.1.3.21.3.1.1.28 Syntax: Counter	Read only	Shows the number of times this interface has changed from the master state to the backup state for the VRID.
snVsrpVirRtrTransToBackupStateCnts fdry.1.1.3.21.3.1.1.29 Syntax: Counter	Read only	Shows the number of times this interface has changed from the master state to the backup state.
snVsrpVirRtrCurrDeadInt fdry.1.1.3.21.3.1.1.30 Syntax: Integer	Read only	Shows the current dead in 100-millisecond intervals for the virtual router. This is the time period that a backup waits for a Hello message from the master before determining that the Master is no longer active. If the Master does not send a Hello message before the dead interval expires and the backups negotiate (compare priorities) to select a new master for the
snVsrpVirRtrCurHelloInt fdry.1.1.3.21.3.1.1.31 Syntax: Integer	Read only	Shows the current backup router hello interval.

Name, OID, and Syntax	Access	Description
snVsrpVirRtrCurHoldDownInt fdry.1.1.3.21.3.1.1.32 Syntax: Integer	Read only	Shows the current value of the hold-down interval.
snVsrpVirRtrCurInitTtl fdry.1.1.3.21.3.1.1.33 Syntax: Integer	Read only	Shows the current time-to-live value.
snVsrpVirRtrHelloMacAddress fdry.1.1.3.21.3.1.1.34 Syntax: MAC address	Read only	Shows the MAC address of the hello packet.
snVsrpVirRtrMasterIpAddr fdry.1.1.3.21.3.1.1.35 Syntax: IpAddress	Read only	Shows the Master's real or virtual (primary) IP address. This is the IP address is listed as the source in VRRP and VRRPE advertisement that was last received by this virtual router.

Chapter 13
Global Router and IP

This chapter shows the router objects in the MIB. It contains the following sections:

Refer to the *Foundry Enterprise Configuration and Management Guide* for details on the features discussed in this chapter.

Global Router Objects

This section contains global MIB objects switching properties of the Layer 3 Switch, independent of any routing protocol.

Name, OID, and Syntax	Access	Description
snGblRtRouteOnly fdry.1.2.8.1.1 Syntax: Integer	Read-write	Determines if the Layer 3 Switch will route or switch packets: • disabled(0) – Router will first route the packets. If it cannot route them, it will switch packets. • enabled(1) – Router will only route the packets; it will not switch them.

IP General Group

The following are general objects for the IP group.

Name, OID, and Syntax	Access	Description
snRtClearArpCache fdry.1.2.2.1.1 Syntax: ClearStatus	Read-write	Clears learned ARP entries but does not remove any static ARP entries. The value for this object can be: • normal(0) – Do not clear learned entries • clear(1) – Clear learned entries This object is also available in the ServerIron.
snRtClearIpCache fdry.1.2.2.1.2 Syntax: ClearStatus	Read-write	Clears the entries in the IP Forwarding Cache Table. The value for this object can be: • normal(0) – Do not clear entries • clear(1) – Clear entries • This object is also available in the ServerIron.
snRtClearIpRoute fdry.1.2.2.1.3 Syntax: ClearStatus	Read-write	Clears the IP route tables. The value for this object can be: • normal(0) – Do not clear entries • clear(1) – Clear entries • This object is also available in the ServerIron.
snRtBootpServer fdry.1.2.2.1.4 Syntax: IpAddress	Read-write	Shows the IP address of the bootp server to which bootp packet need to be relayed.
snRtBootpRelayMax fdry.1.2.2.1.5 Syntax: Integer	Read-write	Specifies the maximum number of hops the bootp packet should travel. Valid values: Up to 15 hops
snRtArpAge fdry.1.2.2.1.6 Syntax: Integer	Read-write	Specifies the number of minutes that an ARP entry can be valid without having to be relearned. Valid values: Up to 240 minutes. A value of zero (0) means that the entry will not age out.
snRtIpIrdpEnable fdry.1.2.2.1.7 Syntax: Integer	Read-write	Indicates if router advertisement is enabled on this device: • disabled(0) • enabled(1)
snRtIpLoadShare fdry.1.2.2.1.8 Syntax: Integer	Read-write	Indicates if more than one route will be enabled to share the loads: • disabled(0) • enabled(1)
snRtIpProxyArp fdry.1.2.2.1.9 Syntax: Integer	Read-write	Indicates if the proxy ARP function is enabled: • disabled(0) • enabled(1)

Name, OID, and Syntax	Access	Description
snRtIpRarp fdry.1.2.2.1.10 Syntax: Integer	Read-write	Indicates if the RARP server is enabled: • disabled(0) • enabled(1)
snRtIpTtl fdry.1.2.2.1.11 Syntax: Integer	Read-write	Indicates the time-to-live (TTL) value that will be used in the IP header of an IP packet that was generated by this device. Valid values: 1 – 255
snRtIpSetAllPortConfig fdry.1.2.2.1.12 Syntax: Integer	Read-write	Shows the index number of a row in the "snRtIpPortConfigTable" on page 13-10, such as "snRtIpPortConfigPortIndex" on page 13-11. All the writeable data from that row will be copied to all appropriate rows in all IP Interface Port Configuration Tables **NOTE:** Prior to setting this object, make sure that the row identified in this object contains a value for all its objects; otherwise, the current data of the row will be used to set the entire IP interface configuration table.
snRtIpFwdCacheMaxEntries fdry.1.2.2.1.13 Syntax: Integer	Read only	Shows the maximum number of entries in the IP Forwarding Cache Table.
snRtIpFwdCacheCurEntries fdry.1.2.2.1.14 Syntax: Integer	Read only	Shows the current number of entries in the IP Forwarding Cache Table.
snRtIpMaxStaticRouteEntries fdry.1.2.2.1.14 Syntax: Integer	Read only	Shows the maximum number of entries in the IP Static Route table.
snRtIpDirBcastFwd fdry.1.2.2.1.16 Syntax: Integer	Read-write	Indicates if the directed broadcast forwarding feature is enabled: • disabled(0) • enabled(1)
snRtIpLoadShareNumOfPaths fdry.1.2.2.1.17 Syntax: Integer	Read-write	Specifies the number of routes to be used to share the load.
snRtIpLoadShareMaxPaths fdry.1.2.2.1.18 Syntax: Integer	Read only	Indicates the maximum number of routes that can be configured to share the loads.
snRtIpLoadShareMinPaths fdry.1.2.2.1.19 Syntax: Integer	Read only	Indicates the minimum number of routes that can be configured to share the loads.

Name, OID, and Syntax	Access	Description
snRtIpProtocolRouterId fdry.1.2.2.1.20 Syntax: IpAddress	Read-write	Shows the router ID for all IP Protocols.
snRtIpSourceRoute fdry.1.2.2.1.21 Syntax: Integer	Read-write	Indicates if strict source routing is enabled to drop source routed packets: • disabled(0) • enabled(1)

IP Static Route Table

The IP Static Route Table contains a list of static routes. These routes can be one of the following types:

- Standard – the static route consists of the destination network address and network mask, plus the IP address of the next-hop gateway.
- Interface-based – the static route consists of the destination network address and network mask, plus the Layer 3 Switch interface through which you want the Layer 3 Switch to send traffic for the route. Typically, this type of static route is for directly attached to destination networks.
- Null – the static route consists of the destination network address and network mask, plus the “null0” parameter. Typically, the null route is configured as a backup route for discarding traffic if the primary route is unavailable.

IP Static Route Table also serves as the default route table.

Name, OID, and Syntax	Access	Description
snRtIpStaticRouteTable fdry.1.2.2.2	None	IP static route table
snRtIpStaticRouteEntry fdry.1.2.2.2.1	None	An entry in the IP static route table.
snRtIpStaticRouteIndex fdry.1.2.2.2.1.1 Syntax: Integer	Read only	The table index for a static route entry.
snRtIpStaticRouteDest fdry.1.2.2.2.1.2 Syntax: IpAddress	Read-write	Shows the destination IP address of the default route. The address 0.0.0.0 is the IP address of the default router.
snRtIpStaticRouteMask fdry.1.2.2.2.1.3 Syntax: IpAddress	Read-write	Shows the subnet mask of the default route’s destination IP address. The subnet mask 0.0.0.0 is the subnet mask of the default router.
snRtIpStaticRouteNextHop fdry.1.2.2.2.1.4 Syntax: IpAddress	Read-write	Shows the IP address of the next-hop router (gateway) for the route.

Name, OID, and Syntax	Access	Description
snRtIpStaticRouteMetric fdry.1.2.2.2.1.5 Syntax: Integer	Read-write	Shows the metrics to next hop router. Default: 1
snRtIpStaticRouteRowStatus fdry.1.2.2.2.1.6 Syntax: Integer	Read-write	Controls the management of the table rows. The values that can be written are: • delete(3) – Delete the row • create(4) – Create a new row • modify(5) – Modify an existing row If the row exists, then a SET with a value of create(4) returns a "bad value" error. Deleted rows are removed from the table immediately. The following values can be returned on reads: • noSuch(0) – No such row • other(1) – Row is inoperative • valid(2) – Row exists and is valid
snRtIpStaticRouteDistance fdry.1.2.2.2.1.7 Syntax: Integer	Read-write	Specifies the administrative distance of the route. When comparing equal routes to a destination, the Layer 3 Switch prefers lower administrative distances over higher ones. Valid values: 1 – 255 Default: 1

IP Filter Table

An IP filter is an access policy that determines whether the device forwards or drops IP packets. A filter consists of source and destination IP information and the action to take when a packet matches the values in the filter.

The following objects define IP Filters. They are available in all Foundry products.

Name, OID, and Syntax	Access	Description
snRtIpFilterTable fdry.1.2.2.3	None	IP Filter Table.
snRtIpFilterEntry fdry.1.2.2.3.1	None	An entry in the IP Filter Table
snRtIpFilterIndex fdry.1.2.2.3.1.1 Syntax: Integer	Read only	Shows the index for an entry in the IP Filter Table.

Name, OID, and Syntax	Access	Description
snRtIpFilterAction fdry.1.2.2.3.1.2 Syntax: Integer	Read-write	Determines what action to take if the IP packet matches this filter. • deny(0) • permit(1) • qosEnabled(2) Once you configure an IP access policy, the device denies all IP packets by default unless you explicitly permit them. Thus, if you want the device to permit all IP packets except the ones that you filter out, you must configure the last IP access policy to permit all IP packets.
snRtIpFilterProtocol fdry.1.2.2.3.1.3 Syntax: Integer	Read-write	Specifies the transport protocol that you can filter. Only the traffic for the transport protocol selected will be allowed: • all(0) – All traffic of the transport protocols listed below will be permitted • ICMP(1) • IGMP(2) • IGRP(88) • OSPF(89) • TCP(6) • UDP(17) In addition, if you filter TCP or UDP, you can also specify a particular application port (such as “HTTP” or “80”) or a logical expression consisting of an operator and port names or numbers.
snRtIpFilterSourceIp fdry.1.2.2.3.1.4 Syntax: IpAddress	Read-write	Shows the source IP address. The policy will be applied to packets that come from this IP address.
snRtIpFilterSourceMask fdry.1.2.2.3.1.5 Syntax: IpAddress	Read-write	Shows the source IP subnet mask. The policy will be applied to packets that come from this subnet mask.
snRtIpFilterDestIp fdry.1.2.2.3.1.6 Syntax: IpAddress	Read-write	Shows the destination IP address. The IP access policy will be applied to packets that are going to this IP address.
snRtIpFilterDestMask fdry.1.2.2.3.1.7 Syntax: IpAddress	Read-write	Shows the destination IP subnet mask. The IP access policy will be applied to packets that are going to this subnet mask.

Name, OID, and Syntax	Access	Description
snRtIpFilterOperator fdry.1.2.2.3.1.8 Syntax: Integer	Read-write	Applies only if the value of the object “snRtIpFilterProtocol” is TCP or UDP. It specifies the type of comparison to be performed to TCP and UDP packets: • greater(1) – The policy applies to TCP or UDP port numbers that are greater than the value of the “snRtIpFilterOperand” object. • equal(2) – The policy applies to TCP or UDP port numbers that are equal to the value of the “snRtIpFilterOperand” object. • less(3) – The policy applies to TCP or UDP port numbers that are less than the value of the “snRtIpFilterOperand” object. • notEqual(4) – The policy applies to all TCP or UDP port numbers except to those that are equal to the value of the “snRtIpFilterOperand” object.
snRtIpFilterOperand fdry.1.2.2.3.1.9 Syntax: Integer	Read-write	Applies only if the value of the object “snRtIpFilterProtocol” is TCP or UDP. Specifies the TCP or UDP port number that will be used in this filter. Valid values: 0 – 65535. 0 means that this object is not applicable.
snRtIpFilterRowStatus fdry.1.2.2.3.1.10 Syntax: Integer	Read-write	Controls the management of the table rows. The values that can be written are: • delete(3) – Delete the row • create(4) – Create a new row • modify(5) – Modify an existing row If the row exists, then a SET with a value of create(4) returns a "bad value" error. Deleted rows are removed from the table immediately. The following values can be returned on reads: • noSuch(0) – No such row • invalid(1) – Row is inoperative • valid(2) – Row exists and is valid
snRtIpFilterEstablished fdry.1.2.2.3.1.11 Syntax: Integer	Read-write	Applies only to TCP packets. Indicates if the filtering of established TCP packets is enabled for packets that have the ACK or RESET flag on: • disabled(0) • enabled(1)

Name, OID, and Syntax	Access	Description
snRtIpFilterQosPriority fdry.1.2.2.3.1.12 Syntax: Integer	Read-write	The router Layer 4 QoS Priority values are: • low(0) – lower priority • high(1) – higher priority The Priority values are: • level0(0) – lower priority • level1(1) • level2(2) • level3(3), • level4(4) • level5(5) • level6(6) • level7(7) – higher priority

IP Interface Port Address Table

The IP Interface Port Address Table shows the port's IP address and its port type.

Name, OID, and Syntax	Access	Description
snRtIpPortAddrTable fdry.1.2.2.6	None	IP port address table.
snRtIpPortAddrEntry fdry.1.2.2.6.1	None	An entry in the IP Port Address table.
snRtIpPortAddrPortIndex fdry.1.2.2.6.1.1 Syntax: PortIndex	Read only	The index of the port address entry. • For FastIron or NetIron products, the value of this object is from 1 to 42 • For BigIron products, the value of this object is an encoded number: Bit 0 to bit 7 – Port number. Bit 8 to bit 11 – Slot number.
snRtIpPortAddress fdry.1.2.2.6.1.2 Syntax: IpAddress	Read only	Specifies the port IP address.
snRtIpPortSubnetMask fdry.1.2.2.6.1.3 Syntax: IpAddress	Read-write	Specifies the port IP address subnet mask.

Name, OID, and Syntax	Access	Description
snRtIpPortAddrType fdry.1.2.2.6.1.4 Syntax: Integer	Read-write	Shows the port type of the entry: • primary(1) • secondary(2) Default: primary(1)
snRtIpPortRowStatus fdry.1.2.2.6.1.5 Syntax: Integer	Read-write	Controls the management of the table rows. The values that can be written are: • delete(3) – Delete the row • create(4) – Create a new row • modify(5) – Modify an existing row If the row exists, then a set with a value of create(4) returns a "bad value" error. Deleted rows are removed from the table immediately. The following values can be returned on reads: • noSuch(0) – No such row • invalid(1) – Row is inoperative • valid(2) – Row exists and is valid

IP Interface Port Access Table

This table determines if the port is for incoming or outgoing traffic and the filter used on the interface.

Name, OID, and Syntax	Access	Description
snRtIpPortAccessTable fdry.1.2.2.7	None	IP Port Access Table.
snRtIpPortAccessEntry fdry.1.2.2.7.1	None	An entry in the IP Port Access Table.
snRtIpPortAccessPortIndex fdry.1.2.2.7.1.1 Syntax: PortIndex	Read only	The index for an entry in the IP Port Access Table. • For FastIron or NetIron products, the value of this object is from 1 to 42 • For BigIron products, the value of this object is an encoded number: Bit 0 to bit 7 – Port number. Bit 8 to bit 11 – Slot number. Beginning with software release 07.2.00, the following values have been added: Bit 16, set to 1 – Virtual router interface Bit 17, set to 1 – Loopback interface.

Name, OID, and Syntax	Access	Description
snRtIpPortAccessDirection fdry.1.2.2.7.1.2 Syntax: Integer	Read only	Specifies if the port is for incoming or outgoing traffic. • in(1) • out(2)
snRtIpPortAccessFilters fdry.1.2.2.7.1.3 Syntax: Octet string	Read-write	Each octet represents a filter number.
snRtIpPortAccessRowStatus fdry.1.2.2.7.1.4 Syntax: Integer	Read-write	Controls the management of the table rows. The values that can be written are: • delete(3) – Delete the row • create(4) – Create a new row • modify(5) – Modify an existing row If the row exists, then a SET with a value of create(4) returns a "bad value" error. Deleted rows are removed from the table immediately. The following values can be returned on reads: • noSuch(0) – No such row • invalid(1) – Row is inoperative • valid(2) – Row exists and is valid

IP Interface Port Configuration Table

The following table defines the size, encapsulation format, and cost of the packet that will be transmitted through a port.

Name, OID, and Syntax	Access	Description
snRtIpPortConfigTable fdry.1.2.2.8	None	IP Port Configuration Table.
snRtIpPortConfigEntry fdry.1.2.2.8.1	None	An entry in the IP Port Configuration Table.

Name, OID, and Syntax	Access	Description
snRtIpPortConfigPortIndex fdry.1.2.2.8.1.1 Syntax: PortIndex	Read only	An index for an entry in the IP Port Configuration Table • For FastIron or NetIron products, the value of this object is from 1 to 42 • For BigIron products, the value of this object is an encoded number: Bit 0 to bit 7 – Port number. Bit 8 to bit 11 – Slot number. Beginning with software release 07.2.00, the following values have been added: Bit 16, set to 1 – Virtual router interface Bit 17, set to 1 – Loopback interface.
snRtIpPortMtu fdry.1.2.2.8.1.2 Syntax: Integer	Read-write	Indicates the maximum size of IP packets that will be transmitted on the port.
snRtIpPortEncap fdry.1.2.2.8.1.3 Syntax: Integer	Read-write	Shows the encapsulation format that will be used on the IP frame transmitted on the port. • ethernet(1) – Ethernet • snap(2) – ATM and Ethernet • hdlc(3) – POS • ppp(4) – POS
snRtIpPortMetric fdry.1.2.2.8.1.4 Syntax: Integer	Read-write	Specifies the metric or cost to the router adds to the route. Valid values: 1 – 15 Default: 1
snRtIpPortDirBcastFwd fdry.1.2.2.8.1.5 Syntax: Integer	Read-write	Indicates if the directed broadcast forwarding feature is enabled. A directed broadcast is a packet containing all ones (or in some cases, all zeros) in the host portion of the destination IP address. When a router forwards such a broadcast, it sends a copy of the packet out each of its enabled IP interfaces: • disabled(0) • enabled(1) Default: enabled(1)

Broadcast Forwarding Group

This section contains the following tables:

- “Trace Route Result Table” on page 13-16

General UDP Broadcast Forwarding Group

Name, OID, and Syntax	Access	Description
snRtUdpBcastFwdEnable fdry.1.2.2.9 Syntax: Integer	Read-write	Indicates if the UDP broadcast forwarding feature is enabled: • disabled(0) – When this object is set to disabled, entries in the UDP Broadcast Forwarding Port Table are deleted. • enabled(1) – When UDP broadcast forwarding is enabled, default entries are added to the UDP broadcast forwarding port table. Default: enabled(1)

UDP Broadcast Forwarding Port Table

This table contains a list of UDP port numbers for which forwarding UDP broadcast is enabled.

Name, OID, and Syntax	Access	Description
snRtUdpBcastFwdPortTable fdry.1.2.2.9.2.1	None	The UDP Broadcast Forwarding Port Table
snRtUdpBcastFwdPortEntry fdry.1.2.2.9.2.1.1	None	An entry in the UDP Broadcast Forwarding Port Table.
snRtUdpBcastFwdPortIndex fdry.1.2.2.9.2.1.1.1 Syntax: Integer	Read only	The index of an entry in the UDP Broadcast Forwarding Port Tables. There can be up to 20 entries.

Name, OID, and Syntax	Access	Description
snRtUdpBcastFwdPortNumber fdry.1.2.2.9.2.1.1.2 Syntax: Integer	Read-write	Shows the port number for which the UDP broadcast forwarding feature has been enabled. Possible port numbers are: • port(68) – bootpc • port(67) – bootps • port(9) – discard • port(53) – dns • port(90) – dnsix • port(7) – echo • port(434) – mobile-ip • port(138) – netbios-dgm • port(137) – netbios-ns • port(123) – ntp • port(65) – tacacs • port(517) – talk • port(37) – time • port(69) – tftp Other application port numbers can also be specified.
snRtUdpBcastFwdPortRowStatus fdry.1.2.2.9.2.1.1.3 Syntax: Integer	Read-write	Controls the management of the table rows. The values that can be written are: • delete(3) – Delete the row • create(4) – Create a new row • modify(5) – Modify an existing row If the row exists, then a SET with a value of create(4) returns a "bad value" error. Deleted rows are removed from the table immediately. The following values can be returned on reads: • noSuch(0) – No such row • invalid(1) – Row is inoperative • valid(2) – Row exists and is valid

UDP Helper Table

A UDP Helper Table contains addresses that are used to forward a client's broadcast request for a UDP application when the client and server are on different networks. There can be up to four helper addresses on each interface. Helper addresses can be configured on an Ethernet port or a virtual interface.

Name, OID, and Syntax	Access	Description
snRtUdpHelperTable fdry.1.2.2.9.3.1	None	UDP Helper Table

Name, OID, and Syntax	Access	Description
snRtUdpHelperEntry fdry.1.2.2.9.3.1.1	None	An entry of the UDP Helper Table.
snRtUdpHelperPortIndex fdry.1.2.2.9.3.1.1.1 Syntax: PortIndex	Read only	Indicates the port index for a UDP Helper address. • For FastIron or NetIron products, the value of this object is from 1 to 42 • For BigIron products, the value of this object is an encoded number, where: Bit 0 to bit 7 – Port number. Bit 8 to bit 11 – Slot number. Beginning with software release 07.2.00, the following values have been added: Bit 16, set to 1 – Virtual router interface. Bit 17, set to 1 – Loopback interface.
snRtUdpHelperIndex fdry.1.2.2.9.3.1.1.2 Syntax: Integer	Read only	An index in the UDP Helper Table for this entry. Valid values: 1– 4.
snRtUdpHelperAddr fdry.1.2.2.9.3.1.1.3 Syntax: IpAddress	Read-write	Shows the IP address of the UDP helper. UDP packets will be forwarded to this address. It can be a helper address or a subnet broadcast address, but it cannot be 255.255.255.255 or 0.0.0.0.
snRtUdpHelperRowStatus fdry.1.2.2.9.3.1.1.4 Syntax: Integer	Read-write	Controls the management of the table rows. The values that can be written are: • delete(3) – Delete the row • create(4) – Create a new row • modify(5) – Modify an existing row If the row exists, then a SET with a value of create(4) returns a "bad value" error. Deleted rows are removed from the table immediately. The following values can be returned on reads: • noSuch(0) – No such row • invalid(1) – Row is inoperative • valid(2) – Row exists and is valid

Trace Route Group

This group uses the following method to detect routes used to reach a destination address:

1. The originating Layer 3 Switch sends a probe packet (a UDP packet) to the destination address with a time-to-Live (TTL) value of 1.
2. The first Layer 3 Switch that receives this packet decrements the TTL, then drops the packet and returns a ICMP packet to the originator.
3. The originating Layer 3 Switch records the route in the “snRtIpTraceRouteResultTable”.

4. The originating Layer 3 Switch sends a probe packet (a UDP packet) to the destination address with a TTL value of 2.
5. The second Layer 3 Switch that receives this packet decrements the TTL, then drops the packet and returns an ICMP packet to the originator.
6. The originating Layer 3 Switch records the route in “snRtIpTraceRouteResultTable”.

This procedure is repeated until the destination is reached or the maximum TTL is reached.

General Trace Route Group

The following objects define the trace route probe packet.

Name, OID, and Syntax	Access	Description
snRtIpTraceRouteTargetAddr fdry.1.2.2.10.1.1 Syntax: IpAddress	Read-write	Shows the target IP address of the trace route.
snRtIpTraceRouteMinTtl fdry.1.2.2.10.1.2 Syntax: Integer	Read-write	Indicates the minimum TTL value carried in the first probe packet. Valid values: 1 – 255 minutes Default: 1 minute
snRtIpTraceRouteMaxTtl fdry.1.2.2.10.1.3 Syntax: Integer	Read-write	Indicates the maximum TTL value carried in the last probe packet. Valid values: 1 – 255 minutes. Default: 30 minutes
snRtIpTraceRouteTimeOut fdry.1.2.2.10.1.4 Syntax: Integer	Read-write	Indicates the number of seconds the Layer 3 Switch waits for a response from the probe packet (i.e. the ICMP packet) before timing out. Valid values: 1 – 120 seconds. Default: 2 seconds
snRtIpTraceRouteControl fdry.1.2.2.10.1.5 Syntax: Integer	Read-write	Indicates the progress of the trace route: • start(1) – snRtIpTraceRouteDestAddr must have been initialized before start(1) can be written. • abort(2) – Stops the current trace route operation. • success(3) – The destination address is reached. • failure(4) – Either the destination address is not reach, trace route times out, or the ending TTL is reached before the operation is completed. • inProgress(5) – Trace route operation has started. Only "start" and "abort" are writable values "success", "failure" and "inProgress" are read only (or returned) values.

Trace Route Result Table

This table contains the routes and the target addresses used in the trace route operation to reach the destination address.

Name, OID, and Syntax	Access	Description
snRtIpTraceRouteResultTable fdry.1.2.2.10.2.1	None	Trace Route Results Table.
snRtIpTraceRouteResultEntry fdry.1.2.2.10.2.1.1	None	An entry in the Trace Route Results Table.
snRtIpTraceRouteResultIndex fdry.1.2.2.10.2.1.1.1 Syntax: Integer	Read only	The index for an entry in the Trace Route Results Table.
snRtIpTraceRouteResultAddr fdry.1.2.2.10.2.1.1.2 Syntax: IpAddress	Read only	Indicates the IP address of the Layer 3 Switch or the target IP address of the Layer 3 Switch.
snRtIpTraceRouteResultRoundTripTime1 fdry.1.2.2.10.2.1.1.3 Syntax: Time ticks	Read only	Shows the round trip time between the transmission of the first probe packet and the received response of the ICMP packet.
snRtIpTraceRouteResultRoundTripTime2 fdry.1.2.2.10.2.1.1.4 Syntax: Time ticks	Read only	Shows the round trip time between the transmission of the second probe and the received response of the ICMP packet.

IP Forwarding Cache Table

The IP forwarding cache provides a fast-path mechanism for forwarding IP packets. The cache contains entries for IP destinations.

Name, OID, and Syntax	Access	Description
snRtIpFwdCacheTable fdry.1.2.2.11	None	IP Forwarding Cache Table.
snRtIpFwdCacheEntry fdry.1.2.2.11.1	None	An entry in the IP Forwarding Cache Table.
snRtIpFwdCacheIndex fdry.1.2.2.11.1.1 Syntax: Integer	Read only	An index in the IP Forwarding Cache Table for this entry.

Name, OID, and Syntax	Access	Description
snRtIpFwdCacheIp fdry.1.2.2.11.1.2 Syntax: IpAddress	Read only	Shows the IP address of a forwarding cache station.
snRtIpFwdCacheMac fdry.1.2.2.11.1.3 Syntax: Octet string	Read only	Shows the MAC address of a forwarding cache station. This object has six octets.
snRtIpFwdCacheNextHopIp fdry.1.2.2.11.1.4 Syntax: IpAddress	Read only	Indicates the IP address of the Layer 3 Switch for the next hop.
snRtIpFwdCacheOutgoingPort fdry.1.2.2.11.1.5 Syntax: Integer	Read only	Specifies the outgoing port to which packets will be forwarded. Valid values: 0 – 3900. A value of zero indicates that there is no outgoing port for this entry. Non-zero value has the following meaning: • Bit 0 to bit 7 – Port number. • Bit 8 to bit 11 – Slot number. For virtual Layer 3 Switch interface, slot number is 15. Port number is the virtual Layer 3 Switch port number, which is a value from 1 – 60.
snRtIpFwdCacheType fdry.1.2.2.11.1.6 Syntax: Integer	Read only	Indicates the type of entry this is: • dynamic(1) • permanent(2)
snRtIpFwdCacheAction fdry.1.2.2.11.1.7 Syntax: Integer	Read only	Indicates the action taken with this entry: • other(1) • forward(2) • forUs(3) • waitForArp(4) • complexFilter(5) • icmpDeny(6) • dropPacket(7)
snRtIpFwdCacheFragCheck fdry.1.2.2.11.1.8 Syntax: Integer	Read only	Indicates if fragmentation-needed is enabled: • disabled(0) • enabled(1) **NOTE:** Foundry devices cannot forward the packet without fragmenting it.

Name, OID, and Syntax	Access	Description
snRtIpFwdCacheSnapHdr fdry.1.2.2.11.1.9 Syntax: Integer	Read only	Indicates if Ethernet SNAP (also called IEEE 802.3) encapsulation is enabled: • disabled(0) • enabled(1)
snRtIpFwdCacheVLanId fdry.1.2.2.11.1.10 Syntax: Integer	Read only	Shows the VLAN ID of an IP Forwarding Cache Table entry. A value of zero indicates that no VLAN is associated with this entry.

IP Prefix List Table

An IP prefix list specifies a list of networks. When you apply an IP prefix list to a neighbor, the Layer 3 Switch sends or receives only a route whose destination is in the IP prefix list. You can configure up to 100 prefix lists. The software interprets the prefix lists in sequential order, beginning with the lowest sequence number.

Name, OID, and Syntax	Access	Description
snIpPrefixListTable fdry.1.2.2.14	None	IP Prefix List Table.
snIpPrefixListEntry fdry.1.2.2.14.1	None	An entry in the IP Prefix List Table.
snIpPrefixListName fdry.1.2.2.14.1.1 Syntax: Octet string	Read only	Specifies the name of the prefix list. This name can be used when applying the prefix list to a neighbor. It appears in an octet string; each character of the name is represented by one octet. There can be up to 32 octets for this name.
snIpPrefixListSequence fdry.1.2.2.14.1.2 Syntax: Integer	Read only	Shows the sequence of an entry in the table. There can be up to 100 prefix list entries. If a sequence number is not specified, then entries are numbered in increments of 5, beginning with prefix list entry 5. Incoming or outgoing routes are matched against the entries in the IP Prefix List in numerical order, beginning with the lowest sequence number.
snIpPrefixListDesc fdry.1.2.2.14.1.3 Syntax: Octet string	Read-write	Specifies the description of the prefix. This description is in an octet string; each character in the description is represented by one octet. There can be up to 80 octets in the description.
snIpPrefixListAction fdry.1.2.2.14.1.4 Syntax: Integer	Read-write	Indicates what to do with the route if it matches this entry: • deny(0) • permit(1)
snIpPrefixListAddr fdry.1.2.2.14.1.5 Syntax: IpAddress	Read-write	Shows the IP address of the prefix.

Name, OID, and Syntax	Access	Description
snIpPrefixListMask fdry.1.2.2.14.1.6 Syntax: IpAddress	Read-write	Shows the number of bits in the prefix network mask.
snIpPrefixListGeValue fdry.1.2.2.14.1.7 Syntax: Integer	Read-write	Specifies that the prefix is greater than the value of the "snIpPrefixListMask" object. Valid values: 0 – 32
snIpPrefixListLeValue fdry.1.2.2.14.1.8 Syntax: Integer	Read-write	Specifies that the prefix is less than the value of the "snIpPrefixListMask" object. Valid values: 0 – 32

NOTE: You can specify a range of length for prefixes that are more specific than the values for the "snIpPrefixListAddr" and "snIpPrefixListMask" objects. The <ge-value> or <le-value> you specify must meet the following condition:

length < ge-value <= le-value <= 32

If a value for "snIpPrefixListGeValue" is specified, then the mask-length range is from the value of "snIpPrefixListGeValue" to 32.

If a value for "snIpPrefixListLeValue" is specified, then mask-length range is from length to the value of "snIpPrefixListLeValue".

If no value is specified for either the less than or greater than objects, then routes must exactly match the prefixes on the list.

snIpPrefixListRowStatus fdry.1.2.2.14.1.9 Syntax: Integer	Read-write	Controls the management of the table rows. The values that can be written are: • delete(3) – Delete the row • create(4) – Create a new row • modify(5) – Modify an existing row If the row exists, then a SET with a value of create(4) returns a "bad value" error. Deleted rows are removed from the table immediately. The following values can be returned on reads: • noSuch(0) – No such row • invalid(1) – Row is inoperative • valid(2) – Row exists and is valid

IP AS-Path Access List Table

The IP AS-Path Access List Table (snIpAsPathAccessListTable) has been deprecated in IronWare software release 07.5.00 and is no longer supported in Foundry devices.

IP AS-Path Access List String Table

AS-PATH is a list of the other ASs through which a route passes. BGP4 routers can use the AS-path to detect and eliminate routing loops. The IP AS-Path Access List Table contains filters that are used to deny or permit updates received from BGP4 neighbors.

Name, OID, and Syntax	Access	Description
snIpAsPathAccessListStringTable fdry.1.2.2.16	None	IP As-Path Access List Table.
snIpAsPathAccessListStringEntry fdry.1.2.2.16.1	None	An entry in the IP As-Path Access List Table.
snIpAsPathAccessListStringName fdry.1.2.2.16.1.1 Syntax: Display string	Read only	An index for the entry in the table.
snIpAsPathAccessListStringSequence fdry.1.2.2.16.1.2 Syntax: Integer	Read only	The sequence index for this entry in this table.
snIpAsPathAccessListStringAction fdry.1.2.2.16.1.3 Syntax: Integer	Read-write	Determines what to do with the packet if its address matches this entry: • deny(0) • permit(1)
snIpAsPathAccessListStringRegExpression fdry.1.2.2.16.1.4 Syntax: Integer	Read-write	Specifies the AS path information that will be permitted or denied. This object contains a regular expression. Each character of the regular expression string is represented by one octet.

Name, OID, and Syntax	Access	Description
snIpAsPathAccessListStringRow Status fdry.1.2.2.16.1.5 Syntax: Integer	Read-write	Controls the management of the table rows. The values that can be written are • delete(3) – Delete the row • create(4) – Create a new row • modify(5) – Modify an existing row If the row exists, then a SET with a value of create(4) returns a "bad value" error. Deleted rows are deleted immediately. The following values can be returned on reads: • noSuch(0) – No such row • invalid(1) – Row is inoperative • valid(2) – Row exists and is valid

Chapter 14
RIP

Routing Information Protocol (RIP) is an IP route exchange protocol that uses a distance vector (a number representing distance) to measure the cost of a given route. The cost is a distance vector because the cost often is equivalent to the number of hops between the Foundry Layer 3 Switch and the destination network.

A Foundry Layer 3 Switch can receive multiple paths to a destination. A RIP route can have a maximum cost of 15.

Refer to the *Foundry Enterprise Configuration and Management Guide* for details on the features discussed in this chapter.

IP RIP General Group

The following objects are general objects for RIP.

Name, OID, and Syntax	Access	Description
snRtIpRipEnable fdry.1.2.3.1.1 Syntax: Integer	Read-write	Indicates if IP RIP routing is enabled: • disabled(0) • enabled(1) Default: disabled
snRtIpRipUpdateTime fdry.1.2.3.1.2 Syntax: Integer	Read-write	Specifies the RIP update interval in seconds. Valid values: 1 – 1000 seconds
snRtIpRipRedisEnable fdry.1.2.3.1.3 Syntax: Integer	Read-write	Indicates if redistribution of static routes from the IP route table into RIP is enabled: • disabled(0) • enabled(1) Default: disabled
snRtIpRipRedisDefMetric fdry.1.2.3.1.4 Syntax: Integer	Read-write	Shows the default metric to be used when static routes are redistributed to RIP. Valid values: 1 – 15

Name, OID, and Syntax	Access	Description
snRtIpRipSetAllPortConfig fdry.1.2.3.1.5 Syntax: Integer	Read-write	The value of this object is a number corresponding to a row in the “snRtIpRipPortConfigPortIndex” object of the “snRtIpRipPortConfigTable”. The values of the “snRtIpRipPortVersion” and “snRtIpRipPortPoisonReverse” objects will be written to that row. **NOTE:** Before setting this object, all the intended data of the given row of the table must be set. Otherwise, the current data of the row will be used to set the entire “IP RIP Port Configuration Table”. The previous setting will be overwritten by the new one.
snRtIpRipGblFiltList fdry.1.2.3.1.6 Syntax: Octet string	Read-write	An IP RIP global filter list. Each octet contains a filter ID number that forms a group of filters. A valid entry in the “snRtIpRipRouteFilterTable” with the corresponding filter ID number in the “snRtIpRipRouteFilterId” object must be created before a filter list is initialized. Valid values: 1 – 64 octets.
snRtIpRipFiltOnAllPort fdry.1.2.3.1.7 Syntax: Integer	Read-write	Applies the IP RIP global filter object “snRtIpRipGblFiltList” to all interfaces. This object is used to add and delete all RIP filter lists to and from all interfaces. Prior to sending this command, “snRtIpRipGblFiltList” must contain the correct filter list. The values that can be written are: • deleteAllInBound(2) – delete all in-bound filter lists from all ports. • deleteAllOutBound(3) – delete all out-bound filter lists from all ports. • addAllInBound(4) – add all in-bound filter lists to all ports. • addAllOutBound(5) – add all out-bound filter lists to all ports. If a set operation failed, then a SET with value of (2) or (3) returns the error code "GenError". If the operation succeeded, then entries in this filter list are deleted immediately. The following values can be returned on reads: • valid(1) – set operation is done and is valid.
snRtIpRipDistance fdry.1.2.3.1.8 Syntax: Integer	Read-write	Shows the administrative distance of this filter. Valid values: 1 – 255.

IP RIP Port Configuration Table

The IP RIP Port Configuration Table contains the configuration of RIP on a particular interface. Before you can use this table, RIP must be enabled in the device and the “Redistribution Table” on page 14-3 must be configured with permit and deny commands.

Name, OID, and Syntax	Access	Description
snRtIpRipPortConfigTable fdry.1.2.3.2	None	The IP Rip Port Configuration Table.
snRtIpRipPortConfigEntry fdry.1.2.3.2.1	None	An entry in the IP Rip Port Configuration Table.
snRtIpRipPortConfigPortIndex fdry.1.2.3.2.1.1 Syntax: PortIndex	Read only	The port index for an entry in the IP Rip Port Configuration Table.
snRtIpRipPortVersion fdry.1.2.3.2.1.2 Syntax: Integer	Read-write	Specifies the IP RIP version on this port: • disabled(0) – RIP is disabled on this port • v1Only(1) – RIP version 1 only • v2Only(2) – RIP version 2 only • v1CompatibleV2(3) – RIP version 2 is compatible with version 1
snRtIpRipPortPoisonReverse fdry.1.2.3.2.1.3 Syntax: Integer	Read-write	Indicates if poison reverse is enabled: • disabled(0) • enabled(1) Poison reverse prevents routing loops and slow convergence within the network.
snRtIpRipPortLearnDefault fdry.1.2.3.2.1.4 Syntax: Integer	Read-write	Indicates if the ability to learn advertised routes is enabled on the interface: • disabled(0) • enabled(1)

Redistribution Table

The RIP Redistribution Table contains routes where RIP routes will be redistributed. RIP can redistribute routes from other routing protocols such as OSPF and BGP4 into RIP. A redistributed route is one that a Layer 3 Switch learns through another protocol, then distributes into RIP.

Name, OID, and Syntax	Access	Description
snRtIpRipRedisTable fdry.1.2.3.3	None	IP RIP Redistribution table.

Name, OID, and Syntax	Access	Description
snRtIpRipRedisEntry fdry.1.2.3.3.1	None	An entry in the IP RIP Redistribution table.
snRtIpRipRedisIndex fdry.1.2.3.3.1.1 Syntax: Integer	Read only	The table index for a IP RIP Redistribution entry. There can be up to 64 entries in this table.
snRtIpRipRedisAction fdry.1.2.3.3.1.2 Syntax: Integer	Read-write	Indicates what to do if routes match this IP RIP Redistribution entry. • deny(0) • permit(1)
snRtIpRipRedisProtocol fdry.1.2.3.3.1.3 Syntax: Integer	Read-write	Indicates which protocol will to be distributed: • other(1) – Cannot be used for SNMP-SET: • all(2) • static(3) • ospf(4) • bgp(5) • isis(6)
snRtIpRipRedisIp fdry.1.2.3.3.1.4 Syntax: IpAddress	Read-write	Shows the IP address of the IP route to be distributed. The address 0.0.0.0 means that all routes will be distributed.
snRtIpRipRedisMask fdry.1.2.3.3.1.5 Syntax: IpAddress	Read-write	Shows the IP subnet mask of the IP route to be distributed.
snRtIpRipRedisMatchMetric fdry.1.2.3.3.1.6 Syntax: Integer	Read-write	Specifies the metric of the route to be matched to determine the redistribution. Valid values: 0 – 65535. A value of 0 means that any metric value will be matched.
snRtIpRipRedisSetMetric fdry.1.2.3.3.1.7 Syntax: Integer	Read-write	Specifies the new metric of the route to be advertised. Valid values: 0 – 15. A value of 0 indicates that the default metric will be used.

Name, OID, and Syntax	Access	Description
snRtIpRipRedisRowStatus fdry.1.2.3.3.1.8 Syntax: Integer	Read-write	Controls the management of the table rows. The values that can be written are: • delete(3) – Delete the row • create(4) – Create a new row • modify(5) – Modify an existing row If the row exists, then a SET with a value of create(4) returns a "bad value" error. Deleted rows are removed from the table immediately. The following values can be returned on reads: • noSuch(0) – No such row • invalid(1) – Row is inoperative • valid(2) – Row exists and is valid

IP RIP Route Filter Table

The IP RIP Route Filter Table defines the IP network numbers the router will learn from the RIP protocol. The numbers are stored in the router's IP routing table. Once RIP filters are defined, you can assign them to individual interfaces.

Name, OID, and Syntax	Access	Description
snRtIpRipRouteFilterTable fdry.1.2.3.4	None	IP RIP Route Filter Table.
snRtIpRipRouteFilterEntry fdry.1.2.3.4.1	None	An entry of the IP RIP route filter table.
snRtIpRipRouteFilterId fdry.1.2.3.4.1.1 Syntax: Integer	Read only	Shows the filter ID to identify a filter entry. There can be up to 64 entries in this table.
snRtIpRipRouteFilterAction fdry.1.2.3.4.1.2 Syntax: Integer	Read-write	Indicates what action to take if the IP RIP packet matches this filter. • deny(0) • permit(1)
snRtIpRipRouteFilterIpAddr fdry.1.2.3.4.1.3 Syntax: IpAddress	Read-write	Indicates the route IP address that needs to be matched by any IP address in a RIP packet. A value of 0.0.0.0 means that any IP address in any RIP packets will be matched.
snRtIpRipRouteFilterSubnetMask fdry.1.2.3.4.1.4 Syntax: IpAddress	Read-write	If "snRtIpRipRouteFilterIpAddr" is 0, this value is ignored, and all IP RIP packets will be matched. Otherwise, this mask is applied to the IP RIP packet and then compared to "snRtIpRipRouteFilterIpAddr" to determine a match.

Name, OID, and Syntax	Access	Description
snRtIpRipRouteFilterRowStatus fdry.1.2.3.4.1.5 Syntax: Integer	Read-write	Controls the management of the table rows. The values that can be written are: • delete(3) – Delete the row • create(4) – Create a new row • modify(5) – Modify an existing row If the row exists, then a SET with a value of create(4) returns a "bad value" error. Deleted rows are removed from the table immediately. The following values can be returned on reads: • noSuch(0) – No such row • invalid(1) – Row is inoperative • valid(2) – Row exists and is valid

IP RIP Neighbor Filter Table

The IP RIP Neighbor Filter Table specifies the routers from which a router will receive RIP routes. By default, RIP routes will be learned from all neighbors.

Name, OID, and Syntax	Access	Description
snRtIpRipNbrFilterTable fdry.1.2.3.5	None	IP RIP Neighbor Filter Table
snRtIpRipNbrFilterEntry fdry.1.2.3.5.1	None	An entry of the IP RIP neighbor filter table.
snRtIpRipNbrFilterId fdry.1.2.3.5.1.1 Syntax: Integer	Read only	Indicates the ID of this entry in the table. There can be up to 64 entries in this table.
snRtIpRipNbrFilterAction fdry.1.2.3.5.1.2 Syntax: Integer	Read-write	Indicates what action to take if the source IP address in a packet matches the source IP address in this filter. The IP address to be matched is defined by the “snRtIpRipNbrFilterSourceIp” object. • deny(0) • permit(1)
snRtIpRipNbrFilterSourceIp fdry.1.2.3.5.1.3 Syntax: IpAddress	Read-write	Shows the source IP address that needs to be matched by the RIP packet. An IP address of 0.0.0.0 always matches any source IP addresses in any IP RIP packets.

Name, OID, and Syntax	Access	Description
snRtIpRipNbrFilterRowStatus fdry.1.2.3.5.1.4 Syntax: Integer	Read-write	Controls the management of the table rows. The values that can be written are: • delete(3) – Delete the row • create(4) – Create a new row • modify(5) – Modify an existing row If the row exists, then a SET with a value of create(4) returns a "bad value" error. Deleted rows are removed from the table immediately. The following values can be returned on reads: • noSuch(0) – No such row • invalid(1) – Row is inoperative • valid(2) – Row exists and is valid

IP RIP Port Access Table

The IP RIP Port Access Table allows a group of RIP filters to be applied to an IP interface. The filters can be applied to either incoming or outgoing traffic.

Name, OID, and Syntax	Access	Description
snRtIpRipPortAccessTable fdry.1.2.3.6	None	IP interface RIP access table.
snRtIpRipPortAccessEntry fdry.1.2.3.6.1	None	An entry of the IP interface RIP access table.
snRtIpRipPortAccessPort fdry.1.2.3.6.1.1 Syntax: PortIndex	Read only	The port number to which the IP RIP filter applies.
snRtIpRipPortAccessDir fdry.1.2.3.6.1.2 Syntax: Integer	Read only	Specifies if the filter is for incoming or outgoing packets:. • in(1) – Incoming packet • out(2) – Outgoing packet
snRtIpRipPortAccessFilterList fdry.1.2.3.6.1.3 Syntax: Octet string	Read-write	Contains an IP RIP filter list. Valid values: Up to 64 octets. Each octet contains a filter ID number that consists of a group of filters. Before a filter list can be created, there must be valid entries in the IP RIP Route Filter Table (“snRtIpRipRouteFilterTable” object) with their corresponding filter ID number entered in the “snRtIpRipRouteFilterId” object.

Name, OID, and Syntax	Access	Description
snRtIpRipPortAccessRowStatus fdry.1.2.3.6.1.4 Syntax: Integer	Read-write	Controls the management of the table rows. The values that can be written are: • delete(3) – Delete the row • create(4) – Create a new row • modify(5) – Modify an existing row If the row exists, then a SET with a value of create(4) returns a "bad value" error. Deleted rows are removed from the table immediately. The following values can be returned on reads: • noSuch(0) – No such row • invalid(1) – Row is inoperative • valid(2) – Row exists and is valid

Chapter 15
OSPF

This chapter presents the objects for the Open Shortest Path First (OSPF) protocol. OSPF objects are available in all Foundry devices, except ServerIron.

Objects presented in this chapter are:

For objects relating to OSPF traps, refer to the chapter "Traps and Objects to Enable Traps" on page 21-1.

Refer to the *Foundry Enterprise Configuration and Management Guide* for details on the features discussed in this chapter.

OSPF General Objects

These objects provide information about the OSPF Process. They apply globally to the routers.

Name, OID, and Syntax	Access	Description
snOspfRouterId fdry.1.2.4.1.1 Syntax: RouterID	Read-write	Shows the IP address of the Autonomous System Boundary Router. Conventionally, this ID defaults to IP address of one of the routers to ensure uniqueness in the network. This object contains a 32-bit integer. Reference: RFC 1583 “OSPF Version 2”, section C.1 Global parameters
snOspfAdminStat fdry.1.2.4.1.2 Syntax: Integer	Read-write	Specifies the state of the OSPF in the router: • disabled(0) – OSPF is disabled on all interfaces • enabled(1) – OSPF is active on at least one interface
snOspfASBdrRtrStatus fdry.1.2.4.1.3 Syntax: TruthVal	Read-write	Indicates if this router is an Autonomous System Boundary Router: • false(0) • true(1) Reference: RFC 1583 “OSPF Version 2”, Section 3.3 Classification of routers
snOspfRedisMode fdry.1.2.4.1.4 Syntax: Integer	Read-write	Specifies if OSPF redistribution has been enabled on this router: • disabled(0) – OSPF redistribution is disabled • enabled(1) – OSPF redistribution is active
snOspfDefaultOspfMetricValue fdry.1.2.4.1.5 Syntax: Integer	Read-write	Shows the cost of using a default OSPF Metric value on this route. Valid values: 1 – 65535
snOspfExternLSACount fdry.1.2.4.1.6 Syntax: Counter	Read only	The number of external link-state advertisements in the link-state database. Reference: RFC 1583 “OSPF Version 2”, section A.4.5 AS external link advertisements (LS type 5)
snOspfExternLSACksumSum fdry.1.2.4.1.7 Syntax: Integer	Read only	Indicates the 32-bit unsigned sum of the LS checksums of the external link-state advertisements contained in the link-state database. This sum can be used to determine if there has been a change in a router’s link-state database and to compare the link-state database of two routers.
snOspfOriginateNewLSAs fdry.1.2.4.1.8 Syntax: Counter	Read only	Shows the number of new link-state advertisements that have been originated by the router. This number increments each time the router originates a new LSA.

Name, OID, and Syntax	Access	Description
snOspfRxNewLSAs fdry.1.2.4.1.9 Syntax: Counter	Read only	Shows the number of link-state advertisements received by the router. This number does not include newer instantiations of self-originated link-state advertisements.
snOspfOspfRedisMetricType fdry.1.2.4.1.10 Syntax: Integer	Read-write	Indicates the type of route: • type1(1) – External Type 1 (comparable value) the intra-area and inter-area routes. It is an OSPF metric plus the external Metric. • type2(2) – External Type 2 (non-comparable value) routes, it is the external metric.
snOspfExtLsdbLimit fdry.1.2.4.1.11 Syntax: Integer	Read-write	Provides compliance with RFC 1765 in the handling of OSPF external link-state database (LSDB) overflow Specifies the maximum number of non-default AS-external-LSAs entries that can be stored in the link-state database. When the number of non-default AS-external-LSAs in a router's link-state database reaches ospfExtLsdbLimit, the router enters Overflow State.The router never holds more than ospfExtLsdbLimit non-default AS-external-LSAs in its database. OspfExtLsdbLimit MUST be set identically in all routers attached to the OSPF backbone and/or any regular OSPF area. (i.e., OSPF stub areas and NSSAs are excluded). Valid values: 1 – 2000. If the value is -1, then there is no limit.
snOspfExitOverflowInterval fdry.1.2.4.1.12 Syntax: Integer	Read-write	Specifies the number of seconds that a router will attempt to leave the overflow state once it is in that state. This value allows the router to again originate non-default AS-external-LSAs. If this object is set to 0, the router will not leave the overflow state until it is restarted. Valid values: 0 – 86400 seconds.
snOspfRfc1583Compatibility fdry.1.2.4.1.13 Syntax: Integer	Read-write	Specifies if the OSPF route is compatible with RFC1583 or RFC2178: • disabled(0) – Compatible with RFC 2178. • enabled(1) – Compatible with RFC 1583.
snOspfRouterIdFormat fdry.1.2.4.1.14 Syntax: Integer	Read-write	Specifies the format of how Router ID will be entered in the "snOspfRouterId" object: • integer(0) – Integer. • ipAddress(1) – IP address.
snOspfDistance fdry.1.2.4.1.15 Syntax: Integer	Read-write	Determines the OSPF administrative distance for intra-area routes. Default: 110 Valid values: 1 – 255

Name, OID, and Syntax	Access	Description
snOspfDistanceIntra fdry.1.2.4.1.16	Read-write	Determines the OSPF administrative distance for intra-area routes. Default: 110 Valid values: 1 – 255
snOspfDistanceInter fdry.1.2.4.1.17 Syntax: Integer	Read-write	Determines the OSPF administrative distance for inter-area routes. Default: 110 Valid values: 1 – 255
snOspfDistanceExternal fdry.1.2.4.1.18 Syntax: Integer	Read-write	Determines the OSPF administrative distance for external routes. Valid values: 1 – 255 Default: 110

OSPF Area Table

The OSPF Area Data Structure contains information that describes the various OSPF areas. The interfaces and virtual links are configured as part of these areas. Area 0.0.0.0, by definition, is the Backbone Area.

Reference: RFC 1583 “OSPF Version 2”, section 6 The Area Data Structure

Name, OID, and Syntax	Access	Description
snOspfAreaTable fdry.1.2.4.2.1	None	The OSPF Area Table
snOspfAreaEntry fdry.1.2.4.2.1.1	None	An entry in the OSPF Area Table
snOspfAreaId fdry.1.2.4.2.1.1.1 Syntax: AreaID	Read only	Specifies the address of the area. This address identifies the router, independent of its IP address. Area ID 0.0.0.0 is used for the OSPF backbone. The format used for this ID is specified by the “snOspfAreaIdFormat” object. Reference: RFC 1583 “OSPF Version 2”, section C.2 Area parameters

Name, OID, and Syntax	Access	Description
snOspfImportASExtern fdry.1.2.4.2.1.1.2 Syntax: Integer	Read-write	Indicates the type of OSPF area that this router supports: • 0 – Stub area. OSPF routers within a stub area cannot send or receive external LSAs. In addition, OSPF routers in a stub area must use a default route to the area's Area Border Router (ABR) or Autonomous System Boundary Router (ASBR) to send traffic out of the area. • 1 – Normal area. OSPF routers within a normal area can send and receive external link-state advertisements • 2 – NSSA area ASBR of an NSSA can import external route information into the area. Reference: RFC 1583 "OSPF Version 2", section C.2 Area parameters
snOspfStubMetric fdry.1.2.4.2.1.1.3 Syntax: BigMetric	Read-write	The metric value applied at the default type of service(ospfMetric). By default, this equals the least metric at the type of service among the interfaces to other areas. This object exist only if the value of snOspfAreaSummary is snOspfAreaSummary(2); Otherwise, an SNMP_GET/ GET_NEXT attempt of this Object will return NO_SUCH_NAME.
snOspfAreaRowStatus fdry.1.2.4.2.1.1.4 Syntax: Integer	Read-write	Controls the management of the table rows. The values that can be written are: • delete(3) – Delete the row • create(4) – Create a new row • modify(5) – Modify an existing row If the row exists, then a SET with a value of create(4) returns a "bad value" error. Deleted rows are removed from the table immediately. The following values can be returned on reads: • noSuch(0) – No such row • invalid(1) – Row is inoperative • valid(2) – Row exists and is valid
snOspfAreaIdFormat fdry.1.2.4.2.1.1.5 Syntax: Integer	Read-write	Specifies the format of Area ID entered in the "snOspfIfAreaId" object: • integer(0) – Integer • ipAddress(1) – IP address

Area Range Table

The area range allows you to assign an aggregate value to a range of IP addresses. This aggregate value becomes the address that is advertised instead all of the individual addresses it represents being advertised. The Area Range table contains the aggregate value of the ranges of IP addresses that are configured to be propagated from an OSPF area.

Reference: RFC 1583 “OSPF Version 2”, section C.2 Area parameters.

Name, OID, and Syntax	Access	Description
snOspfAreaRangeTable fdry.1.2.4.3.1	None	The Area Range Table.
snOspfAreaRangeEntry fdry.1.2.4.3.1.1	None	An entry in the Area Range Table.
snOspfAreaRangeAreaID fdry.1.2.4.3.1.1.1 Syntax: AreaID	Read only	Specifies the ID of the area where the address range can be found. The object “snOspfAreaRangeAreaIdFormat” determines the format of this object.
snOspfAreaRangeNet fdry.1.2.4.3.1.1.2 Syntax: IpAddress	Read only	Specifies the IP Address of the net or subnet indicated by the range.
snOspfAreaRangeMask fdry.1.2.4.3.1.1.3 Syntax: IpAddress	Read-write	Specifies the subnet mask that pertains to the net or subnet.
snOspfAreaRangeRowStatus fdry.1.2.4.3.1.1.4 Syntax: Integer	Read-write	Controls the management of the table rows. The values that can be written are: • delete(3) – Delete the row • create(4) – Create a new row • modify(5) – Modify an existing row If the row exists, then a SET with a value of create(4) returns a "bad value" error. Deleted rows are removed from the table immediately. The following values can be returned on reads: • noSuch(0) – No such row • invalid(1) – Row is inoperative • valid(2) – Row exists and is valid
snOspfAreaRangeAreaIdFormat fdry.1.2.4.3.1.1.5 Syntax: Integer	Read only	Specifies the format of how Area ID will be entered in the “snOspfAreaRangeAreaID” object: • integer(0) – Integer. • ipAddress(1) – IP Address.

OSPF Interface Configuration Tables

The OSPF Interface Table augments the ifTable with OSPF specific information.

References:

- Reference: RFC 1583 “OSPF Version 2”, section C.3 Router interface parameters.
- Reference: RFC 1583 “OSPF Version 2”, section E Authentication.

OSPF Interface Configuration Table

Name, OID, and Syntax	Access	Description
snOspfIfTable fdry.1.2.4.4.1	None	The OSPF Interface Configuration Table.
snOspfIfEntry fdry.1.2.4.4.1.1	None	An entry in the OSPF Interface Configuration Table.
snOspfIfPort fdry.1.2.4.4.1.1.1 Syntax: Integer	Read only	The physical router port of this OSPF interface.
snOspfIfAreaId fdry.1.2.4.4.1.1.2 Syntax: AreaID	Read-write	Specifies the address of the area in a 32-bit integer. This address uniquely identifies the area to which the interface connects. Area ID 0.0.0.0 is used for the OSPF backbone. Default: '00000000'h, which equals to 0.0.0.0
snOspfIfAdminStat fdry.1.2.4.4.1.1.3 Syntax: Integer	Read-write	Indicates if neighbor relationships may be formed on this interface: • disabled(0) – The interface is external to OSPF • enabled(1) – Neighbor relationships may be formed on the interface, which will be advertised as an internal route to an area. Default: enabled(1)
snOspfIfRtrPriority fdry.1.2.4.4.1.1.4 Syntax: DesignatedRouterPriority	Read-write	Specifies the priority of this interface. This object is used in the designated router election algorithm for multi-access networks. Valid values: 0 – 255. A value of 0 signifies that the router is not eligible to become the designated router on this particular network. If two or more routers have the same priority value, then the router with the highest router ID becomes the designated router. The router with the next highest router ID becomes the backup designated router.
snOspfIfTransitDelay fdry.1.2.4.4.1.1.5 Syntax: UpToMaxAge	Read-write	Shows the time it takes to transmit link-state update packets on this interface. Valid values: 0 – 3600 seconds Default: 1 second
snOspfIfRetransInterval fdry.1.2.4.4.1.1.6 Syntax: UpToMaxAge	Read-write	Specifies the number of seconds between link-state advertisement retransmissions, for adjacencies belonging to this interface. This value is also used when retransmitting database description and link-state request packets. Values can be from 0 – 3600 seconds. Default: 5 seconds

Name, OID, and Syntax	Access	Description
snOspfIfHelloInterval fdry.1.2.4.4.1.1.7 Syntax: HelloRange	Read-write	Specifies the number of seconds that router waits before it sends the next Hello packet on this interface. This value must be the same for all routers attached to a common network. Values can be from 1 – 65535 seconds (up to 'FFFF'h). Valid values: 1 – 65535 seconds Default: 10 seconds
snOspfIfRtrDeadInterval fdry.1.2.4.4.1.1.8 Syntax: PositiveInteger	Read-write	Specifies the number of seconds that neighbor routers wait for a router's Hello packets before they declare that the router is down. This should be a multiple of the Hello interval. This value must be the same for all routers attached to a common network. Valid values: 1 – 2147483647 seconds Default: 40 seconds
snOspfIfAuthType fdry.1.2.4.4.1.1.9 Syntax: Integer	Read-write	Specifies the authentication type for an interface. Valid values: • none(0) • simplePassword(1) • md5(2) • reserved for specification by IANA(> 2) Additional authentication types may be assigned locally on a per interface basis, up to 255. Default: none(0)
snOspfIfAuthKey fdry.1.2.4.4.1.1.10 Syntax: Octet string	Read-write	Indicates the authentication key. • If the authentication type selected is simple password, then this object requires an alphanumeric password. If the value is shorter than eight octets, the agent will left-adjust and zero-fill the key to equal eight octets. The simple password setting takes effect immediately. All OSPF packets transmitted on the interface contain this password. Any OSPF packet received on the interface is checked for this password. If the password is not present, then the packet is dropped. The password can be up to eight characters long. • If the authentication type is MD5, then a key ID and an MD5 key are required. The key ID is a number from 1 to 255 and identifies the MD5 key that is being used. The MD5 key can be up to sixteen alphanumeric characters long. Default: '0000000000000000'h, which is equal to 0.0.0.0.0.0.0.0 When read, "snOspfIfAuthKey" always returns a blank. Reference: RFC 1583 "OSPF Version 2", section 9, The Interface Data Structure

Name, OID, and Syntax	Access	Description
snOspfIfMetricValue fdry.1.2.4.4.1.1.11 Syntax: Integer	Read-write	Specifies the cost of using this type of service (TOS) on this interface. The default value of the TOS 0 Metric is equal to 10^8 divided by the ifSpeed.
snOspfIfRowStatus fdry.1.2.4.4.1.1.12 Syntax: Integer	Read-write	Controls the management of the table rows. The values that can be written are: • delete(3) – Delete the row • create(4) – Create a new row • modify(5) – Modify an existing row If the row exists, then a SET with a value of create(4) returns a "bad value" error. Deleted rows are removed from the table immediately. The following values can be returned on reads: • noSuch(0) – No such row • invalid(1) – Row is inoperative • valid(2) – Row exists and is valid
snOspfIfMd5AuthKeyId fdry.1.2.4.4.1.1.13 Syntax: Integer	Read-write	Specifies the ID of the MD5 authentication key. If the object "snOspfVirtIfAuthType" is set to MD5, this object identifies the algorithm and secret key used to create the message digest appended to the OSPF packet. Key identifiers are unique per-interface (or equivalently, per-subnet). The value of this object must be a number from 1 – 255.
snOspfIfMd5AuthKey fdry.1.2.4.4.1.1.14 Syntax: Octet string	Read-write	Specifies the MD5 authentication key. If the object "snOspfVirtIfAuthType" is set to MD5, the value of this object is encrypted and included in each OSPF packet transmitted. The agent will left-adjust and zero-fill the key to equal 16 octets. When read, snOspfIfMd5AuthKey always returns a blank.
snOspfIfMd5ActivationWaitTime fdry.1.2.4.4.1.1.15 Syntax: Integer	Read-write	Determines when a newly configured MD5 authentication key is valid. This parameter provides a graceful transition from one MD5 key to another without disturbing the network. All new packets transmitted after the key activation wait time interval use the newly configured MD5 key. OSPF packets that contain the old MD5 key are accepted for up to five minutes after the new MD5 key is in operation. The range for the key activation wait time is from 0 – 14400 seconds. Default: 300 seconds
snOspfIfAreaIdFormat fdry.1.2.4.4.1.1.16 Syntax: Integer	Read only	Specifies the format of how Area ID will be entered in the "snOspfIfAreaId" object • integer(0) – Integer • ipAddress(1) – IP Address

Name, OID, and Syntax	Access	Description
snOspfIfPassiveMode fdry.1.2.4.4.1.1.17 Syntax: Integer	Read-write	Indicates if passive mode is enabled on this interface: • disabled(0) • enabled(1)
snOspfIfDatabaseFilterAllOut fdry.1.2.4.4.1.1.18 Syntax: Integer	Read-write	Determines if the filtering of outgoing OSPF LSA on this interface is enabled: • disabled(0) – Filtering is disabled • enabled(1) – Filtering is enabled
snOspfIfMtuIgnore fdry.1.2.4.4.1.1.19 Syntax: Integer	Read-write	Determines if the MTU detection mode of this interface is enabled: • disabled(0) – MTU detection mode is disabled • enabled(1) – MTU detection mode is enabled
snOspfIfNetworkP2mp fdry.1.2.4.4.1.1.20 Syntax: Integer	Read-write	This object is not supported in Foundry devices. Determines if the P2MP mode of this interface is enabled: • disabled(0) – P2MP mode is disabled enabled(1) – P2MP mode is enabled

OSPF Interface 2 Configuration Table

Name, OID, and Syntax	Access	Description
snOspfIf2Table fdry.1.2.4.4.2	None	Determines if the P2MP mode of this interface is enabled: • disabled(0) – P2MP mode is disabled • enabled(1) – P2MP mode is enabled
snOspfIf2Entry fdry.1.2.4.4.2.1	None	An entry in the OSPF Interface 2 Configuration Table.
snOspfIf2Port fdry.1.2.4.4.2.1.1 Syntax: Integer	Read only	The physical router port of this OSPF interface.
snOspfIf2AreaId fdry.1.2.4.4.2.1.2 Syntax: AreaID	Read-write	Specifies the address of the area in a 32-bit integer. This address uniquely identifies the area to which the interface connects. Area ID 0.0.0.0 is used for the OSPF backbone. Default: '00000000'h, which equals to 0.0.0.0
snOspfIf2AdminStat fdry.1.2.4.4.2.1.3 Syntax: Integer	Read-write	Indicates if neighbor relationships may be formed on this interface: • disabled(0) – The interface is external to OSPF • enabled(1) – Neighbor relationships may be formed on the interface, which will be advertised as an internal route to an area. Default: enabled(1)

Name, OID, and Syntax	Access	Description
snOspfIf2RtrPriority fdry.1.2.4.4.2.1.4 Syntax: DesignatedRouterPriority	Read-write	Specifies the priority of this interface. This object is used in the designated router election algorithm for multi-access networks. Valid values: 0 – 255. A value of 0 signifies that the router is not eligible to become the designated router on this particular network. If two or more routers have the same priority value, then the router with the highest router ID becomes the designated router. The router with the next highest router ID becomes the backup designated router.
snOspfIf2TransitDelay fdry.1.2.4.4.2.1.5 Syntax: UpToMaxAge	Read-write	Shows the time it takes to transmit link-state update packets on this interface. Valid values: 0 – 3600 seconds Default: 1 second
snOspfIf2RetransInterval fdry.1.2.4.4.2.1.6 Syntax: UpToMaxAge	Read-write	Specifies the number of seconds between link-state advertisement retransmissions, for adjacencies belonging to this interface. This value is also used when retransmitting database description and link-state request packets. Valid values: 0 – 3600 seconds Default: 5 seconds
snOspfIf2HelloInterval fdry.1.2.4.4.2.1.7 Syntax: HelloRange	Read-write	Specifies the number of seconds that router waits before it sends the next Hello packet on this interface. This value must be the same for all routers attached to a common network. Values can be from 1 – 65535 seconds (up to 'FFFF'h). Valid values: 1 – 65535 seconds Default: 10 seconds
snOspfIf2RtrDeadInterval fdry.1.2.4.4.2.1.8 Syntax: PositiveInteger	Read-write	Specifies the number of seconds that neighbor routers wait for a router's Hello packets before they declare that the router is down. This should be a multiple of the Hello interval. This value must be the same for all routers attached to a common network. Valid values: 1 – 2147483647 seconds Default: 40 seconds
snOspfIf2AuthType fdry.1.2.4.4.2.1.9 Syntax: Integer	Read-write	Specifies the authentication type for an interface. Valid values:: • none(0) • simplePassword(1) • md5(2) • reserved for specification by IANA(> 2) Additional authentication types may be assigned locally on a per interface basis. The value of this object can be up – 255. Default: none(0)

Name, OID, and Syntax	Access	Description
snOspfIf2AuthKey fdry.1.2.4.4.2.1.10 Syntax: Octet string	Read-write	Indicates the authentication key. • If the authentication type selected is simple password, then this object requires an alphanumeric password. If the value is shorter than eight octets, the agent will left-adjust and zero-fill the key to equal eight octets. The simple password setting takes effect immediately. All OSPF packets transmitted on the interface contain this password. Any OSPF packet received on the interface is checked for this password. If the password is not present, then the packet is dropped. The password can be up to eight characters long. • If the authentication type is MD5, then a key ID and an MD5 key are required. The key ID is a number from 1 to 255 and identifies the MD5 key that is being used. The MD5 key can be up to sixteen alphanumeric characters long. Valid values: Up to eight octets. Default: ’0000000000000000’h which is equal to 0.0.0.0.0.0.0.0 When read, “snOspfIf2AuthKey” always returns a blank. Reference: RFC 1583 “OSPF Version 2”, section 9 The Interface Data Structure
snOspfIf2MetricValue fdry.1.2.4.4.2.1.11 Syntax: Integer	Read-write	Specifies the cost of using this type of service (TOS) on this interface. The default value of the TOS 0 Metric is equal to 10^8 divided by the ifSpeed. Valid values: 0 – 65535
snOspfIf2RowStatus fdry.1.2.4.4.2.1.12 Syntax: Integer	Read-write	Controls the management of the table rows. The values that can be written are: • delete(3) – Delete the row • create(4) – Create a new row • modify(5) – Modify an existing row If the row exists, then a SET with a value of create(4) returns a "bad value" error. Deleted rows are removed from the table immediately. The following values can be returned on reads: • noSuch(0) – No such row • invalid(1) – Row is inoperative • valid(2) – Row exists and is valid
snOspfIf2Md5AuthKeyId fdry.1.2.4.4.2.1.13 Syntax: Integer	Read-write	Specifies the ID of the MD5 authentication key. If the object “snOspfVirtIfAuthType” is set to MD5, this object identifies the algorithm and secret key used to create the message digest appended to the OSPF packet. Key identifiers are unique per interface (or equivalently, per subnet). The value of this object must be a number from 1 – 255.

Name, OID, and Syntax	Access	Description
snOspfIf2Md5AuthKey fdry.1.2.4.4.2.1.14 Syntax: Octet string	Read-write	Specifies the MD5 authentication key. If the object "snOspfVirtIfAuthType" is set to MD5, the value of this object is encrypted and included in each OSPF packet transmitted. The agent will left-adjust and zero-fill the key to equal 16 octets. When read, "snOspfIf2Md5AuthKey" always returns a blank. Valid values: Up to 16 octets.
snOspfIf2Md5ActivationWaitTime fdry.1.2.4.4.2.1.15 Syntax: Integer	Read-write	Determines when a newly configured MD5 authentication key is valid. This parameter provides a graceful transition from one MD5 key to another without disturbing the network. All new packets transmitted after the key activation wait time interval use the newly configured MD5 key. OSPF packets that contain the old MD5 key are accepted for up to five minutes after the new MD5 key is in operation. The range for the key activation wait time is from 0 – 14400 seconds. Default: 300 seconds
snOspfIf2AreaIdFormat fdry.1.2.4.4.2.1.16 Syntax: Integer	Read only	Specifies the format of how Area ID will be entered in the "snOspfIfAreaId" object • integer(0) – Integer • ipAddress(1) – IP Address
snOspfIf2PassiveMode fdry.1.2.4.4.2.1.17 Syntax: Integer	Read-write	Indicates if passive mode is enabled on this interface: • disabled(0) • enabled(1)
snOspfIf2DatabaseFilterAllOut fdry.1.2.4.4.2.1.18 Syntax: Integer	Read-write	Determines if the filtering of outgoing OSPF LSA on this interface is enabled: • disabled(0) – Filtering is disabled • enabled(1) – Filtering is enabled
snOspfIf2MtuIgnore fdry.1.2.4.4.2.1.19 Syntax: Integer	Read-write	Determines if the MTU detection mode of this interface is enabled: • disabled(0) – MTU detection mode is disabled • enabled(1) – MTU detection mode is enabled
snOspfIf2NetworkP2mp fdry.1.2.4.4.2.1.20 Syntax: Integer	Read-write	Determines if the P2MP mode of this interface is enabled: • disabled(0) – P2MP mode is disabled • enabled(1) – P2MP mode is enabled

OSPF Virtual Interface Table

The Virtual Interface Table describes the virtual links that the OSPF process is configured to carry.

References:

- RFC 1583 "OSPF Version 2", section C.4 Virtual link parameters

- RFC 1583 “OSPF Version 2”, section 9 The Interface Data Structure

Name, OID, and Syntax	Access	Description
snOspfVirtIfTable fdry.1.2.4.5.1	None	The OSPF Virtual Interface Table.
snOspfVirtIfEntry fdry.1.2.4.5.1.1	None	An entry in the OSPF Virtual Interface Table.
snOspfVirtIfAreaID fdry.1.2.4.5.1.1.1 Syntax: AreaID	Read only	Specifies the ID of the transit Area that the Virtual link traverses. A value of 0.0.0.0 is not valid.
snOspfVirtIfNeighbor fdry.1.2.4.5.1.1.2 Syntax: RouterID	Read only	Shows the IP address of the ID of the router that is serving as the virtual neighbor.
snOspfVirtIfTransitDelay fdry.1.2.4.5.1.1.3 Syntax: UpToMaxAge	Read-write	Shows the time it takes to transmit link-state update packets on this interface. Valid values: 0 – 3600 seconds Default: 1 second
snOspfVirtIfRetransInterval fdry.1.2.4.5.1.1.4 Syntax: UpToMaxAge	Read-write	Specifies the interval between the retransmission of link-state advertisements to router adjacencies for this interface. Valid values: 0 – 3600 seconds Default: 5 seconds This value is also used when retransmitting database description and link-state request packets. This value should be greater than the expected roundtrip time.
snOspfVirtIfHelloInterval fdry.1.2.4.5.1.1.5 Syntax: HelloRange	Read-write	Specifies the number of seconds that router waits before it sends the next Hello packet on this interface. This value must be the same for all routers attached to a common network. Valid values: from 1 – 65535 seconds Default: 10 seconds This value must be the same for the virtual neighbor.
snOspfVirtIfRtrDeadInterval fdry.1.2.4.5.1.1.6 Syntax: PositiveInteger	Read-write	Specifies the number of seconds that neighbor routers wait for a router’s Hello packets before they declare that the router is down. This should be a multiple of the Hello interval. This value must be the same for the virtual neighbor. Default: 60 seconds

Name, OID, and Syntax	Access	Description
snOspfVirtIfAuthType fdry.1.2.4.5.1.1.7 Syntax: Integer	Read-write	Specifies the authentication type for an interface. Valid values: • none(0) • simplePassword(1) • md5(2) • reserved for specification by IANA(> 2) Additional authentication types may be assigned locally on a per interface basis. Default: none(0)
snOspfVirtIfAuthKey fdry.1.2.4.5.1.1.8 Syntax: Octet string	Read-write	Specifies the authentication key: • If the authentication type selected is simple password, then this object requires an alphanumeric password. If the value is shorter than eight octets, the agent will left-adjust and zero-fill the key to equal eight octets. The simple password setting takes effect immediately. All OSPF packets transmitted on the interface contain this password. Any OSPF packet received on the interface is checked for this password. If the password is not present, then the packet is dropped. The password can be up to eight characters long. • If the authentication type is MD5, then a key ID and an MD5 key are required. The key ID is a number from 1 to 255 and identifies the MD5 key that is being used. The MD5 key can be up to sixteen alphanumeric characters long. When read, “snOspfIfAuthKey” always returns a blank. Default: 0000000000000000’h, which is 0.0.0.0.0.0.0.0
snOspfVirtIfRowStatus fdry.1.2.4.5.1.1.9 Syntax: Integer	Read-write	Controls the management of the table rows. The values that can be written are: • delete(3) – Delete the row • create(4) – Create a new row • modify(5) – Modify an existing row If the row exists, then a SET with a value of create(4) returns a "bad value" error. Deleted rows are removed from the table immediately. The following values can be returned on reads: • noSuch(0) – No such row • invalid(1) – Row is inoperative • valid(2) – Row exists and is valid

Name, OID, and Syntax	Access	Description
snOspfVirtIfMd5AuthKeyId fdry.1.2.4.5.1.1.10 Syntax: Integer	Read-write	Specifies the ID of the MD5 authentication key. This object identifies the algorithm and secret key used to create the message digest appended to the OSPF packet. Key identifiers are unique per interface. If the object “snOspfVirtIfAuthType” is set to MD5, the value of this object must be a number from 1 to 255.
snOspfVirtIfMd5AuthKey fdry.1.2.4.5.1.1.11 Syntax: Octet string	Read-write	Specifies the MD5 authentication key. The value of this object is encrypted and included in each OSPF packet transmitted. If the value of this object is shorter than 16 octets, the agent will left-adjust and zero-fill the key to equal 16 octets. When read, snOspfIfMd5AuthKey always returns a blank.
snOspfVirtIfMd5ActivationWaitTime fdry.1.2.4.5.1.1.12 Syntax: Integer	Read-write	Determines when a newly configured MD5 authentication key is valid. This parameter provides a graceful transition from one MD5 key to another without disturbing the network. All new packets transmitted after the key activation wait time interval use the newly configured MD5 key. OSPF packets that contain the old MD5 key are accepted for up to five minutes after the new MD5 key is in operation. Valid values: 0 – 14400 seconds Default: 300 seconds
snOspfVirtIfAreaIdFormat fdry.1.2.4.5.1.1.13 Syntax: Integer	Read only	Specifies the format of how Area ID will be entered in the “snOspfVirtIfAreaID” object: • integer(0) – Integer. • ipAddress(1) – IP address.

OSPF Redistribution of Routes Table

The OSPF Redistribution of Routes Table contains a list of routes that will be used to decide whether a particular RIP or static route is to be imported into OSPF domain. Routes will be imported if the parameter “Import Route into OSPF” is enabled. They will be imported as external type 2 routes.

Name, OID, and Syntax	Access	Description
snOspfRedisTable fdry.1.2.4.6.1	None	The OSPF Redistribution Table contains a list of routes that could be imported into the OSPF domain.
snOspfRedisEntry fdry.1.2.4.6.1.1	None	An entry in the OSPF Redistribution Table
snOspfRedisIndex fdry.1.2.4.6.1.1.1 Syntax: Integer	Read only	An ID identifying this destination route. There can be up to 64 entries for this object.

Name, OID, and Syntax	Access	Description
snOspfRedisIpAddress fdry.1.2.4.6.1.1.2 Syntax: IpAddress	Read-write	Shows the destination IP address that is associated with this particular route.
snOspfRedisMask fdry.1.2.4.6.1.1.3 Syntax: IpAddress	Read-write	Shows the subnet mask of this route.
snOspfRedisAction fdry.1.2.4.6.1.1.4 Syntax: Integer	Read-write	Specifies what action to be taken if the route matches this entry: • noImport(0) – Do not import route into the OSPF domain • import(1) – Import the route is into OSPF domain as external type 2 route
snOspfRedisProtocol fdry.1.2.4.6.1.1.5 Syntax: Integer	Read-write	Specifies how routes are imported into the OSPF domain: • rip(1) – the RIP route. • all(2) – all protocol route. • static(3) – the static route. • bgp(4) – the BGP route. • connected(5) – the connected route. • isis(6) – the ISIS route.
snOspfRedisSetOspfMetric fdry.1.2.4.6.1.1.6 Syntax: Integer	Read-write	The value indicates to which the route metric should match: • disabled(0) – the route metric does NOT match the OSPF metric field. • enabled(1) – the route metric matches the OSPF metric field.
snOspfRedisOspfMetricValue fdry.1.2.4.6.1.1.7 Syntax: Integer	Read-write	Specifies the cost of using this type of service (TOS) on this interface. Valid values: 0 – 65535.

Name, OID, and Syntax	Access	Description
snOspfRedisMatchRipMetric fdry.1.2.4.6.1.1.8 Syntax: Integer	Read-write	The value indicates to which the route metric should match: • disabled(0) – the route metric does NOT match the RIP metric field. • enabled(1) – the route metric matches the RIP metric field.
snOspfRedisRipMetricValue fdry.1.2.4.6.1.1.9 Syntax: Integer	Read-write	Specifies the cost of using RIP on this interface. Valid values: 1 – 15 hops.
snOspfRedisRowStatus fdry.1.2.4.6.1.1.10 Syntax: Integer	Read-write	Controls the management of the table rows. The values that can be written are: • delete(3) – Delete the row • create(4) – Create a new row • modify(5) – Modify an existing row If the row exists, then a SET with a value of create(4) returns a "bad value" error. Deleted rows are removed from the table immediately. The following values can be returned on reads: • noSuch(0) – No such row • invalid(1) – Row is inoperative • valid(2) – Row exists and is valid

OSPF Neighbor Table

The OSPF Neighbor Table describes non-virtual neighbors in the locality of the router.

Reference:

- RFC 1583 “OSPF Version 2”, section 10 The Neighbor Data Structure
- RFC 1583 “OSPF Version 2”, section 12.1.2 Options

Name, OID, and Syntax	Access	Description
snOspfNbrTable fdry.1.2.4.7.1	None	A table of non-virtual neighbor information.
snOspfNbrEntry fdry.1.2.4.7.1.1	None	An entry in the OSPF Neighbor Information Table. One entry represents one neighbor.
snOspfNbrEntryIndex fdry.1.2.4.7.1.1.1 Syntax: Integer	Read only	The table entry index of this neighbor.

Name, OID, and Syntax	Access	Description
snOspfNbrPort fdry.1.2.4.7.1.1.2 Syntax: Integer	Read only	Shows the physical port ID of this neighbor.
snOspfNbrIpAddr fdry.1.2.4.7.1.1.3 Syntax: IpAddress	Read only	Shows the IP address of this neighbor.
snOspfNbrIndex fdry.1.2.4.7.1.1.4 Syntax: Integer	Read only	Contains an index of each neighbor's port and IP address.
snOspfNbrRtrId fdry.1.2.4.7.1.1.5 Syntax: RouterID	Read only	Specifies the IP address of the neighboring router in the Autonomous System. The value of this object is a A 32-bit integer. Default: '00000000'h, which is equal to 0.0.0.0
snOspfNbrOptions fdry.1.2.4.7.1.1.6 Syntax: Integer	Read only	The bit mask that is set corresponding to the neighbor's options field: • Bit 0 – The system will operate on type of service metrics other than TOS 0. The neighbor will ignore all metrics except for the TOS 0 metric. • Bit 1 – The associated area accepts and operates on external information; it is a stub area. • Bit 2 – The system is capable of routing IP Multicast datagrams. It implements the multicast extensions to OSPF. • Bit 3 – The associated area is an NSSA. These areas are capable of carrying type 7 external advertisements, which are translated into type 5 external advertisements at NSSA borders. Default: 0
snOspfNbrPriority fdry.1.2.4.7.1.1.7 Syntax: DesignatedRouterPriority	Read only	Specifies the priority of this interface. This object is used in the designated router election algorithm for multi-access networks. Valid values: 0 – 255 Default: 1. A value of 0 signifies that the router is not eligible to become the designated router on this particular network. If two or more routers have the same priority value, then the router with the highest router ID becomes the designated router. The router with the next highest router ID becomes the backup designated router.

Name, OID, and Syntax	Access	Description
snOspfNbrState fdry.1.2.4.7.1.1.8 Syntax: Integer	Read only	Shows the state of the communication between the Layer 3 Switch and the neighbor: • down(1) – There has been no recent information received from the neighbor. • attempt(2) – This state is only valid for neighbors attached to non-broadcast networks. It indicates that no recent information has been received from the neighbor. • init(3) – A Hello packet has recently been seen from the neighbor. However, bidirectional communication has not yet been established with the neighbor. (The router itself did not appear in the neighbor's Hello packet.) All neighbors in this state (or higher) are listed in the Hello packets sent from the associated interface. • twoWay(4) – Communication between the two routers is bidirectional. This is the most advanced state before beginning adjacency establishment. The Designated Router and Backup Designated Router are selected from the set of neighbors in the 2-Way state or greater. • exchangeStart(5) – The first step in creating an adjacency between the two neighboring routers. The goal of this step is to decide which router is the master, and to decide upon the initial Database Description (DD) sequence number. Neighbor communications in this state or greater are called adjacencies. • exchange(6) – The router is describing its entire link-state database by sending DD packets to the neighbor. Each DD packet has a DD sequence number, and is explicitly acknowledged. Only one DD packet can be outstanding at any time. In this state, link-state Request packets can also be sent asking for the neighbor's more recent advertisements. All adjacencies that are in the exchange state or greater are used by the flooding procedure. In fact, these adjacencies are fully capable of transmitting and receiving all types of OSPF routing protocol packets. • loading(7) – Link-state Request packets are sent to the neighbor asking for the more recent advertisements that have been discovered (but not yet received) in the exchange state. • full(8) – The neighboring routers are fully adjacent. These adjacencies will now appear in router links and network link advertisements. Default: down(1)
snOspfNbrEvents fdry.1.2.4.7.1.1.9 Syntax: Counter	Read only	Shows the number of times this neighbor’s state has changed state, or the number of times an error occurred.

Name, OID, and Syntax	Access	Description
snOspfNbrLsRetransQLen fdry.1.2.4.7.1.1.10 Syntax: Gauge	Read only	Specifies the interval between the retransmission of link-state advertisements to router adjacencies for this interface. The range is 0 – 3600 seconds. Default: 5 seconds

OSPF Virtual Neighbor Table

The OSPF Virtual Neighbor Table describes all virtual neighbors. Since Virtual links are configured in the virtual interface table, this table is read only.

Reference: RFC 1583 “OSPF Version 2”, section 15 Virtual Links

Name, OID, and Syntax	Access	Description
snOspfVirtNbrTable fdry.1.2.4.8.1	None	The OSPF Virtual Neighbor Table.
snOspfVirtNbrEntry fdry.1.2.4.8.1.1	None	An entry in the OSPF Virtual Neighbor Table.
snOspfVirtNbrEntryIndex fdry.1.2.4.8.1.1.1 Syntax: Integer	Read only	The ID of an entry in OSPF Virtual Neighbor Table.
snOspfVirtNbrArea fdry.1.2.4.8.1.1.2 Syntax: AreaID	Read only	Shows the ID of the transit area. The format is defined in the “snOspfVirtNbrAreaIdFormat” object.
snOspfVirtNbrRtrId fdry.1.2.4.8.1.1.3 Syntax: RouterID	Read only	Identifies the IP address of the neighboring router in the Autonomous System. This is a 32-bit integer.
snOspfVirtNbrIpAddr fdry.1.2.4.8.1.1.4 Syntax: IpAddress	Read only	Shows the IP address of this virtual neighbor.
snOspfVirtNbrOptions fdry.1.2.4.8.1.1.5 Syntax: Integer	Read only	Shows a bit map that corresponds to the neighbor’s options field. Thus, Bit 1, if set, indicates that the neighbor supports Type of Service Routing; if zero, no metrics other than TOS 0 are in use by the neighbor.

Name, OID, and Syntax	Access	Description
snOspfVirtNbrState fdry.1.2.4.8.1.1.6 Syntax: Integer	Read only	Shows the state of the communication between the Layer 3 Switch and the virtual neighbor: • down(1) – There has been no recent information received from the neighbor. • attempt(2) – This state is only valid for neighbors attached to non-broadcast networks. It indicates that no recent information has been received from the neighbor. • init(3) – A Hello packet has recently been seen from the neighbor. However, bidirectional communication has not yet been established with the neighbor. (The router itself did not appear in the neighbor's Hello packet.) All neighbors in this state (or higher) are listed in the Hello packets sent from the associated interface. • twoWay(4) – Communication between the two routers is bidirectional. This is the most advanced state before beginning adjacency establishment. The Designated Router and Backup Designated Router are selected from the set of neighbors in the 2-Way state or greater. • exchangeStart(5) – The first step in creating an adjacency between the two neighboring routers. The goal of this step is to decide which router is the master, and to decide upon the initial DD sequence number. Neighbor communications in this state or greater are called adjacencies. • exchange(6) – The router is describing its entire link-state database by sending DD packets to the neighbor. Each DD packet has a DD sequence number, and is explicitly acknowledged. Only one DD packet can be outstanding at any time. In this state, link-state Request packets can also be sent asking for the neighbor's more recent advertisements. All adjacencies in exchange state or greater are used by the flooding procedure. In fact, these adjacencies are fully capable of transmitting and receiving all types of OSPF routing protocol packets. • loading(7) – Link-state Request packets are sent to the neighbor asking for the more recent advertisements that have been discovered (but not yet received) in the exchange state. • full(8) – The neighboring routers are fully adjacent. These adjacencies will now appear in router links and network link advertisements.

Name, OID, and Syntax	Access	Description
snOspfVirtNbrEvents fdry.1.2.4.8.1.1.7 Syntax: Counter	Read only	Shows the number of times the state of this virtual link has changed or an error has occurred.
snOspfVirtNbrLSRetransQLen fdry.1.2.4.8.1.1.8 Syntax: Gauge	Read only	Shows the current length of the retransmission queue.
snOspfVirtNbrAreaIdFormat fdry.1.2.4.8.1.1.9 Syntax: Integer	Read only	Specifies the format of how Area ID will be entered in the "snOspfVirtNbrRtrId" object: • integer(0) – Integer • ipAddress(1) – IP address

OSPF Link-State Database

The link-state database contains the link-state advertisement from all the areas to which the device is attached.

Reference: RFC 1583 "OSPF Version 2", section 12 Link State Advertisements.

Name, OID, and Syntax	Access	Description
snOspfLsdbTable fdry.1.2.4.9.1	None	The OSPF Process's link-state database.
snOspfLsdbEntry fdry.1.2.4.9.1.1	None	An entry in the OSPF Process's link-state database. Each entry represents a single link-state advertisement.
snOspfLsdbEntryIndex fdry.1.2.4.9.1.1.1 Syntax: Integer	Read only	The ID of the entry in the link-state database.
snOspfLsdbAreaId fdry.1.2.4.9.1.1.2 Syntax: AreaID	Read only	Shows the Area from which the LSA was received. The value is in a 32-bit format. Reference: RFC 1583 "OSPF Version 2", section C.2 Area parameters
snOspfLsdbType fdry.1.2.4.9.1.1.3 Syntax: Integer	Read only	Specifies the type of the link-state advertisement. Each link-state type has a separate advertisement format. • routerLink(1) • networkLink(2) • summaryLink(3) • asSummaryLink(4) Reference: RFC 1583 "OSPF Version 2", section A.4.1 The Link State Advertisement header

Name, OID, and Syntax	Access	Description
snOspfLsdbLsId fdry.1.2.4.9.1.1.4 Syntax: IpAddress	Read only	Specifies the link-state ID. This ID is an LS type-specific field containing either a Router ID or an IP Address. It identifies the piece of the routing domain that is being described by the advertisement. Reference: RFC 1583 “OSPF Version 2”, section 12.1.4 Link State ID
snOspfLsdbRouterId fdry.1.2.4.9.1.1.5 Syntax: RouterID	Read only	Identifies the originating router in the Autonomous System. This information is in a 32-bit number. The format is determined by the “snOspfLsdbAreaIdFormat” object. Reference: RFC 1583 “OSPF Version 2”, section C.1 Global parameters **NOTE:** OSPF Sequence Number is a 32-bit signed integer. It starts with the value ’80000001’h or -’7FFFFFFF’h, and increments until ’7FFFFFFF’h Thus, a typical sequence number will be very negative.
snOspfLsdbSequence fdry.1.2.4.9.1.1.6 Syntax: Integer	Read only	Shows the sequence number of this entry. The OSPF neighbor that sent the LSA stamps the LSA with a sequence number to enable the Layer 3 Switch and other OSPF routers to determine which LSA for a given route is the most recent. This object can be used to detect old and duplicate link-state advertisements. The higher the sequence number, the more recent the advertisement. Reference: RFC 1583 “OSPF Version 2”, section 12.1.6 LS sequence number
snOspfLsdbAge fdry.1.2.4.9.1.1.7 Syntax: Integer	Read only	Shows the age of the link-state advertisement in seconds. Reference: RFC 1583 “OSPF Version 2”, section 12.1.1 LS age
snOspfLsdbChecksum fdry.1.2.4.9.1.1.8 Syntax: Integer	Read only	Indicates the checksum for the LSA packet. The checksum is based on all the fields in the packet except the age field. The Layer 3 Switch uses the checksum to verify that the packet is not corrupted. Reference: RFC 1583 “OSPF Version 2”, section 2.1.7 LS checksum
snOspfLsdbAdvertisement fdry.1.2.4.9.1.1.9 Syntax: Octet string	Read only	Shows the data in the link-state advertisement, including its header in octets. Reference: RFC 1583 “OSPF Version 2”, section Section 12 Link State Advertisements
snOspfLsdbAreaIdFormat fdry.1.2.4.9.1.1.10 Syntax: Integer	Read only	Specifies the format of how RouterId will be entered in the “snOspfLsdbRouterId” object: • integer(0) – Integer • ipAddress(1) – IP address

OSPF Link State Database, External

The link-state database contains the link-state advertisement from throughout the areas that the device is attached to.

This table is identical to the OSPF LSDB Table in format, but contains only external link-state advertisement. The purpose is to allow external LSAs to be displayed once for the router rather than once in each non-stub area.

Name, OID, and Syntax	Access	Description
snOspfExtLsdbTable fdry.1.2.4.10.1	None	The Link-State External Database Table. Reference: RFC 1583 “OSPF Version 2”, section Section 12 Link State Advertisements
snOspfExtLsdbEntry fdry.1.2.4.10.1.1	None	An entry in the Link-State External Database Table. Each entry represents a single link-state advertisement.
snOspfExtLsdbEntryIndex fdry.1.2.4.10.1.1.1 Syntax: Integer	Read only	The table entry index of this link-state database.
snOspfExtLsdbType fdry.1.2.4.10.1.1.2 Syntax: Integer	Read only	Shows the type of the link-state advertisement. Each link-state type has a separate advertisement format. Reference: RFC 1583 “OSPF Version 2”, section Appendix A.4.1 The Link State Advertisement header
snOspfExtLsdbLsId fdry.1.2.4.10.1.1.3 Syntax: Integer	Read only	Specifies the external link-state ID. This ID is an LS type-specific field containing either a Router ID or an IP Address. It identifies the piece of the routing domain that is being described by the advertisement. Reference: RFC 1583 “OSPF Version 2”, section 12.1.4 Link-state ID
snOspfExtLsdbRouterId fdry.1.2.4.10.1.1.4 Syntax: Integer	Read only	Identifies the originating router in the Autonomous System. This information is in a 32-bit number. Reference: RFC 1583 “OSPF Version 2”, section C.1 Global parameters **NOTE:** OSPF Sequence Number is a 32-bit signed integer. It starts with the value ’80000001’h, or -’7FFFFFFF’h. It increments until ’7FFFFFFF’h Thus, a typical sequence number will be very negative.
snOspfExtLsdbSequence fdry.1.2.4.10.1.1.5 Syntax: Integer	Read only	Shows the sequence number of this entry. The OSPF neighbor that sent the LSA stamps it with a sequence number to enable the Layer 3 Switch and other OSPF routers to determine which LSA for a given route is the most recent. This object can be used to detect old and duplicate link-state advertisements. The higher the sequence number, the more recent the advertisement. Reference: RFC 1583 “OSPF Version 2”, section 12.1.6 LS sequence number

Name, OID, and Syntax	Access	Description
snOspfExtLsdbAge fdry.1.2.4.10.1.1.6 Syntax: Integer	Read only	Shows the age of the link-state advertisement in seconds. Reference: RFC 1583 “OSPF Version 2”, section 12.1.1 LS age
snOspfExtLsdbChecksum fdry.1.2.4.10.1.1.7 Syntax: Integer	Read only	Indicates the checksum for the LSA packet. The checksum is based on all the fields in the packet except the age field. The Layer 3 Switch uses the checksum to verify that the packet is not corrupted. Reference: RFC 1583 “OSPF Version 2”, section 12.1.7 LS checksum
snOspfExtLsdbAdvertisement fdry.1.2.4.10.1.1.8 Syntax: Octet string	Read only	Shows the data in the link-state advertisement, including its header in octets. There can be up to 36 octets in this object. Reference: RFC 1583 “OSPF Version 2”, section 12 Link State Advertisements

OSPF Area Status Table

The OSPF Area Status Data Structure contains information regarding the configured parameters and cumulative statistics of the router’s attached areas. The interfaces and virtual links are configured as part of these areas. Area 0.0.0.0 is the Backbone Area.

Reference: RFC 1583 “OSPF Version 2”, section 6 The Area Data Structure

Name, OID, and Syntax	Access	Description
snOspfAreaStatusTable fdry.1.2.4.11.1	None	The OSPF Area Status Table.
snOspfAreaStatusEntry fdry.1.2.4.11.1.1	None	An entry in the OSPF Area Status Table.
snOspfAreaStatusEntryIndex fdry.1.2.4.11.1.1.1 Syntax: Integer	Read only	The ID of an entry in the OSPF Area Status Table.
snOspfAreaStatusAreaId fdry.1.2.4.11.1.1.2 Syntax: AreaID	Read only	Specifies the ID of an area. The format of this 32-bit integer is determined by the value of the “snOspfAreaStatusAreaIdFormat” object. Area ID 0.0.0.0 is used for the OSPF backbone. Reference: RFC 1583 “OSPF Version 2”, section C.2 Area parameters
snOspfAreaStatusImportASExtern fdry.1.2.4.11.1.1.3 Syntax: Integer	Read only	The area’s support for importing AS external link-state advertisements. Reference: RFC 1583 “OSPF Version 2”, section C.2 Area parameters Default: 1

Name, OID, and Syntax	Access	Description
snOspfAreaStatusStubMetric fdry.1.2.4.11.1.1.4 Syntax: BigMetric	Read only	The metric value applied at the default type of service(ospfMetric). By default, this equals the least metric at the type of service among the interfaces to other areas. This object exist only if the value of snOspfAreaSummary is snOspfAreaSummary(2); Otherwise, an SNMP_GET/ GET_NEXT attempt of this Object will return NO_SUCH_NAME.
snOspfAreaStatusSpfRuns fdry.1.2.4.11.1.1.5 Syntax: Counter	Read only	Shows the number of times that the intra-area route table has been recalculated using this area's link-state database.
snOspfAreaStatusAreaBdrRtrCount fdry.1.2.4.11.1.1.6 Syntax: Gauge	Read only	Show the number of area border routers that are reachable within this area. This is initially zero, the default, and is calculated in each shortest path first (SPF) pass.
snOspfAreaStatusASBdrRtrCount fdry.1.2.4.11.1.1.7 Syntax: Gauge	Read only	Shows the total number of Autonomous System border routers that are reachable within this area. This is initially zero, the default, and is calculated in each SPF pass.
snOspfAreaStatusLSACount fdry.1.2.4.11.1.1.8 Syntax: Gauge	Read only	Shows the total number of link-state advertisements in this area's link-state database, excluding AS external LSAs. Default: 0
snOspfAreaStatusLSACksumSum fdry.1.2.4.11.1.1.9 Syntax: Integer	Read only	Shows the total link-state advertisements of area's link-state database. This number is a 32-bit unsigned sum of the LS checksums, excluding external (LS type 5) link-state advertisements. The value can be used to determine if there has been a change in a router's link-state database, and to compare the link-state database of two routers. Default: 0
snOspfAreaStatusAreaIdFormat fdry.1.2.4.11.1.1.10 Syntax: Integer	Read only	Specifies the format of how Area ID will be entered in the "snOspfAreaStatusAreaId" object: • integer(0) – Integer. • ipAddress(1) – IP address.

OSPF Interface Status Table

The OSPF Interface Status Table describes the interfaces from the viewpoint of OSPF. It augments the ifStatusTable with OSPF specific information.

Name, OID, and Syntax	Access	Description
snOspfIfStatusTable fdry.1.2.4.12.1	None	The OSPF Interface Status Table.
snOspfIfStatusEntry fdry.1.2.4.12.1.1	None	An entry in the OSPF Interface Status Table. Each entry represents one interface from the viewpoint of OSPF.
snOspfIfStatusEntryIndex fdry.1.2.4.12.1.1.1 Syntax: Integer	Read only	The ID of an entry in the OSPF Interface Status Table.
snOspfIfStatusPort fdry.1.2.4.12.1.1.2 Syntax: Integer	Read only	Shows the ID of the physical router port of this OSPF interface.
snOspfIfStatusIpAddress fdry.1.2.4.12.1.1.3 Syntax: IpAddress	Read only	Shows the IP address of this OSPF interface.
snOspfIfStatusAreaId fdry.1.2.4.12.1.1.4 Syntax: AreaID	Read only	Identifies the area to which the interface connects. This ID is a 32-bit integer. Area ID 0.0.0.0 (in the '00000000'h format) is used for the OSPF backbone. The format of this ID is determined by the value of the "snOspfIfStatusAreaIdFormat" object.
snOspfIfStatusType fdry.1.2.4.12.1.1.5 Syntax: Integer	Read only	Identifies the OSPF interface type. (By way of a default, this field may be derived from the corresponding value of ifType.) • broadcast(1) – For broadcast LANs such as Ethernet and IEEE 802.5 • nbma(2) – For X.25, Frame Relay, and similar technologies • pointToPoint(3) – For point-to-point interfaces
snOspfIfStatusAdminStat fdry.1.2.4.12.1.1.6 Syntax: Integer	Read only	Shows if OSPF has been enabled to form neighbor relationships on the interface: • disabled(0) – The interface is external to OSPF • enabled(1) – OSPF has been enabled to form neighbor relationships and the interface will be advertised as an internal route to some area

Name, OID, and Syntax	Access	Description
snOspfIfStatusRtrPriority fdry.1.2.4.12.1.1.7 Syntax: DesignatedRouterPriority	Read only	Specifies the priority of this interface. This object is used in the designated router election algorithm for multi-access networks. Valid values: 0 – 255 Default: 1. A value of 0 means that the router is not eligible to become the designated router on this particular network. If two or more routers have the same priority value, then the router with the highest router ID becomes the designated router. The router with the next highest router ID becomes the backup designated router.
snOspfIfStatusTransitDelay fdry.1.2.4.12.1.1.8 Syntax: UpToMaxAge	Read only	Shows the time it takes to transmit link-state update packets on this interface. Valid values: 0 – 3600 seconds Default: 1 second
snOspfIfStatusRetransInterval fdry.1.2.4.12.1.1.9 Syntax: UpToMaxAge	Read only	Shows the number of seconds between retransmissions of link-state advertisements, to adjacencies that belong to this interface. This value is also used when retransmitting database description and link-state request packets. Valid values: 0 – 3600 seconds Default: 5 seconds
snOspfIfStatusHelloInterval fdry.1.2.4.12.1.1.10 Syntax: HelloRange	Read only	Specifies the number of seconds that router waits before it sends the next Hello packet on this interface. This value must be the same for all routers attached to a common network. Valid values: 1 – 65535 seconds Default: 10 seconds
snOspfIfStatusRtrDeadInterval fdry.1.2.4.12.1.1.11 Syntax: PositiveInteger	Read only	Specifies the number of seconds that neighbor routers wait for a router's Hello packets before they declare that the router is down. This should be a multiple of the Hello interval and must be the same for all routers attached to a common network. Default: 40 seconds
snOspfIfStatusState fdry.1.2.4.12.1.1.12 Syntax: Integer	Read only	Shows the OSPF Interface State. • down(1) • loopback(2) • waiting(3) • pointToPoint(4) • designatedRouter(5) • backupDesignatedRouter(6) • otherDesignatedRouter(7) Default: down(1)

Name, OID, and Syntax	Access	Description
snOspfIfStatusDesignatedRouter fdry.1.2.4.12.1.1.13 Syntax: IpAddress	Read only	Shows the IP Address of the designated router. Default: '00000000'h, which equals to 0.0.0.0
snOspfIfStatusBackupDesignated Router fdry.1.2.4.12.1.1.14 Syntax: IpAddress	Read only	Shows the IP Address of the backup router. Default: '00000000'h, which equals to 0.0.0.0
snOspfIfStatusEvents fdry.1.2.4.12.1.1.15 Syntax: Counter	Read only	Shows the following: • The number of times that the state of this OSPF interface has changed • The number of times an error has occurred
snOspfIfStatusAuthType fdry.1.2.4.12.1.1.16 Syntax: Integer	Read only	Specifies the authentication type for an interface. Valid values:: • none(0) • simplePassword(1) • md5(2) • reserved for specification by IANA(> 2) Additional authentication types may be assigned locally on a per interface basis. Default: none(0)
snOspfIfStatusAuthKey fdry.1.2.4.12.1.1.17 Syntax: Octet string	Read only	Indicates the area's authentication key. • If the authentication type selected is simple password, then this object requires an alphanumeric password. If the value is shorter than eight octets, the agent will left-adjust and zero-fill the key to equal eight octets. The simple password setting takes effect immediately. All OSPF packets transmitted on the interface contain this password. Any OSPF packet received on the interface is checked for this password. If the password is not present, then the packet is dropped. The password can be up to eight characters long. • If the authentication type is MD5, then a key ID and an MD5 key are required. The key ID is a number from 1 to 255 and identifies the MD5 key that is being used. The MD5 key can be up to sixteen alphanumeric characters long. When read, "snOspfIfAuthKey" always returns a blank. Reference: RFC 1583 "OSPF Version 2", section 9 The Interface Data Structure Default: '0000000000000000'h – 0.0.0.0.0.0.0.0

Name, OID, and Syntax	Access	Description
snOspfIfStatusMetricValue fdry.1.2.4.12.1.1.18 Syntax: Integer	Read only	Specifies the cost of using this TOS on this interface. The default value of the TOS 0 Metric is 10^8 / ifSpeed. Valid values: 0 – 65535
snOspfIfStatusMd5AuthKeyId fdry.1.2.4.12.1.1.19 Syntax: Integer	Read only	Specifies the ID of the MD5 authentication key. This object identifies the algorithm and secret key used to create the message digest appended to the OSPF packet. Key identifiers are unique per interface. If the object "snOspfVirtIfAuthType" is set to MD5, the value of this object must be a number from 1 – 255.
snOspfIfStatusMd5AuthKey fdry.1.2.4.12.1.1.20 Syntax: Octet string	Read only	Specifies the MD5 authentication key. The value of this object is encrypted and included in each OSPF packet transmitted. If the value of this object is shorter than 16 octets, the agent will left-adjust and zero-fill the key to equal 16 octets. When read, snOspfIfMd5AuthKey always returns a blank.
snOspfIfStatusMd5ActivationWait Time fdry.1.2.4.12.1.1.21 Syntax: Integer	Read only	Determines when a newly configured MD5 authentication key is valid. This parameter provides a graceful transition from one MD5 key to another without disturbing the network. All new packets transmitted after the key activation wait time interval use the newly configured MD5 key. OSPF packets that contain the old MD5 key are accepted for up to five minutes after the new MD5 key is in operation. The range for the key activation wait time is from 0 – 14400 seconds.
snOspfIfStatusAreaIdFormat fdry.1.2.4.12.1.1.22 Syntax: Integer	Read only	Specifies the format of how Area ID will be entered in the "snOspfIfStatusAreaId" object: • integer(0) – Integer. • ipAddress(1) – IP address

OSPF Virtual Interface Status Table

The Virtual Interface Status Table contains information about this router's virtual interfaces.

Reference: RFC 1583 "OSPF Version 2", section C.4 Virtual link parameters.

Name, OID, and Syntax	Access	Description
snOspfVirtIfStatusTable fdry.1.2.4.13.1	None	The OSPF Virtual Interface Status Table.
snOspfVirtIfStatusEntry fdry.1.2.4.13.1.1	None	An entry in the The OSPF Virtual Interface Status Table. Each entry represents one interface.
snOspfVirtIfStatusEntryIndex fdry.1.2.4.13.1.1.1 Syntax: Integer	Read only	The ID of the entry in this table.

Name, OID, and Syntax	Access	Description
snOspfVirtIfStatusAreaID fdry.1.2.4.13.1.1.2 Syntax: AreaID	Read only	Shows the ID of the transit area that the virtual link traverses. The value of this object cannot be 0.0.0.0. The format of this object is determined by the value of the "snOspfVirtIfStatusAreaIdFormat" object.
snOspfVirtIfStatusNeighbor fdry.1.2.4.13.1.1.3 Syntax: RouterID	Read only	Shows the ID or IP address of the router that is serving as the virtual neighbor.
snOspfVirtIfStatusTransitDelay fdry.1.2.4.13.1.1.4 Syntax: UpToMaxAge	Read only	Shows the time it takes to transmit link-state update packets on this interface. Valid values: 0 – 3600 seconds Default: 1 second
snOspfVirtIfStatusRetransInterval fdry.1.2.4.13.1.1.5 Syntax: UpToMaxAge	Read only	Specifies the interval between the retransmission of link-state advertisements to router adjacencies for this interface. Valid values: 0 – 3600 seconds Default: 5 seconds
snOspfVirtIfStatusHelloInterval fdry.1.2.4.13.1.1.6 Syntax: HelloRange	Read only	Specifies the number of seconds that router waits before it sends the next Hello packet on this interface. This value must be the same for all routers attached to a common network. Valid values: 1 – 65535 seconds Default: 10 seconds This value must be the same for all routers attached to a common network.
snOspfVirtIfStatusRtrDeadInterval fdry.1.2.4.13.1.1.7 Syntax: PositiveInteger	Read only	Specifies the number of seconds that neighbor routers wait for a router's Hello packets before they declare that the router is down. This should be a multiple of the Hello interval. This value must be the same for all routers attached to a common network. Default: 60 seconds
snOspfVirtIfStatusState fdry.1.2.4.13.1.1.8 Syntax: Integer	Read only	Shows the state of the OSPF virtual interface: • down(1) • pointToPoint(4) Default: down(1)
snOspfVirtIfStatusEvents fdry.1.2.4.13.1.1.9 Syntax: Counter	Read only	Shows the following: • The number of times that the state of this OSPF interface has changed • The number of times an error has occurred

Name, OID, and Syntax	Access	Description
snOspfVirtIfStatusAuthType fdry.1.2.4.13.1.1.10 Syntax: Integer	Read only	Specifies the authentication type for an interface. Valid values:: • none(0) • simplePassword(1) • reserved for specification by IANA(> 1) Additional authentication types may be assigned locally on a per interface basis. Default: none(0)
snOspfVirtIfStatusAuthKey fdry.1.2.4.13.1.1.11 Syntax: Octet string	Read only	Specifies the authentication key. • If the authentication type selected is simple password, then this object requires an alphanumeric password. If the value is shorter than eight octets, the agent will left-adjust and zero-fill the key to equal eight octets. The simple password setting takes effect immediately. All OSPF packets transmitted on the interface contain this password. Any OSPF packet received on the interface is checked for this password. If the password is not present, then the packet is dropped. The password can be up to eight characters long. • If the authentication type is MD5, then a key ID and an MD5 key are required. The key ID is a number from 1 to 255 and identifies the MD5 key that is being used. The MD5 key can be up to sixteen alphanumeric characters long. When read, “snOspfIfAuthKey” always returns a blank. Reference: RFC 1583 “OSPF Version 2”, section 9 The Interface Data Structure Default: ’0000000000000000’h – 0.0.0.0.0.0.0.0
snOspfVirtIfStatusMd5AuthKeyId fdry.1.2.4.13.1.1.12 Syntax: Integer	Read only	Specifies the ID of the MD5 authentication key. This object identifies the algorithm and secret key used to create the message digest appended to the OSPF packet. Key identifiers are unique per interface. If the object “snOspfVirtIfAuthType” is set to MD5, the value of this object must be a number from 1 – 255.

Name, OID, and Syntax	Access	Description
snOspfVirtIfStatusMd5AuthKey fdry.1.2.4.13.1.1.13 Syntax: Octet string	Read only	Specifies the MD5 authentication key. The value of this object is encrypted and included in each OSPF packet transmitted. If the value of this object is shorter than 16 octets, the agent will left-adjust and zero-fill the key to equal 16 octets. When read, snOspfIfMd5AuthKey always returns a blank.
snOspfVirtIfStatusMd5Activation WaitTime fdry.1.2.4.13.1.1.14 Syntax: Integer	Read only	Determines when a newly configured MD5 authentication key is valid. This parameter provides a graceful transition from one MD5 key to another without disturbing the network. All new packets transmitted after the key activation wait time interval use the newly configured MD5 key. OSPF packets that contain the old MD5 key are accepted for up to five minutes after the new MD5 key is in operation. The range for the key activation wait time is from 0 – 14400 seconds.
snOspfVirtIfStatusAreaIdFormat fdry.1.2.4.13.1.1.15 Syntax: Integer	Read only	Specifies the format of how Area ID will be entered in the "snOspfVirtIfStatusAreaID" object: • integer(0) – Integer • ipAddress(1) – IP address

OSPF Routing Information Table

The OSPF Routing Information Table contains information on the OSPF ABR/ASBR routing.

Name, OID, and Syntax	Access	Description
snOspfRoutingInfoTable fdry.1.2.4.14.1	None	The OSPF Routing Information Table.
snOspfRoutingInfoEntry fdry.1.2.4.14.1.1	None	An entry in the OSPF Routing Information Table.
snOspfRoutingInfoIndex fdry.1.2.4.14.1.1.1 Syntax: Integer	Read only	ID of an entry in this table.
snOspfRoutingInfoRouter fdry.1.2.4.14.1.1.2 Syntax: RouterID	Read only	Shows the ID or IP address of the destination router.

Name, OID, and Syntax	Access	Description
snOspfRoutingInfoRouterType fdry.1.2.4.14.1.1.3 Syntax: Integer	Read only	Shows what router type the destination router is: • abr(1) – Area Border Router. • asbr(2) – Autonomous System Border Router. • abrANDasbr(3) – Area Border and Autonomous System Border Router.
snOspfRoutingInfoNextHopRouterID fdry.1.2.4.14.1.1.4 Syntax: RouterID	Read only	Shows the ID or IP address of the next hop destination router.
snOspfRoutingInfoOutgoingInterface fdry.1.2.4.14.1.1.5 Syntax: Integer	Read only	Shows the outgoing interface of the destination router.

Chapter 16
BGP4

Border Gateway Protocol version 4 (BGP4) on Foundry products using the CLI and the Web management interface. BGP4 is supported on the following Foundry products:

- NetIron Internet Backbone router
- BigIron Layer 3 Switch
- NetIron stackable Layer 3 Switch (must have 32MB RAM and 4MB flash module)
- TurboIron/8 Layer 3 Switch

NOTE: BGP4 is not supported on the FastIron II. BGP4 is described in RFC 1771.

The Foundry implementation complies with RFC 1771. The Foundry BGP4 implementation also supports the following RFCs:

- RFC 1745 (OSPF Interactions)
- RFC 1965 (BGP4 Confederations)
- RFC 1997 (BGP Communities Attributes)
- RFC 2385 (TCP MD5 Signature Option)
- RFC 2439 (Route Flap Dampening)
- RFC 2796 (Route Reflection)
- RFC 2842 (Capability Advertisement)

Refer to the *Foundry Enterprise Configuration and Management Guide* for details on the features discussed in this chapter.

BGP4 General Variables

These parameters apply globally to a device's BGP4 process.

Name, OID, and Syntax	Access	Description
snBgp4GenAlwaysCompareMed fdry.1.2.11.1.1 Syntax: Integer	Read-write	Indicates if the comparison of the Multi-Exit Discriminator for paths from neighbors in different AS is enabled: • disabled(0) • enabled(1)
snBgp4GenAutoSummary fdry.1.2.11.1.2 Syntax: Integer	Read-write	Indicates if subnet routes are automatically summarized: • disabled(0) • enabled(1)
snBgp4GenDefaultLocalPreference fdry.1.2.11.1.3 Syntax: Integer	Read-write	Sets the default local preference attribute. When the router uses the BGP4 algorithm to select a route to send to the IP route table, one of the parameters the algorithm uses is the local preference. Local preference is an attribute that indicates a degree of preference for a route relative to other routes. BGP4 neighbors can send the local preference value as an attribute of a route in an UPDATE message. Local preference applies only to routes within the local AS. BGP4 routers can exchange local preference information with neighbors who are also in the local AS; however, BGP4 routers do not exchange local preference information with neighbors in remote ASs. Valid values: 0 – 4294967295 Default: 100
snBgp4GenDefaultInfoOriginate fdry.1.2.11.1.4 Syntax: Integer	Read-write	Indicates if the default Information Originate is enabled: • disabled(0) • enabled(1) By default, the router does not originate and advertise a default route using BGP4. A BGP4 default route is the IP address 0.0.0.0 and the route prefix 0 or network mask 0.0.0.0. For example, 0.0.0.0/0 is a default route. You can enable the router to advertise a default BGP4 route using either of the following methods. Foundry Layer 3 Switches check for the existence of an IGP route with 0.0.0.0/0 in the IP route table before creating a local BGP route for 0.0.0.0/0.
snBgp4GenFastExternalFallover fdry.1.2.11.1.5 Syntax: Integer	Read-write	Indicates if automatic resetting of BGP sessions of any directly adjacent sessions is enabled, if the links used to reach them go down. • disabled(0) • enabled(1)

Name, OID, and Syntax	Access	Description
snBgp4GenNextBootNeighbors fdry.1.2.11.1.6 Syntax: Integer	Read-write	The next boot-configured number of neighbors in a BGP Peer Group. The minimum value of this object is the value of the "snBgp4GenMinNeighbors" object. Its maximum value is the value of the "snBgp4GenMaxNeighbors" object.
snBgp4GenNextBootRoutes fdry.1.2.11.1.7 Syntax: Integer	Read-write	The next boot-configured number of routes. The minimum value of this MIB is snBgp4GenMinRoutes. The maximum value of this MIB is "snBgp4GenMaxRoutes".
snBgp4GenSynchronization fdry.1.2.11.1.8 Syntax: Integer	Read-write	To enable or disable the synchronization between BGP and your IGP. • disabled(0) • enabled(1)
snBgp4GenKeepAliveTime fdry.1.2.11.1.9 Syntax: Integer	Read-write	Indicates how often the device sends keep alive messages. Valid values: 1 – 65535 seconds Default: 60 seconds
snBgp4GenHoldTime fdry.1.2.11.1.10 Syntax: Integer	Read-write	Determines how many seconds the device will wait for a keep alive or update message from a BGP4 neighbor before deciding that the neighbor is dead. Valid values: 1 – 65535 seconds Default: 180 seconds
snBgp4GenRouterId fdry.1.2.11.1.11 Syntax: IpAddress	Read-write	Indicates the BGP Router IP address.
snBgp4GenTableMap fdry.1.2.11.1.12 Syntax: Octet string	Read-write	Defines the route map name. Each character of the name is represented by one octet. Valid values: Up to 32 octets.
snBgp4GenAdminStat fdry.1.2.11.1.13 Syntax: Integer	Read-write	Indicates if BGP4 routing is enabled: • disabled(0) • enabled(1)
snBgp4GenDefaultMetric fdry.1.2.11.1.14 Syntax: Integer	Read-write	Indicates the default metric values for the BGP4 protocol. The Foundry Layer 3 Switches can redistribute directly connected routes, static IP routes, RIP routes, and OSPF routes into BGP4. The MED (metric) is a global parameter that specifies the cost that will be applied to all routes by default when they are redistributed into BGP4. Valid values: 0 – 4294967295
snBgp4GenMaxNeighbors fdry.1.2.11.1.15 Syntax: Integer	Read only	Shows the maximum number of neighbors that can be configured in a BGP Peer Group.

Name, OID, and Syntax	Access	Description
snBgp4GenMinNeighbors fdry.1.2.11.1.16 Syntax: Integer	Read only	Shows the minimum number of neighbors that can be configured in a BGP Peer Group.
snBgp4GenMaxRoutes fdry.1.2.11.1.17 Syntax: Integer	Read only	Shows the maximum number of configured routes.
snBgp4GenMinRoutes fdry.1.2.11.1.18 Syntax: Integer	Read only	Shows the minimum number of configured routes.
snBgp4GenMaxAddrFilters fdry.1.2.11.1.19 Syntax: Integer	Read only	Shows the maximum number of configured BGP4 address filters.
snBgp4GenMaxAggregateAddresses fdry.1.2.11.1.20 Syntax: Integer	Read only	Shows the maximum number of configured BGP4 aggregate addresses.
snBgp4GenMaxAsPathFilters fdry.1.2.11.1.21 Syntax: Integer	Read only	Shows the maximum number of configured BGP4 AS-PATH filters.
snBgp4GenMaxCommunityFilters fdry.1.2.11.1.22 Syntax: Integer	Read only	Shows the maximum number of configured BGP4 community filters.
snBgp4GenMaxNetworks fdry.1.2.11.1.23 Syntax: Integer	Read only	Shows the maximum number of configured BGP4 networks.
snBgp4GenMaxRouteMapFilters fdry.1.2.11.1.24 Syntax: Integer	Read only	Shows the maximum number of configured BGP4 route map filters.
snBgp4GenNeighPrefixMinValue fdry.1.2.11.1.25 Syntax: Integer	Read only	Shows the minimum configured value of BGP4 neighbor prefix.
snBgp4GenOperNeighbors fdry.1.2.11.1.26	Read only	Shows the current operational max number of neighbors configured for a BGP Group.

Name, OID, and Syntax	Access	Description
snBgp4GenOperRoutes fdry.1.2.11.1.27 Syntax: Integer	Read only	Shows the current operational number of routes.
snBgp4GenLocalAs fdry.1.2.11.1.28 Syntax: Integer	Read only	Shows the BGP4 local autonomous system number.
snBgp4GenRoutesInstalled fdry.1.2.11.1.29 Syntax: Integer	Read only	Shows the BGP4 installed routes.
snBgp4GenAsPathInstalled fdry.1.2.11.1.30 Syntax: Integer	Read only	Shows the BGP4 installed autonomous system path.
snBgp4ExternalDistance fdry.1.2.11.1.31 Syntax: Integer	Read-write	Determines the administrative distance for BGP external routes. Default: 200
snBgp4InternalDistance fdry.1.2.11.1.32 Syntax: Integer	Read-write	Determines the administrative distance for BGP internal routes. Default: 200
snBgp4LocalDistance fdry.1.2.11.1.33 Syntax: Integer	Read-write	Determines the administrative distance for BGP local routes. Default: 200
snBgp4OperNumOfAttributes fdry.1.2.11.1.34 Syntax: Integer	Read only	Shows the operational number of attribute entries.
snBgp4NextBootMaxAttributes fdry.1.2.11.1.35 Syntax: Integer	Read-write	Defines the next boot maximum attribute entries. Default: 10000, which means to reset to default
snBgp4ClusterId fdry.1.2.11.1.36 Syntax: Integer	Read-write	Defines a cluster ID which is represented by 4-unsigned-byte integers (0..0xFFFFFFFF). 0 means to reset to default.
snBgp4ClientToClientReflection fdry.1.2.11.1.37 Syntax: Integer	Read-write	Indicates if the client to client reflection in BGP4 is enabled. • disabled(0) • enabled(1)

Name, OID, and Syntax	Access	Description
snBgp4GenTotalNeighbors fdry.1.2.11.1.38 Syntax: Integer	Read only	Shows the current total number of neighbors running in a BGP group.
snBgp4GenMaxPaths fdry.1.2.11.1.39 Syntax: Integer	Read-write	Indicates the maximum number of configured Paths.
snBgp4GenConfedId fdry.1.2.11.1.40 Syntax: Integer	Read-write	Determines the BGP4 Confederation ID. This ID identifies the confederation to BGP routers outside the confederation. A confederation is a BGP4 AS that has been subdivided into multiple, smaller ASs. Subdividing an AS into smaller ASs simplifies administration and reduces BGP-related traffic, thus reducing the complexity of the Interior Border Gateway Protocol (IBGP) mesh among the BGP routers in the AS. The confederation ID is the AS ID.
snBgp4GenConfedPeers fdry.1.2.11.1.41 Syntax: Octet string	Read-write	Specifies the sub-AS numbers that are members of the confederation. There is a maximum of 50 peers. This is a number from 1 to 0xFFFF. It is represented by two octets.
snBgp4GenDampening fdry.1.2.11.1.42 Syntax: Integer	Read-write	Specifies the dampening of BGP4 in the device • none(0) – BGP4 dampening is off • parameters(1) – Parameters are configurable • routemap(2) – Routemap is configurable
snBgp4GenDampenHalfLife fdry.1.2.11.1.43 Syntax: Integer	Read-write	Specifies the number of minutes after which the route's penalty becomes half its value.
snBgp4GenDampenReuse fdry.1.2.11.1.44 Syntax: Integer	Read-write	Specifies how low a route's penalty must be before the route becomes eligible for use again after being suppressed.
snBgp4GenDampenSuppress fdry.1.2.11.1.45 Syntax: Integer	Read-write	Specifies how high a route's penalty can be before the Layer 3 Switch suppresses the route.
snBgp4GenDampenMaxSuppress fdry.1.2.11.1.46 Syntax: Integer	Read-write	Specifies the maximum number of minutes that a route can be suppressed regardless of how unstable it is.

Name, OID, and Syntax	Access	Description
snBgp4GenDampenMap fdry.1.2.11.1.47 Syntax: Octet string	Read-write	Specifies the name of the route map that will be used to redirect traffic. The name is an octet string. Each character is represented by one octet. Valid values: Up to 32 octets.

BGP4 Network Table

The BGP4 Network Table shows the weight used for the network.

Name, OID, and Syntax	Access	Description
snBgp4NetworkTable fdry.1.2.11.10.1	None	The BGP4 Network Table.
snBgp4NetworkEntry fdry.1.2.11.10.1.1	None	An entry in the BGP4 Network Table.
snBgp4NetworkIp fdry.1.2.11.10.1.1.1 Syntax: IpAddress	Read only	Shows the IP Address for a network entry.
snBgp4NetworkSubnetMask fdry.1.2.11.10.1.1.2 Syntax: IpAddress	Read only	Shows the subnet mask for a network entry.
snBgp4NetworkWeight fdry.1.2.11.10.1.1.3 Syntax: Integer	Read-write	Shows the weight of the neighbor connection. Valid values: 0 – 65535
snBgp4NetworkBackdoor fdry.1.2.11.10.1.1.4 Syntax: Integer	Read-write	Indicates if the backdoor option is enabled for this network: • disabled(0) • enabled(1) The backdoor option changes the administrative distance of the route to this network from the EBGP administrative distance (20 by default) to the Local BGP weight (200 by default). The route is tagged as a backdoor route. Use this option when you want the router to prefer IGP routes such as RIP or OSPF routes over the EBGP route for the network

Name, OID, and Syntax	Access	Description
snBgp4NetworkRowStatus fdry.1.2.11.10.1.1.5 Syntax: Integer		Controls the management of the table rows. The values that can be written are: • delete(3) – Delete the row • create(4) – Create a new row • modify(5) – Modify an existing row If the row exists, then a SET with a value of create(4) returns a "bad value" error. Deleted rows are removed from the table immediately. The following values can be returned on reads: • noSuch(0) – No such row • invalid(1) – Row is inoperative • valid(2) – Row exists and is valid

BGP4 Address Filter Table

You can configure the router to explicitly permit or deny specific IP addresses received in updates from BGP4 neighbors by defining IP address filters. The router permits all IP addresses by default. You can define up to 100 IP address filters for BGP4.

- If you want “permit” to remain the default behavior, define individual filters to deny specific IP addresses.
- If you want to change the default behavior to “deny”, define individual filters to permit specific IP addresses.

NOTE: Once you define a filter, the default action for addresses that do not match a filter is “deny”. To change the default action to “permit”, configure the last filter as “permit any any”.

Address filters can be referred to by a BGP neighbor's distribute list number as well as by match statements in a route map.

Name, OID, and Syntax	Access	Description
snBgp4AddrFilterTable fdry.1.2.11.2.1	None	The BGP4 Address Filter Table
snBgp4AddrFilterEntry fdry.1.2.11.2.1.1	None	An entry in the BGP4 Address Filter Table
snBgp4AddrFilterIndex fdry.1.2.11.2.1.1.1 Syntax: Integer	Read only	The table index for a filter entry.
snBgp4AddrFilterAction fdry.1.2.11.2.1.1.2 Syntax: Integer	Read-write	Indicates what the device will do if the BGP address matches this filter: • deny(0) • permit(1)

Name, OID, and Syntax	Access	Description
snBgp4AddrFilterSourceIp fdry.1.2.11.2.1.1.3 Syntax: IpAddress	Read-write	Specifies the source IP address.
snBgp4AddrFilterSourceMask fdry.1.2.11.2.1.1.4 Syntax: IpAddress	Read-write	Specifies the source IP subnet mask.
snBgp4AddrFilterDestIp fdry.1.2.11.2.1.1.5 Syntax: IpAddress	Read-write	Specifies the destination IP address.
snBgp4AddrFilterDestMask fdry.1.2.11.2.1.1.6 Syntax: IpAddress	Read-write	Specifies the destination IP subnet mask.
snBgp4AddrFilterRowStatus fdry.1.2.11.2.1.1.7 Syntax: Integer	Read-write	Controls the management of the table rows. The values that can be written are: • delete(3) – Delete the row • create(4) – Create a new row • modify(5) – Modify an existing row If the row exists, then a SET with a value of create(4) returns a "bad value" error. Deleted rows are removed from the table immediately. The following values can be returned on reads: • noSuch(0) – No such row • invalid(1) – Row is inoperative • valid(2) – Row exists and is valid

BGP4 Aggregate Address Table

By default, the Layer 3 Switch advertises individual routes for all the networks. The aggregation feature allows you to configure the Layer 3 Switch to aggregate routes in a range of networks into a single CIDR number.

Name, OID, and Syntax	Access	Description
snBgp4AggregateAddrTable fdry.1.2.11.3.1	None	The BGP4 Aggregate Address Table
snBgp4AggregateAddrEntry fdry.1.2.11.3.1.1	None	An entry in the BGP4 Aggregate Address Table

Name, OID, and Syntax	Access	Description
snBgp4AggregateAddrIp fdry.1.2.11.3.1.1.1 Syntax: IpAddress	Read only	Shows the aggregate Address IP address. Specify 0 for the host portion and for the network portion that differs among the networks in the aggregate. For example, to aggregate 10.0.1.0, 10.0.2.0, and 10.0.3.0, enter the IP address 10.0.0.0 and the network mask 255.255.0.0 in the next object.
snBgp4AggregateAddrMask fdry.1.2.11.3.1.1.2 Syntax: IpAddress	Read only	Shows the aggregate Address IP subnet mask.
snBgp4AggregateAddrOption fdry.1.2.11.3.1.1.3 Syntax: Integer	Read only	Specifies the type of aggregate address option that is being used: • address(1) – Adds an address. This is the default option. • asSet(2) – Causes the router to aggregate AS-path information for all the routes in the aggregate address into a single AS-path. • summaryOnly(3) – Prevents the router from advertising more specific routes contained within the aggregate route. • suppressMap(4) – Prevents the more specific routes contained in the specified route map from being advertised. • advertiseMap(5) – Configures the router to advertise the more specific routes in the specified route map. • attributeMap(6) – Configures the router to set attributes for the aggregate routes based on the specified route map.
snBgp4AggregateAddrMap fdry.1.2.11.3.1.1.4 Syntax: Octet string	Read-write	Specifies the name of the route map to be used if the “snBgp4AggregateAddrOption” object is set to suppressMap(4), advertiseMap(5), or attributeMap(6). The value of this object is an octet string. Each character in the address map name is represented by one octet. There can be up to 32 octets in this object.
snBgp4AggregateAddrRowStatus fdry.1.2.11.3.1.1.5 Syntax: Integer	Read-write	Controls the management of the table rows. The values that can be written are: • delete(3) – Delete the row • create(4) – Create a new row • modify(5) – Modify an existing row If the row exists, then a SET with a value of create(4) returns a "bad value" error. Deleted rows are removed from the table immediately. The following values can be returned on reads: • noSuch(0) – No such row • invalid(1) – Row is inoperative • valid(2) – Row exists and is valid

BGP4 Attribute Entries Table

The BGP4 Attribute Entries Table contains the sets of BGP4 attributes stored in the router's memory. Each set of attributes is unique and can be associated with one or more routes.

Name, OID, and Syntax	Access	Description
snBgp4AttributeTable fdry.1.2.11.18.1	None	The BGP4 Attribute Entries Table.
snBgp4AttributeEntry fdry.1.2.11.18.1.1	None	An entry in the BGP4 Attribute Entries Table.
snBgp4AttributeIndex fdry.1.2.11.18.1.1.1 Syntax: Integer	Read only	Shows the index for a route entry.
snBgp4AttributeNextHop fdry.1.2.11.18.1.1.2 Syntax: Integer	Read only	Shows the IP address of the next hop router for routes that have this set of attributes.
snBgp4AttributeMetric fdry.1.2.11.18.1.1.3 Syntax: Integer	Read only	Shows the cost of the route entry.
snBgp4AttributeOrigin fdry.1.2.11.18.1.1.4 Syntax: Integer	Read only	Shows the origin of this route: • igp(0) – Routes with this set of attributes came to BGP through IGP. • egp(1) – Routes with this set of attributes came to BGP through EGP. • incomplete(2) – Routes came from an origin other than one of the above. For example, they may have been redistributed from OSPF or RIP.
snBgp4AttributeAggregatorAs fdry.1.2.11.18.1.1.5 Syntax: Integer	Read only	Shows the aggregator AS number for an attribute entry. AS in which the network information in the attribute set was aggregated. This value applies only to aggregated routes and is otherwise 0.
snBgp4AttributeRouterId fdry.1.2.11.18.1.1.6 Syntax: Integer	Read only	Shows the ID of the device that originated this aggregator.
snBgp4AttributeAtomicAggregate Present fdry.1.2.11.18.1.1.7 Syntax: Integer	Read only	Shows if this aggregation has resulted in information loss. • false(0) – No information loss • true(1) – Information has been lost

Name, OID, and Syntax	Access	Description
snBgp4AttributeLocalPreference fdry.1.2.11.18.1.1.8 Syntax: Integer	Read only	Shows the degree of preference for routes that use this set of attributes, relative to other routes in the local AS.
snBgp4AttributeCommunityList fdry.1.2.11.18.1.1.9 Syntax: Octet string	Read only	Shows the communities that routes with this set of attributes are in. A community is represented by four octets. The community list, could have some well known numbers such as: • BGP_COMMUNITY_ATTRIBUTE_NO_EXPORT0xFFFFFF01 • BGP_COMMUNITY_ATTRIBUTE_NO_ADVERTISE0xFFFFFF02 If the community list is a NULL string (empty list) then the community is INTERNET, which is represented by a number from 1 to 0xFFFFFFFF.
snBgp4AttributeAsPathList fdry.1.2.11.18.1.1.10 Syntax: Octet string	Read only	Shows the ASs through which routes with this set of attributes have passed. The local AS is shown in parentheses. This is a number from 1 – 0xFFFF. This integer number is represented by two octets.
snBgp4AttributeOriginator fdry.1.2.11.18.1.1.11 Syntax: IpAddress	Read only	Shows the originator of the route in a route reflector environment.
snBgp4AttributeClusterList fdry.1.2.11.18.1.1.12 Syntax: Octet string	Read only	Shows the route reflector clusters through which this set of attributes has passed. The list is a group of cluster IDs. Each ID is an IP address represented by four octets.

BGP4 AS-Path Filter Table

A list of the other ASs through which a route passes. BGP4 routers can use the AS-path to detect and eliminate routing loops.

Name, OID, and Syntax	Access	Description
snBgp4AsPathFilterTable fdry.1.2.11.4.1	None	The BGP4 AS-Path Filter Table
snBgp4AsPathFilterEntry fdry.1.2.11.4.1.1	None	An entry in the BGP4 AS-Path Filter Table
snBgp4AsPathFilterIndex fdry.1.2.11.4.1.1.1 Syntax: Integer	Read only	The table index for a filter entry.

Name, OID, and Syntax	Access	Description
snBgp4AsPathFilterAction fdry.1.2.11.4.1.1.2 Syntax: Integer	Read-write	Specifies what the device will do if the BGP address matches this filter. • deny(0) • permit(1)
snBgp4AsPathFilterRegExpression fdry.1.2.11.4.1.1.3 Syntax: Octet string	Read-write	Shows the AS in the filter that is using a regular expression. Each character of the regular expression string is represented by one octet. Valid values: Up to 256
snBgp4AsPathFilterRowStatus fdry.1.2.11.4.1.1.4 Syntax: Integer	Read-write	Controls the management of the table rows. The values that can be written are: • delete(3) – Delete the row • create(4) – Create a new row • modify(5) – Modify an existing row If the row exists, then a SET with a value of create(4) returns a "bad value" error. Deleted rows are removed from the table immediately. The following values can be returned on reads: • noSuch(0) – No such row • invalid(1) – Row is inoperative • valid(2) – Row exists and is valid

BGP4 Community Filter Table

You can filter routes received from BGP4 neighbors based on community names.

Name, OID, and Syntax	Access	Description
snBgp4CommunityFilterTable fdry.1.2.11.5.1	None	The BGP4 Community Filter Table.
snBgp4CommunityFilterEntry fdry.1.2.11.5.1.1	None	An entry in the BGP4 Community Filter Table.
snBgp4CommunityFilterIndex fdry.1.2.11.5.1.1.1 Syntax: Integer	Read only	The table index for a filter entry.
snBgp4CommunityFilterAction fdry.1.2.11.5.1.1.2 Syntax: Integer	Read-write	Specifies what the device will do if the BGP address matches this filter. • deny(0) • permit(1)

Name, OID, and Syntax	Access	Description
snBgp4CommunityFilterCommNum fdry.1.2.11.5.1.1.3 Syntax: Octet string	Read-write	Identifies the filter's number. This is a number from 1 – 0xFFFFFFFF. There can be up to 20 filters. Each integer is represented by four octets.
snBgp4CommunityFilterInternet fdry.1.2.11.5.1.1.4 Syntax: Integer	Read-write	Indicates if Internet Community is enabled • disabled(0) • enabled(1)
snBgp4CommunityFilterNoAdvertise fdry.1.2.11.5.1.1.5 Syntax: Integer	Read-write	Checks the route to see if it has the keyword "NO_ADVERTISE". If the route has the keyword, it will not be advertised to EBGP peers: • false(0) • true(1)
snBgp4CommunityFilterNoExport fdry.1.2.11.5.1.1.6 Syntax: Integer	Read-write	Checks the route to see if it has the keyword "NO_EXPORT". If the route has the keyword, it will not be advertised to EBGP peers outside the local AS: • false(0) • true(1)
snBgp4CommunityFilterRowStatus fdry.1.2.11.5.1.1.7 Syntax: Integer	Read-write	Controls the management of the table rows. The values that can be written are: • delete(3) – Delete the row • create(4) – Create a new row • modify(5) – Modify an existing row If the row exists, then a SET with a value of create(4) returns a "bad value" error. Deleted rows are removed from the table immediately. The following values can be returned on reads: • noSuch(0) – No such row • invalid(1) – Row is inoperative • valid(2) – Row exists and is valid
snBgp4CommunityFilterLocalAs fdry.1.2.11.5.1.1.8 Syntax: Integer	Read-write	Checks the route to see if it has the keyword "LOCAL_AS". If the route has the keyword the community applies only to confederations. The device will advertises the route only within the sub-AS. • false(0) • true(1)

BGP4 Route Map Filter Table

A ***route map*** is a named set of match conditions and parameter settings that a Foundry Layer 3 Switch can use to modify route attributes and to control redistribution of routes.

BGP4 allows you to include the redistribution filters as part of a route map. A route map examines and modifies route information exchanged between BGP4 and RIP or OSPF.

Name, OID, and Syntax	Access	Description
snBgp4RouteMapFilterTable fdry.1.2.11.12.1	None	The BGP4 RouteMap Filter Table.
snBgp4RouteMapFilterEntry fdry.1.2.11.12.1.1	None	An entry in the BGP4 RouteMap Filter Table.
snBgp4RouteMapFilterMapName fdry.1.2.11.12.1.1.1 Syntax: Octet string	Read only	Shows the route map's name. The value of this object contains an octet string. Each character is represented by one octet. There can be up to 32 octets in this object.
snBgp4RouteMapFilterSequence Num fdry.1.2.11.12.1.1.2 Syntax: Integer	Read only	Shows the sequence number for this particular route map.
snBgp4RouteMapFilterAction fdry.1.2.11.12.1.1.3 Syntax: Integer	Read-write	Tells the device what to do if the BGP address matches this entry. • deny(0) • permit(1)
snBgp4RouteMapFilterRowStatus fdry.1.2.11.12.1.1.4 Syntax: Integer	Read-write	Controls the management of the table rows. The values that can be written are: • delete(3) – Delete the row • create(4) – Create a new row • modify(5) – Modify an existing row If the row exists, then a SET with a value of create(4) returns a "bad value" error. Deleted rows are removed from the table immediately. The following values can be returned on reads: • noSuch(0) – No such row • invalid(1) – Row is inoperative • valid(2) – Row exists and is valid

BGP4 Route Map Match Configuration Table

A ***route map*** is a named set of match conditions and parameter settings that a Foundry Layer 3 Switch can use to modify route attributes and to control redistribution of routes.

BGP4 allows you to include the redistribution filters as part of a route map. A route map examines and modifies route information exchanged between BGP4 and RIP or OSPF.

Name, OID, and Syntax	Access	Description
snBgp4RouteMapMatchTable fdry.1.2.11.13.1	None	The BGP4 Route Map Set Table
snBgp4RouteMapMatchEntry fdry.1.2.11.13.1.1	None	An entry in the BGP4 Route Map Set Table
snBgp4RouteMapMatchMapName fdry.1.2.11.13.1.1.1 Syntax: Octet string	Read only	Shows the name of the route map to be matched. The value of this object is an octet string. Each character of the name is represented by one octet. There can be up to 32 octets in this object.
snBgp4RouteMapMatchSequenceNum fdry.1.2.11.13.1.1.2 Syntax: Integer	Read only	Shows the sequence number for this particular route map. Routes are matched to the route map in ascending numerical order. Matching stops once a match is found.
snBgp4RouteMapMatchAsPathFilter fdry.1.2.11.13.1.1.3 Syntax: Octet string	Read-write	Identifies the AS path list number that this route must match. This is a number from 1 – 0xFFFF. There are 10. Each number consists of of two octets.
snBgp4RouteMapMatchCommunityFilter fdry.1.2.11.13.1.1.4 Syntax: Octet string	Read-write	Identifies the community filter number that this route must match. This is a number from 1 – 0xFFFF. There are 10. Each number consists of of two octets.
snBgp4RouteMapMatchAddressFilter fdry.1.2.11.13.1.1.5 Syntax: Octet string	Read-write	Identifies the address filter number that this route must match. This is a number from 1 – 0xFFFF. There are 10. Each number consists of two octets. There can be a total of 20 octets in this object.
snBgp4RouteMapMatchMetric fdry.1.2.11.13.1.1.6 Syntax: Integer	Read-write	Compares the route's MED (metric) to the this value. There can be up to 20 octets in this object.
snBgp4RouteMapMatchNextHopList fdry.1.2.11.13.1.1.7 Syntax: Octet string	Read-write	Compares the IP address of the route's next hop to the IP address filters in this route. This is a number from 1 – 0xFFFF, represented by two octets. There are 16 of them. There can be a total of 32 octets in this object.

Name, OID, and Syntax	Access	Description
snBgp4RouteMapMatchRouteType fdry.1.2.11.13.1.1.8 Syntax: Integer	Read-write	Determines the OSPF route type to match: • none(0) • external(1) • externalType1(2) • externalType2(3) • internal(4) • local(5) Currently only externalType1(2), externalType2(3), and internal(4) is supported for SNMP-SET.
snBgp4RouteMapMatchTagList fdry.1.2.11.13.1.1.9 Syntax: Octet string	Read-write	Identifies the community tag access list that this route must match. This is a number represented by an octet strings. There can be up to 32 octets in this object.
snBgp4RouteMapMatchRowMask fdry.1.2.11.13.1.1.10 Syntax: Integer	Read-write	This object is used together with the MIB objects above in the same VARBIND to set and reset any MIBs in the table. The bit number is referred to the snBgp4RouteMapMatchEntry number of each row in the table: The bit is ON - means set The bit is OFF - means reset
snBgp4RouteMapMatchAsPathAccessList fdry.1.2.11.13.1.1.11 Syntax: Octet string	Read-write	Indicates which BGP AS path access list this route must match. This is an integer from 1 – 0xFFFFFFFF, consisting of five sets of four octets.
snBgp4RouteMapMatchCommunityList fdry.1.2.11.13.1.1.12 Syntax: Octet string	Read-write	Indicates which BGP community access list this route must match. This is an integer from 1 – 0xFFFFFFFF, consisting of five sets of four octets.
snBgp4RouteMapMatchAddressAccessList fdry.1.2.11.13.1.1.13 Syntax: Octet string	Read-write	Indicates which BGP address access list this route must match. This is an integer from 1 – 0xFFFFFFFF, consisting of five sets of two octets.
snBgp4RouteMapMatchAddressPrefixList fdry.1.2.11.13.1.1.14 Syntax: Octet string	Read-write	Indicates the prefix list that must match a BGP address access list. Valid values: Up to 170 octets.
snBgp4RouteMapMatchNextHopAccessList fdry.1.2.11.13.1.1.15 Syntax: Octet string	Read-write	Indicates the ID of the next hop router that this route must match. This is an integer from 1 – 0xFFFFFFFF, consisting of five integers. Each integer has two octets.

Name, OID, and Syntax	Access	Description
snBgp4RouteMapMatchNextHop PrefixList fdry.1.2.11.13.1.1.16 Syntax: Octet string	Read-write	Indicates the prefix list of the next hop router that this route must. Valid values: Up to 170 octets.

BGP4 Route Map Set Configuration Table

A ***route map*** is a named set of match conditions and parameter settings that a Foundry Layer 3 Switch can use to modify route attributes and to control redistribution of routes.

BGP4 allows you to include the redistribution filters as part of a route map. A route map examines and modifies route information exchanged between BGP4 and RIP or OSPF.

Name, OID, and Syntax	Access	Description
snBgp4RouteMapSetTable fdry.1.2.11.14.1	None	The BGP4 Route Map Set Table.
snBgp4RouteMapSetEntry fdry.1.2.11.14.1.1	None	An entry in the BGP4 Route Map Set Table.
snBgp4RouteMapSetMapName fdry.1.2.11.14.1.1.1 Syntax: Octet string	Read only	Specifies the name of the route map you want to use to set or change BGP4 attributes for the network you are advertising The value of this object is an octet string. Each character of the name is represented by one octet.
snBgp4RouteMapSetSequenceNum fdry.1.2.11.14.1.1.2 Syntax: Integer	Read only	Shows the sequence of the route map.
snBgp4RouteMapSetAsPathType fdry.1.2.11.14.1.1.3 Syntax: Integer	Read-write	Specifies how an AS path for BGP routes will be modified: • tag(0) – Converts the tag of a route into an AS path. • prepend(1) – Adds the specified AS numbers to the front of the value of the “snBgp4RouteMapSetAsPathString” object of the matching route.
snBgp4RouteMapSetAsPathString fdry.1.2.11.14.1.1.4 Syntax: Octet string	Read-write	Specifies the AS-path string. This string is used only if the snBgp4RouteMapSetAsPathCmd was sent together with the value set to prepend(1).
snBgp4RouteMapSetAutoTag fdry.1.2.11.14.1.1.5 Syntax: Integer	Read-write	Indicates if the automatic tag option for BGP routes is enabled: • disabled(0) • enabled(1) If enabled, the automatic tag calculates and sets an automatic tag value for the route

Name, OID, and Syntax	Access	Description
snBgp4RouteMapSetCommunityType fdry.1.2.11.14.1.1.6 Syntax: Integer	Read-write	Indicates if BGP communities attributes are allowed: • nums(0) – Allow community attributes • none(3) – No community attributes are allowed The old values 1 and 2 are not valid starting with Release 05.03.00.
snBgp4RouteMapSetCommunityNum fdry.1.2.11.14.1.1.7 Syntax: Integer	Read-write	Shows the community number of this route. Applies only if the object "snBgp4RouteMapSetCommunityType" that was sent on this route is set to nums(0).
snBgp4RouteMapSetCommunityAdditive fdry.1.2.11.14.1.1.8 Syntax: Integer	Read-write	Indicates if the option to add the existing communities to the route is enabled: • disabled(0) • enabled(1)
snBgp4RouteMapSetLocalPreference fdry.1.2.11.14.1.1.9 Syntax: Integer	Read-write	Specifies the local preference for the route. You can set the preference to a value from 0 – 4294967295.
snBgp4RouteMapSetMetric fdry.1.2.11.14.1.1.10 Syntax: Integer	Read-write	Sets the MED (metric) value for the route.
snBgp4RouteMapSetNextHop fdry.1.2.11.14.1.1.11 Syntax: IpAddress	Read-write	Indicates the IP address of the next hop for the BGP routes.
snBgp4RouteMapSetOrigin fdry.1.2.11.14.1.1.12 Syntax: Integer	Read-write	Shows the BGP route origin: • igp(0) – Routes with this set of attributes came to BGP through IGP. • egp(1) – Routes with this set of attributes came to BGP through EGP. • incomplete(2) – routes came from an origin other than IGP or EGP. For example, they may have been redistributed from OSPF or RIP.
snBgp4RouteMapSetTag fdry.1.2.11.14.1.1.13 Syntax: Integer	Read-write	Specifies the tag for BGP routes.
snBgp4RouteMapSetWeight fdry.1.2.11.14.1.1.14 Syntax: Integer	Read-write	Specifies the BGP weight for the routing table. Valid values: 0 – 65535

Name, OID, and Syntax	Access	Description
snBgp4RouteMapSetRowMask fdry.1.2.11.14.1.1.15 Syntax: Integer	Read-write	This object is used together with the MIB objects above in the same VARBIND to set and reset any MIBs in the table. The bit number is referred to the snBgp4RouteMapSetEntry number of each row in the table. • The bit is ON - means set • The bit is OFF - means reset
snBgp4RouteMapSetCommunityNums fdry.1.2.11.14.1.1.16 Syntax: Octet string	Read-write	Shows the community number for this route. Community number is a number from 1 – 0xFFFFFFFF. There are six community numbers. Each number is represented by four octets.
snBgp4RouteMapSetDampenHalfLife fdry.1.2.11.14.1.1.17 Syntax: Integer	Read-write	Specifies the number of minutes after which the route's penalty becomes half its value.
snBgp4RouteMapSetDampenReuse fdry.1.2.11.14.1.1.18 Syntax: Integer	Read-write	Specifies how low a route's penalty must be before the route becomes eligible for use again after being suppressed.
snBgp4RouteMapSetDampenSuppress fdry.1.2.11.14.1.1.19 Syntax: Integer	Read-write	Specifies how high a route's penalty can be before the Layer 3 Switch suppresses the route.
snBgp4RouteMapSetDampenMaxSuppress fdry.1.2.11.14.1.1.20 Syntax: Integer	Read-write	Specifies the maximum number of minutes that a route can be suppressed regardless of how unstable it is.

BGP4 Redistribution of Routes Table

The BGP4 Redistribution of Routes Table contains configurations that could be imported into the BGP4 domain. Each entry specifies a particular RIP, OSPF, or static route that will be imported into the BGP4 domain.

Name, OID, and Syntax	Access	Description
snBgp4RedisTable fdry.1.2.11.11.1	None	The BGP4 Redistribution of Routes Table.
snBgp4RedisEntry fdry.1.2.11.11.1.1	None	An entry in the BGP4 Redistribution of Routes Table.

Name, OID, and Syntax	Access	Description
snBgp4RedisProtocol fdry.1.2.11.11.1.1.1 Syntax: Integer	Read only	Shows the type of route that was imported into the BGP4 domain: • rip(1) – RIP • ospf(2) – OSPF • static(3) – Static • connected(4) – Connected • isis(5) – ISIS
snBgp4RedisMetric fdry.1.2.11.11.1.1.2 Syntax: Integer	Read-write	Indicates the metric used..
snBgp4RedisRouteMap fdry.1.2.11.11.1.1.3 Syntax: Octet string	Read-write	Indicates the name of the route map used. Each character is represented by one octet. Valid values: Up to 32 octets.
snBgp4RedisWeight fdry.1.2.11.11.1.1.4 Syntax: Integer	Read-write	Specifies the weight assigned to this entry.
snBgp4RedisMatchInternal fdry.1.2.11.11.1.1.5 Syntax: Integer	Read-write	Applies only to the OSPF protocol. • disabled(0) • enabled(1)
snBgp4RedisMatchExternal1 fdry.1.2.11.11.1.1.6 Syntax: Integer	Read-write	Applies only to the OSPF protocol. • disabled(0) • enabled(1)
snBgp4RedisMatchExternal2 fdry.1.2.11.11.1.1.7 Syntax: Integer	Read-write	Applies only to the OSPF protocol. • disabled(0) • enabled(1)
snBgp4RedisRowStatus fdry.1.2.11.11.1.1.8 Syntax: Integer	Read-write	Controls the management of the table rows. The values that can be written are: • delete(3) – Delete the row • create(4) – Create a new row • modify(5) – Modify an existing row If the row exists, then a SET with a value of create(4) returns a "bad value" error. Deleted rows are removed from the table immediately. The following values can be returned on reads: • noSuch(0) – No such row • invalid(1) – Row is inoperative • valid(2) – Row exists and is valid

BGP4 Routes Operational Status Table

Name, OID, and Syntax	Access	Description
snBgp4RouteOperStatusTable fdry.1.2.11.16.1	None	The BGP4 Router Operational Status Table.
snBgp4RouteOperStatusEntry fdry.1.2.11.16.1.1	None	An entry in the BGP4 Router Operational Status Table.
snBgp4RouteOperStatusIndex fdry.1.2.11.16.1.1.1 Syntax: Integer	Read only	The index for a route entry.
snBgp4RouteOperStatusIp fdry.1.2.11.16.1.1.2 Syntax: IpAddress	Read only	Shows the IP address of the route.
snBgp4RouteOperStatusSubnetMask fdry.1.2.11.16.1.1.3 Syntax: IpAddress	Read only	Shows the IP Subnet Mask of the route.
snBgp4RouteOperStatusNextHop fdry.1.2.11.16.1.1.4 Syntax: IpAddress	Read only	Shows the IP address of the next hop in the route.
snBgp4RouteOperStatusMetric fdry.1.2.11.16.1.1.5 Syntax: Integer	Read only	Shows the value of the route's MED attribute.
snBgp4RouteOperStatusLocalPreference fdry.1.2.11.16.1.1.6 Syntax: Integer	Read only	Shows the degree of preference for this route relative to other routes in the local AS. When the BGP4 algorithm compares routes on the basis of local preferences, the route with the higher local preference is chosen. The preference can have a value from 0 – 4294967295.
snBgp4RouteOperStatusWeight fdry.1.2.11.16.1.1.7 Syntax: Integer	Read only	The value that this router associates with routes from a specific neighbor. For example, if the router receives routes to the same destination from two BGP4 neighbors, the router prefers the route from the neighbor with the larger weight.
snBgp4RouteOperStatusOrigin fdry.1.2.11.16.1.1.8 Syntax: Integer	Read only	Shows the route's origin: • igp(0) – Routes with this set of attributes came to BGP through IGP. • egp(1) – Routes with this set of attributes came to BGP through EGP. • incomplete(2) – routes came from an origin other than IGP or EGP. For example, they may have been redistributed from OSPF or RIP.

Name, OID, and Syntax	Access	Description
snBgp4RouteOperStatusStatus fdry.1.2.11.16.1.1.9 Syntax: Integer	Read only	Shows the route's status. The value of this object is a bit array, a packed bit string. The following shows the meaning of each bit. A bit position may be set to 0 – FALSE or 1 – TRUE: **Bit position** / **Meaning** 6 – 31 reserved 5 aggregate route for multiple networks 4 best route to destination 3 internal, learned through BGP4 2 local, originated on this device 1 suppressed, suppressed during aggregation and thus is not advertised to neighbors 0 valid
snBgp4RouteOperStatusRouteTag fdry.1.2.11.16.1.1.10 Syntax: Integer	Read only	Sets the route's tag. This can be a value from 0 – 4294967295. This object applies only to routes redistributed into OSPF
snBgp4RouteOperStatusCommunityList fdry.1.2.11.16.1.1.11 Syntax: Octet string	Read only	Shows the communities the route is in. A community is represented by 4 octets. The community list, could have some well-known numbers such as: • BGP_COMMUNITY_ATTRIBUTE_NO_EXPORT0xFFFFFF01 • BGP_COMMUNITY_ATTRIBUTE_NO_ADVERTISE0xFFFFFF02 If the community list is a NULL string (empty list) then the community is INTERNET, which is represented by a number from 1 – 0xFFFFFFFF.
snBgp4RouteOperStatusAsPathList fdry.1.2.11.16.1.1.12 Syntax: Octet string	Read only	Shows the AS Path list of this route. Valid values: 1 – 0xFFFF. This integer is represented by two octets.

BGP4 Neighbor General Configuration Table

The BGP4 protocol does not contain a peer discovery process. You must indicate the neighbor's IP address for each of the router's BGP4 neighbors (peers), as well as the AS each neighbor is in. Neighbors that are in different ASs communicate using EBGP. Neighbors within the same AS communicate use IBGP.

Name, OID, and Syntax	Access	Description
snBgp4NeighGenCfgTable fdry.1.2.11.6.1	None	The BGP4 Neighborhood General Configuration Table.
snBgp4NeighGenCfgEntry fdry.1.2.11.6.1.1	None	An entry in the BGP4 Neighborhood General Configuration Table.
snBgp4NeighGenCfgNeighIp fdry.1.2.11.6.1.1.1 Syntax: IpAddress	Read only	Shows the IP Address for a neighbor entry.
snBgp4NeighGenCfgAdvertIevel fdry.1.2.11.6.1.1.2 Syntax: Integer	Read-write	Specifies the minimum delay (in seconds) between messages to the specified neighbor. Valid values: 0 – 600 Defaults: • 30 for EBGP neighbors (neighbors in other ASs) • 5 for IBGP neighbors (neighbors in the same AS).
snBgp4NeighGenCfgDefOriginate fdry.1.2.11.6.1.1.3 Syntax: Integer	Read-write	Indicates if the default originate for this neighbor is enabled: • disabled(0) • enabled(1) If enabled, the device sends the default route 0.0.0.0 to the neighbor.
snBgp4NeighGenCfgEbgpMultiho p fdry.1.2.11.6.1.1.4 Syntax: Integer	Read-write	Indicates if the EBGP Muitihop for this neighbor is enabled. • disabled(0) • enabled(1) If enabled, the neighbor is more than one hop away and that the session type with the neighbor is thus EBGP multihop. Default: disabled(0)
snBgp4NeighGenCfgMaxPrefix fdry.1.2.11.6.1.1.5 Syntax: Integer	Read-write	Specifies the maximum number of IP network prefixes (routes) that can be learned from the specified neighbor or peer group. You can specify a value from 0 – 4294967295. Default: 0 (unlimited) The minimum value of the maximum prefix is defined by the "snBgp4GenNeighPrefixMinValue" object. The maximum value of the maximum prefix is defined by the "snBgp4GenOperRoutes" object.

Name, OID, and Syntax	Access	Description
snBgp4NeighGenCfgNextHopSelf fdry.1.2.11.6.1.1.6 Syntax: Integer	Read-write	Indicates if the option that allows the router to list itself as the next hop in the updates sent to the specified neighbor is enabled: • disabled(0) • enabled(1) Default: disabled(0)
snBgp4NeighGenCfgRemoteAs fdry.1.2.11.6.1.1.7 Syntax: Integer	Read-write	Specifies the AS that the remote neighbor is in. Valid values: 1 – 65535 Default: no default
snBgp4NeighGenCfgSendComm fdry.1.2.11.6.1.1.8 Syntax: Integer	Read-write	Indicates if the option to send community attributes in updates to specified neighbors is enabled: • disabled(0) • enabled(1) Default: disabled(0)
snBgp4NeighGenCfgWeight fdry.1.2.11.6.1.1.9 Syntax: Integer	Read-write	Assigns a weight to a neighbor connection. BGP4 prefers larger weights over smaller weights. Valid values: 0 – 65535 Default: 0
snBgp4NeighGenCfgWeightFilterList fdry.1.2.11.6.1.1.10 Syntax: Octet string	Read-write	Specifies a weight that the device applies to routes received from the neighbor that match the AS-path filter or ACL. Valid values: 1 – 0xFFFF. There are 16 of them. Each integer is represented by two octets.
snBgp4NeighGenCfgRowStatus fdry.1.2.11.6.1.1.11 Syntax: Integer	Read-write	Controls the management of the table rows. The values that can be written are: • delete(3) – Delete the row • create(4) – Create a new row • modify(5) – Modify an existing row If the row exists, then a SET with a value of create(4) returns a "bad value" error. Deleted rows are removed from the table immediately. The following values can be returned on reads: • noSuch(0) – No such row • invalid(1) – Row is inoperative • valid(2) – Row exists and is valid

Name, OID, and Syntax	Access	Description
snBgp4NeighGenCfgUpdateSrcLpbIntf fdry.1.2.11.6.1.1.12 Syntax: Integer	Read-write	Specifies the loopback interface number for TCP connections. Valid values: 0 – 8 Generally, loopback interfaces are used for links to IBGP neighbors, which often are multiple hops away, rather than to EBGP neighbors. Zero interface means to restore the interface assignment to the closest interface, which is called the best local address.
snBgp4NeighGenCfgRouteRefClient fdry.1.2.11.6.1.1.13 Syntax: Integer	Read-write	Indicates if the option to allow this neighbor to be a router reflector client is enabled: • disabled(0) • enabled(1)
snBgp4NeighGenCfgRemovePrivateAs fdry.1.2.11.6.1.1.14 Syntax: Integer	Read-write	Specifies if the option to remove private AS numbers from update messages that routers sent to this neighbor is enabled. • disabled(0) • enabled(1) If enabled, the router will remove AS numbers 64512 – 65535 (the well known BGP4 private AS numbers) from the AS-path attribute in UPDATE messages the device sends to the neighbor. Default: disabled(0)
snBgp4NeighGenCfgEbgpMultihopTtl fdry.1.2.11.6.1.1.15 Syntax: Integer	Read-write	Specifies the time-to-live (TTL) for the neighbor. Valid values: 0 – 255. Default: 0. If you leave the EBGP TTL value set to 0, the software uses the IP TTL value.
snBgp4NeighGenCfgShutdown fdry.1.2.11.6.1.1.16 Syntax: Integer	Read-write	Indicates if BGP4 neighbor shutdown is enabled: • disabled(0) • enabled(1) If enabled, the device shuts down the session with this neighbor. Shutting down the session allows you to completely configure the neighbor and save the configuration without actually establishing a session with the neighbor. Default: disabled(0)
snBgp4NeighGenCfgKeepAliveTime fdry.1.2.11.6.1.1.17 Syntax: Integer	Read-write	Indicates how often the device sends keep alive messages. This object overrides the global settings for the Keepalive Time Valid values: 0 – 65535 seconds

Name, OID, and Syntax	Access	Description
snBgp4NeighGenCfgHoldTime fdry.1.2.11.6.1.1.18 Syntax: Integer	Read-write	Determines how many seconds the device will wait for a keep alive or update message from a BGP4 neighbor before deciding that the neighbor is dead. This object overrides the global settings for Hold Time. Valid values: 0 or 3 – 65535 seconds (1 and 2 seconds are not allowed) If you set the Hold Time to 0, the router waits indefinitely for messages from a neighbor.
snBgp4NeighGenCfgDefOrigMap fdry.1.2.11.6.1.1.19 Syntax: Octet string	Read-write	Indicates if the name of the default route map. This is an octet string. Each character is represented by one octet. Valid values: Up to 32 octets
snBgp4NeighGenCfgDesc fdry.1.2.11.6.1.1.20 Syntax: Octet string	Read-write	Specifies the name for the neighbor. Valid values: Up to 80 octets
snBgp4NeighGenCfgPass fdry.1.2.11.6.1.1.21 Syntax: Octet string	Read-write	Specifies an MD5 password for securing sessions between the device and its neighbor. Valid values: Up to 80 octets

BGP4 Neighbor Distribute Group Table

Name, OID, and Syntax	Access	Description
snBgp4NeighDistGroupTable fdry.1.2.11.7.1	None	The BGP4 Neighbor Distribute Group Table
snBgp4NeighDistGroupEntry fdry.1.2.11.7.1.1	None	An entry in the BGP4 Neighbor Distribute Group Table
snBgp4NeighDistGroupNeighIp fdry.1.2.11.7.1.1.1 Syntax: IpAddress	Read only	Shows the IP Address for this entry.
snBgp4NeighDistGroupDir fdry.1.2.11.7.1.1.2 Syntax: Integer	Read only	Indicates if the access list is applied to incoming or outgoing advertisements: • out(0) • in(1)
snBgp4NeighDistGroupAccessList fdry.1.2.11.7.1.1.3 Syntax: Octet string	Read-write	Indicates the access list that will be applied to advertisements. This is number from 1 – 0xFFFF. There are 16 of them. Each integer is represented by two octets.

Name, OID, and Syntax	Access	Description
snBgp4NeighDistGroupRowStatus fdry.1.2.11.7.1.1.4 Syntax: Integer	Read-write	Controls the management of the table rows. The values that can be written are: • delete(3) – Delete the row • create(4) – Create a new row • modify(5) – Modify an existing row If the row exists, then a SET with a value of create(4) returns a "bad value" error. Deleted rows are removed from the table immediately. The following values can be returned on reads: • noSuch(0) – No such row • invalid(1) – Row is inoperative • valid(2) – Row exists and is valid
snBgp4NeighDistGroupInFilterList fdry.1.2.11.7.1.1.5 Syntax: Octet string	Read-write	Indicates the group filter list that will be applied to incoming advertisements. This is number from 1 – 0xFFFF. There are 16 of them. Each integer is represented by two octets.
snBgp4NeighDistGroupOutFilterList fdry.1.2.11.7.1.1.6 Syntax: Octet string	Read-write	Indicates the group filter list that will be applied to outgoing advertisements. This is number from 1 – 0xFFFF. There are 16 of them. Each integer is represented by two octets.
snBgp4NeighDistGroupInIpAccessList fdry.1.2.11.7.1.1.7 Syntax: Octet string	Read-write	Indicates the access list that will be applied to incoming advertisements. This is number from 1 – 0xFFFF. There are 16 of them. Each integer is represented by two octets.
snBgp4NeighDistGroupOutIpAccessList fdry.1.2.11.7.1.1.8 Syntax: Octet string	Read-write	Indicates the access list that will be applied to outgoing advertisements. This is number from 1 – 0xFFFF. There are 16 of them. Each integer is represented by two octets.
snBgp4NeighDistGroupInPrefixList fdry.1.2.11.7.1.1.9 Syntax: Octet string	Read-write	Specifies the prefix name list of incoming advertisements. Valid values; Up to 32 octets
snBgp4NeighDistGroupOutPrefixList fdry.1.2.11.7.1.1.10 Syntax: Octet string	Read-write	Specifies the prefix name list of outgoing advertisements. Valid values; Up to 32 octets

BGP4 Neighbor Filter Group Table

The BGP4 Neighbor Filter Group Table control the routes that the device learns or advertises.

Name, OID, and Syntax	Access	Description
snBgp4NeighFilterGroupTable fdry.1.2.11.8.1	None	The BGP4 Neighbor Filter Group Table.
snBgp4NeighFilterGroupEntry fdry.1.2.11.8.1.1	None	An entry in the BGP4 Neighbor Filter Group table.
snBgp4NeighFilterGroupNeighIp fdry.1.2.11.8.1.1.1 Syntax: IpAddress	Read only	Shows the IP Address for a neighbor entry.
snBgp4NeighFilterGroupDir fdry.1.2.11.8.1.1.2 Syntax: Integer	Read only	Shows the direction of advertisements to which the access list is applied. • out(0) – Outgoing • in(1) – Incoming
snBgp4NeighFilterGroupAccessList fdry.1.2.11.8.1.1.3 Syntax: Octet string	Read-write	Identifies the access list that is being used to filter a neighbor group. This is a number from 1 – 0xFFFF. There are 16 of them. This integer is represented by two octets.
snBgp4NeighFilterGroupRowStatus fdry.1.2.11.8.1.1.4 Syntax: IpAddress	Read-write	Controls the management of the table rows. The values that can be written are: • delete(3) – Delete the row • create(4) – Create a new row • modify(5) – Modify an existing row If the row exists, then a SET with a value of create(4) returns a "bad value" error. Deleted rows are removed from the table immediately. The following values can be returned on reads: • noSuch(0) – No such row • invalid(1) – Row is inoperative • valid(2) – Row exists and is valid
snBgp4NeighFilterGroupInFilterList fdry.1.2.11.8.1.1.5 Syntax: Octet string	Read-write	Identifies the filter list that is being used to filter incoming routes from a neighbor group. This is a number from 1 – 0xFFFF. There are 16 of them. This integer is represented by two octets.

Name, OID, and Syntax	Access	Description
snBgp4NeighFilterGroupOutFilterList fdry.1.2.11.8.1.1.6 Syntax: Octet string	Read-write	Identifies the filter list that is being used to filter outgoing routes from a neighbor group. This is a number from 1 – 0xFFFF. There are 16 of them. This integer is represented by two octets.
snBgp4NeighFilterGroupInAsPathAccessList fdry.1.2.11.8.1.1.7 Syntax: Octet string	Read-write	Identifies the AS path list that is being used to filter incoming routes from a neighbor group. This is a number from 1 – 0xFFFF. There are 16 of them. This integer is represented by two octets.
snBgp4NeighFilterGroupOutAsPathAccessList fdry.1.2.11.8.1.1.8 Syntax: Octet string	Read-write	Identifies the AS path list that is being used to filter outgoing routes from a neighbor group. This is a number from 1 – 0xFFFF. There are 16 of them. This integer is represented by two octets.
snBgp4NeighFilterGroupWeight fdry.1.2.11.8.1.1.9 Syntax: Integer	Read-write	Assign a weight to a neighbor filter. Valid values: 0 – 65535
snBgp4NeighFilterGroupWeightAccessList fdry.1.2.11.8.1.1.10 Syntax: Octet string	Read-write	This is a number from 1 – 0xFFFF. There are 16 of them. This integer is represented by two octets.

BGP4 Neighbor Route Map Table

A route map can be one of the parameters a BGP4 network can advertised. The Layer 3 Switch can use the route map to set or change BGP4 attributes when creating a local BGP4 route.

Name, OID, and Syntax	Access	Description
snBgp4NeighRouteMapTable fdry.1.2.11.9.1	None	The BGP4 Neighbor Route Map Table.
snBgp4NeighRouteMapEntry fdry.1.2.11.9.1.1	None	An entry in the BGP4 Route Map Table.
snBgp4NeighRouteMapNeighIp fdry.1.2.11.9.1.1.1 Syntax: IpAddress	Read only	Shows the IP Address for a neighbor entry.
snBgp4NeighRouteMapDir fdry.1.2.11.9.1.1.2 Syntax: Integer	Read only	Indicates the direction of the advertisement to which the access list is applied: • out(0) • in(1)

Name, OID, and Syntax	Access	Description
snBgp4NeighRouteMapMapName fdry.1.2.11.9.1.1.3 Syntax: Octet string	Read-write	Specifies the name of the route map you want to use. The value of this object is an octet string. Each character of the name is represented by one octet. There can be up to 32 octets in this object.
snBgp4NeighRouteMapRowStatus fdry.1.2.11.9.1.1.4 Syntax: Integer	Read-write	Controls the management of the table rows. The values that can be written are: • delete(3) – Delete the row • create(4) – Create a new row • modify(5) – Modify an existing row If the row exists, then a SET with a value of create(4) returns a "bad value" error. Deleted rows are removed from the table immediately. The following values can be returned on reads: • noSuch(0) – No such row • invalid(1) – Row is inoperative • valid(2) – Row exists and is valid

BGP4 Neighbor Operational Status Table

The BGP4 Neighbor Operational Status Table shows the state of a neighbor and statistics about the messages sent and received.

Name, OID, and Syntax	Access	Description
snBgp4NeighOperStatusTable fdry.1.2.11.15.1	None	The BGP4 Neighbor Operational Status Table.
snBgp4NeighOperStatusEntry fdry.1.2.11.15.1.1	None	An entry in the BGP4 Neighbor Operational Status Table.
snBgp4NeighOperStatusIndex fdry.1.2.11.15.1.1.1 Syntax: Integer	Read only	The index for the entry. Each entry represents a neighbor.
snBgp4NeighOperStatusIp fdry.1.2.11.15.1.1.2 Syntax: IpAddress	Read only	Shows the IP address of the neighbor.
snBgp4NeighOperStatusRemoteAs fdry.1.2.11.15.1.1.3 Syntax: Integer	Read only	Shows the AS that the neighbor is in.

Name, OID, and Syntax	Access	Description
snBgp4NeighOperStatusBgpType fdry.1.2.11.15.1.1.4 Syntax: Integer	Read only	Shows the type of BGP protocol used by this entry: • ebgp(0) – The neighbor is in another AS • ibgp(1) – The neighbor is in the same AS
snBgp4NeighOperStatusState fdry.1.2.11.15.1.1.5 Syntax: Integer	Read only	Shows the state of this neighbor: • noState(0) • idle(1) – BGP4 process is waiting to be started. Usually, enabling BGP4 or establishing a neighbor session starts the BGP4 process. A minus sign (-) indicates that the session has gone down and the software is clearing or removing routes. • connect(2) – BGP4 is waiting for the connection process for the TCP neighbor session to be completed. • active(3) – BGP4 is waiting for a TCP connection from the neighbor. • openSent(4) – BGP4 is waiting for an Open message from the neighbor. • openConfirm(5) – BGP4 has received an OPEN message from the neighbor and is now waiting for either a KEEPALIVE or NOTIFICATION message. If the router receives a KEEPALIVE message from the neighbor, the state changes to established(6). If the message is a NOTIFICATION, the state changes to idle(1). • established(6) – BGP4 is ready to exchange UPDATE messages with the neighbor. **NOTE:** If there is more BGP data in the TCP receiver queue, a plus sign (+) is also displayed.
snBgp4NeighOperStatusKeepAliveTime fdry.1.2.11.15.1.1.6 Syntax: Integer	Read only	Specifies how often this router sends keep alive messages to the neighbor.
snBgp4NeighOperStatusHoldTime fdry.1.2.11.15.1.1.7 Syntax: Integer	Read only	Specifies how many seconds the router will wait for a keepalive or update message from a BGP4 neighbor before deciding that the neighbor is dead.
snBgp4NeighOperStatusAdvertlevel fdry.1.2.11.15.1.1.8 Syntax: Integer	Read only	Shows the minimum interval between the sending of BGP routing updates.
snBgp4NeighOperStatusKeepAliveTxCounts fdry.1.2.11.15.1.1.9	Read only	Shows the number of keep alive message sent.

Name, OID, and Syntax	Access	Description
snBgp4NeighOperStatusKeepAliveRxCounts fdry.1.2.11.15.1.1.10 Syntax: Counter	Read only	Shows the number of keep alive message received.
snBgp4NeighOperStatusUpdateTxCounts fdry.1.2.11.15.1.1.11 Syntax: Counter	Read only	Shows the number of updated message sent.
snBgp4NeighOperStatusUpdateRxCounts fdry.1.2.11.15.1.1.12 Syntax: Counter	Read only	Shows the number of updated message received.
snBgp4NeighOperStatusNotifTxCounts fdry.1.2.11.15.1.1.13 Syntax: Counter	Read only	Shows the number of Notification message sent.
snBgp4NeighOperStatusNotifRxCounts fdry.1.2.11.15.1.1.14 Syntax: Counter	Read only	Shows the number of Notification message received.
snBgp4NeighOperStatusOpenTxCounts fdry.1.2.11.15.1.1.15 Syntax: Counter	Read only	Shows the number of open message sent.
snBgp4NeighOperStatusOpenRxCounts fdry.1.2.11.15.1.1.16 Syntax: Counter	Read only	Shows the number of open message received.

BGP4 Neighbor Summary Table

The BGP4 Neighbor Summary Table shows statistics for the router's BGP4 neighbors.

Name, OID, and Syntax	Access	Description
snBgp4NeighborSummaryTable fdry.1.2.11.17.1	None	The BGP4 Neighbor Summary Table.
snBgp4NeighborSummaryEntry fdry.1.2.11.17.1.1	None	An entry in the BGP4 Router Operational Status Table.

Name, OID, and Syntax	Access	Description
snBgp4NeighborSummaryIndex fdry.1.2.11.17.1.1.1 Syntax: Integer	Read only	The index for a route entry.
snBgp4NeighborSummaryIp fdry.1.2.11.17.1.1.2 Syntax: IpAddress	Read only	Shows the IP address of the neighbor.
snBgp4NeighborSummaryState fdry.1.2.11.17.1.1.3 Syntax: Integer	Read only	Shows the state of the BGP4 process during the current session with the neighbor. • noState(0) • idle(1) – The BGP4 process is waiting to be started. Usually, enabling BGP4 or establishing a neighbor session starts the BGP4 process. A minus sign (-) indicates that the session has gone down and the software is clearing or removing routes. • connect(2) – Waiting for the connection process for the TCP neighbor session to be completed. • active(3) – BGP4 is waiting for a TCP connection from the neighbor. • openSent(4) – BGP4 is waiting for an Open message from the neighbor. • openConfirm(5) – BGP4 has received an OPEN message from the neighbor and is now waiting for either a KEEPALIVE or NOTIFICATION message. If the router receives a KEEPALIVE message from the neighbor, the state changes to established(6). If the message is a NOTIFICATION, the state changes to idle(1). • established(6) – BGP4 is ready to exchange UPDATE messages with the neighbor. If there is more BGP data in the TCP receiver queue, a plus sign (+) is also displayed.
snBgp4NeighborSummaryStateChgTime fdry.1.2.11.17.1.1.4 Syntax: Integer	Read only	Shows the number of times the state of this neighbor has changed. If the state frequently changes between CONNECT and ACTIVE, there may be a problem with the TCP connection.
snBgp4NeighborSummaryRouteReceived fdry.1.2.11.17.1.1.5 Syntax: Integer	Read only	Shows the number of routes received from the neighbor during the current BGP4 session.
snBgp4NeighborSummaryRouteInstalled fdry.1.2.11.17.1.1.6 Syntax: Integer	Read only	Indicates how many of the received routes was accepted and installed in the BGP4 route table.

BGP4 Clear Neighbor Command Table

Name, OID, and Syntax	Access	Description
snBgp4ClearNeighborCmdTable fdry.1.2.11.19.1	None	The BGP4 Clear Neighbor Command Table.
snBgp4ClearNeighborCmdEntry fdry.1.2.11.19.1.1	None	An entry in the BGP4 Clear Neighbor Command Table.
snBgp4ClearNeighborCmdIp fdry.1.2.11.19.1.1.1 Syntax: IpAddress	Read only	Shows the IP Address of a neighbor entry. If the IP address is 255.255.255.255, then the entry applies to all neighbors.
snBgp4ClearNeighborCmdElement fdry.1.2.11.19.1.1.2 Syntax: Integer	Read-write	Indicates what will be cleared • valid(0) – Received in SNMP-GET. • lastPacketWithError(1) – Clears the buffer containing the first 400 bytes of the last BGP4 packet that contained an error. • notificationErrors(2) – Clears the buffer containing the last NOTIFICATION message sent or received. • softOutbound(3) – Update all outbound routes by applying the new or changed filters, but sends only the existing routes affected by the new or changed filters to the neighbor. • traffic(4) – Clears the BGP4 message counters for all neighbors (the default) or a neighbor. • neighbor(5) – Clears the BGP4 message counter for all neighbors within a peer group.

BGP4 Neighbor Prefix Group Table

Name, OID, and Syntax	Access	Description
snBgp4NeighPrefixGroupTable fdry.1.2.11.20.1	None	The BGP4 Neighbor Prefix Group Table.
snBgp4NeighPrefixGroupEntry fdry.1.2.11.20.1.1	None	An entry in the BGP4 Neighbor Prefix Group Table. Each entry is a neighbor.
snBgp4NeighPrefixGroupNeighIp fdry.1.2.11.20.1.1.1 Syntax: IpAddress	Read only	Shows the neighbor's IP Address.

Name, OID, and Syntax	Access	Description
snBgp4NeighPrefixGroupDir fdry.1.2.11.20.1.1.2 Syntax: Integer	Read only	Shows the direction of the advertisement to which this filter will be applied: • outgoing(0) – Applied to routes that will be transmitted to the neighbor. • incoming(1) – Applied to routes received from the neighbor.
snBgp4NeighPrefixGroupInAccessList fdry.1.2.11.20.1.1.3 Syntax: Octet string	Read-write	If the “snBgp4NeighPrefixGroupDir” object is set to incoming(1), this object shows the name of the prefix list for incoming routes. There can be up to 32 octets in this object.
snBgp4NeighPrefixGroupOutAccessList fdry.1.2.11.20.1.1.4 Syntax: Octet string	Read-write	If the “snBgp4NeighPrefixGroupDir” object is set outgoing(0), this object shows the name of the prefix list for outgoing routes. There can be up to 32 octets in this object.
snBgp4NeighPrefixGroupRowStatus fdry.1.2.11.20.1.1.5 Syntax: Integer	Read-write	Controls the management of the table rows. The values that can be written are: • delete(3) – Delete the row • create(4) – Create a new row • modify(5) – Modify an existing row If the row exists, then a SET with a value of create(4) returns a "bad value" error. Deleted rows are removed from the table immediately. The following values can be returned on reads: • noSuch(0) – No such row • invalid(1) – Row is inoperative • valid(2) – Row exists and is valid

Chapter 17
IPX

This chapter presents the objects in the Foundry MIBs for the Internet Packet Exchange (IPX) protocol. IPX is available in Foundry's Layer 3 Switches, such as the BigIron product.

Refer to the *Foundry Enterprise Configuration and Management Guide* for details on IPX support in Foundry devices.

IPX General Objects

The following presents the general objects used to define IPX.

Name, OID, and Syntax	Access	Description
snIpxRoutingMode fdry.1.2.1.1.1 Syntax: Integer	Read-write	Shows the IPX Routing Mode status: • disabled(0) • enabled(1)
snIpxNetBiosFilterMode fdry.1.2.1.1.2 Syntax: Integer	Read-write	Shows the NetBios Filter Mode status. • disabled(0) • enabled(1)
snIpxClearCache fdry.1.2.1.1.3 Syntax: ClearStatus	Read-write	Indicates if the cache table will be cleared. • normal(0)l • clear(1)
snIpxClearRoute fdry.1.2.1.1.4 Syntax: ClearStatus	Read-write	Indicates if the IPX table will be cleared. • normal(0)l • clear(1)

Name, OID, and Syntax	Access	Description
snIpxClearTrafficCnts fdry.1.2.1.1.5 Syntax: ClearStatus	Read-write	Indicates if all IPX traffic counters are cleared: • normal(0) – Do not clear counters • clear(1) – Clear counters The IPX traffic counters affected by this object are: • snIpxRcvPktsCnt • snIpxFwdPktsCnt • snIpxRcvDropPktsCnt • snIpxTxDropPktsCnt • snIpxRcvFiltPktsCnt • snIpxTxFiltPktsCnt
snIpxRcvPktsCnt fdry.1.2.1.1.6 Syntax: Counter	Read only	The number of IPX packets received on the Layer 3 Switch.
snIpxTxPktsCnt fdry.1.2.1.1.7 Syntax: Counter	Read only	The number of IPX packets that originated on the Layer 3 Switch and sent on its port.
snIpxFwdPktsCnt fdry.1.2.1.1.8 Syntax: Counter	Read only	The number of IPX packets received by the Layer 3 Switch from another device and then sent out on its port.
snIpxRcvDropPktsCnt fdry.1.2.1.1.9 Syntax: Counter	Read only	The number of packets received by the Layer 3 Switch that the switch dropped.
snIpxRcvFiltPktsCnt fdry.1.2.1.1.10 Syntax: Counter	Read only	The number of packets received by a port that matched an inbound IPX filter configured on the port.
snIpxRipGblFiltList fdry.1.2.1.1.11 Syntax: Octet string	Read-write	An IPX RIP Global Filter List. There can be up to 32 octets in this object.

Name, OID, and Syntax	Access	Description
snIpxRipFiltOnAllPort fdry.1.2.1.1.12 Syntax: Integer	Read-write	Applies the IPX RIP Global filter list in the "snIpxRipGblFiltList" object to all interfaces. This object adds all RIP filter lists and deletes all RIP filter lists from all ports. Before sending this command, the "snIpxRipGblFiltList" object must be defined. The values that can be written are: • deleteAllInBound(2) – Deletes all in-bound filter lists from all ports. • deleteAllOutBound(3) – Deletes all out-bound filter lists from all ports. • addAllInBound(4) – Adds all in-bound filter lists to all ports. • addAllOutBound(5) – Adds all out-bound filter lists to all ports. The following values can be returned on reads: • noSuch(0) – Set operation has not be performed. • valid(1) – Set operation is done and is valid.
snIpxSapGblFiltList fdry.1.2.1.1.13 Syntax: Octet string	Read-write	Contains an IPX SAP Global Filter List. There can be up to 32 octets in this object.
snIpxSapFiltOnAllPort fdry.1.2.1.1.14 Syntax: Integer	Read-write	Applies the IPX RIP Global filter list in the "snIpxSapGblFiltList" object to all interfaces. This object adds all filter lists and deletes all SAP filter lists from all ports. Before sending this command, the object "snIpxSapGblFiltList" must be defined. The values that can be written are: • deleteAllInBound(2) – Deletes all in-bound filter lists from all ports. • deleteAllOutBound(3) – Deletes all out-bound filter lists from all ports. • addAllInBound(4) – Adds all in-bound filter lists to all ports. • addAllOutBound(5) – Adds all out-bound filter lists to all ports. The following values can be returned on reads: • noSuch(0) – Set operation has not be performed. • valid(1) – Set operation is done and is valid.
snIpxTxDropPktsCnt fdry.1.2.1.1.15 Syntax: Counter	Read only	Shows the number of packets that were queued to be sent on a port by the Layer 3 Switch, but then dropped.
snIpxTxFiltPktsCnt fdry.1.2.1.1.16 Syntax: Counter	Read only	The number of packets that were queued to be sent on a port that matched an outbound IPX filter that was configured on the port.

IPX Cache Table

The IPX Cache Table contains information about the IPX forwarding cache for the router.

Name, OID, and Syntax	Access	Description
snIpxCacheTable fdry.1.2.1.2.1	None	The IPX Cache table
snIpxCacheEntry fdry.1.2.1.2.1.1	None	An entry in the IPX Cache table.
snIpxCacheIndex fdry.1.2.1.2.1.1.1 Syntax: Integer	Read only	The table index for a IPX Cache Table entry.
snIpxCacheNetNum fdry.1.2.1.2.1.1.2 Syntax: NetNumber	Read only	Shows the network number containing the destination node.
snIpxCacheNode fdry.1.2.1.2.1.1.3 Syntax: Physical address	Read only	Shows the number of the destination node.
snIpxCacheOutFilter fdry.1.2.1.2.1.1.4 Syntax: Integer	Read only	Shows if an outbound cache filter has been enabled: • disabled(0) • enabled(1)
snIpxCacheEncap fdry.1.2.1.2.1.1.5 Syntax: Integer	Read only	Shows the IPX frame encapsulation type. • EthernetII(1) • Ethernet8022(2) • Ethernet8023(3) • EthernetSnap(4)
snIpxCachePort fdry.1.2.1.2.1.1.6 Syntax: PortIndex	Read only	Shows the number of the port through which the Layer 3 Switch sends IPX traffic to the destination network and node.

IPX Route Table

The IPX Route Table contains objects for IPX routes.

Name, OID, and Syntax	Access	Description
snIpxRouteTable fdry.1.2.1.3.1	None	IPX route table.

Name, OID, and Syntax	Access	Description
snIpxRouteEntry fdry.1.2.1.3.1.1	None	An entry in the IPX route table
snIpxRouteIndex fdry.1.2.1.3.1.1.1 Syntax: Integer	Read only	The table index for a IPX route entry.
snIpxDestNetNum fdry.1.2.1.3.1.1.2 Syntax: NetNumber	Read only	Shows the destination network number. A value of all zeros indicates that any destination network number is accepted
snIpxFwdRouterNode fdry.1.2.1.3.1.1.3 Syntax: Physical address	Read only	Shows the MAC address of the next hop IPX router.
snIpxDestHopCnts fdry.1.2.1.3.1.1.4 Syntax: Integer	Read only	Shows the number of hops to reach the destination.
snIpxRouteMetric fdry.1.2.1.3.1.1.5 Syntax: Integer	Read only	Shows the metric for the next hop router.
snIpxDestPort fdry.1.2.1.3.1.1.6 Syntax: Integer	Read only	Shows the destination port.

IPX Server Table

The IPX Server Table presents information about the IPX servers.

Name, OID, and Syntax	Access	Description
snIpxServerTable fdry.1.2.1.4.1	None	IPX Server table.
snIpxServerEntry fdry.1.2.1.4.1.1	None	An entry in the IPX Server table.
snIpxServerIndex fdry.1.2.1.4.1.1.1 Syntax: Integer	Read only	The table index for a IPX Server entry.
snIpxServerType fdry.1.2.1.4.1.1.2 Syntax: Integer	Read only	Shows the IPX server type.

Name, OID, and Syntax	Access	Description
snIpxServerNetNum fdry.1.2.1.4.1.1.3 Syntax: NetNumber	Read only	Shows the IPX server network number.
snIpxServerNode fdry.1.2.1.4.1.1.4 Syntax: Physical address	Read only	Shows the IPX server node number.
snIpxServerSocket fdry.1.2.1.4.1.1.5 Syntax: Integer	Read only	Shows the IPX server socket number.
snIpxServerHopCnts fdry.1.2.1.4.1.1.6 Syntax: Integer	Read only	Shows the IPX number of intervening networks to reach the server.
snIpxServerName fdry.1.2.1.4.1.1.7 Syntax: Octet string	Read only	Shows the IPX server name. There can be up to 47 octets in this object.

IPX Forward Filter Table

The following table defines forward filters, which controls the access of remote IPX clients to a a server with restricted access.

Name, OID, and Syntax	Access	Description
snIpxFwdFilterTable fdry.1.2.1.5.1	None	IPX Forward Filter Table
snIpxFwdFilterEntry fdry.1.2.1.5.1.1	None	An entry in the IPX Forward Filter Table.
snIpxFwdFilterIdx fdry.1.2.1.5.1.1.1 Syntax: Integer	Read only	The filter ID for a filter entry.
snIpxFwdFilterAction fdry.1.2.1.5.1.1.2 Syntax: Integer	Read-write	Shows what action to take if the IPX packet matches this filter: • deny(0) • permit(1)
snIpxFwdFilterSocket fdry.1.2.1.5.1.1.3 Syntax: Integer	Read-write	Indicates the IPX Forward Filter Socket Number.

Name, OID, and Syntax	Access	Description
snIpxFwdFilterSrcNet fdry.1.2.1.5.1.1.4 Syntax: NetNumber	Read-write	Indicates the source network number.
snIpxFwdFilterSrcNode fdry.1.2.1.5.1.1.5 Syntax: Physical address	Read-write	Indicates the source node number.
snIpxFwdFilterDestNet fdry.1.2.1.5.1.1.6 Syntax: NetNumber	Read-write	Indicates the destination network number.
snIpxFwdFilterDestNode fdry.1.2.1.5.1.1.7 Syntax: Physical address	Read-write	Indicates the destination node number.
snIpxFwdFilterRowStatus fdry.1.2.1.5.1.1.8 Syntax: Integer	Read-write	Controls the management of the table rows. The values that can be written are: • delete(3) – Delete the row • create(4) – Create a new row • modify(5) – Modify an existing row If the row exists, then a SET with a value of create(4) returns a "bad value" error. Deleted rows are removed from the table immediately. The following values can be returned on reads: • noSuch(0) – No such row • invalid(1) – Row is inoperative • valid(2) – Row exists and is valid

IPX RIP Filter Table

The following table allows you to define filters that a router uses to block RIP routes being advertised to other parts of the network.

Name, OID, and Syntax	Access	Description
snIpxRipFilterTable fdry.1.2.1.6.1	None	IPX RIP Filter table.
snIpxRipFilterEntry fdry.1.2.1.6.1.1	None	An entry in the IPX RIP Filter table.
snIpxRipFilterId fdry.1.2.1.6.1.1.1 Syntax: Integer	Read only	The ID for an entry.

Name, OID, and Syntax	Access	Description
snIpxRipFilterAction fdry.1.2.1.6.1.1.2 Syntax: Integer	Read-write	Shows what action to take if the IPX packet matches this filter: • deny(0) • permit(1)
snIpxRipFilterNet fdry.1.2.1.6.1.1.3 Syntax: NetNumber	Read-write	Indicates the IPX RIP filter network number.
snIpxRipFilterMask fdry.1.2.1.6.1.1.4 Syntax: NetNumber	Read-write	Indicates the IPX RIP filter network/subnet mask.
snIpxRipFilterRowStatus fdry.1.2.1.6.1.1.5 Syntax: Integer	Read-write	Controls the management of the table rows. The values that can be written are: • delete(3) – Delete the row • create(4) – Create a new row • modify(5) – Modify an existing row If the row exists, then a SET with a value of create(4) returns a "bad value" error. Deleted rows are removed from the table immediately. The following values can be returned on reads: • noSuch(0) – No such row • invalid(1) – Row is inoperative • valid(2) – Row exists and is valid

IPX SAP Filter Table

The following table allows you to define filters that a router uses to block SAP routes being advertised to other parts of the network.

Name, OID, and Syntax	Access	Description
snIpxSapFilterTable fdry.1.2.1.7.1	None	IPX SAP Filter Table.
snIpxSapFilterEntry fdry.1.2.1.7.1.1	None	An entry in the IPX SAP Filter Table.
snIpxSapFilterId fdry.1.2.1.7.1.1.1 Syntax: Integer	Read only	The filter ID for a filter entry.

Name, OID, and Syntax	Access	Description
snIpxSapFilterAction fdry.1.2.1.7.1.1.2 Syntax: Integer	Read-write	Determines what action to take if the IPX packet matches this filter: • deny(0) • permit(1)
snIpxSapFilterType fdry.1.2.1.7.1.1.3 Syntax: Integer	Read-write	Identifies the IPX SAP filter type to be matched.
snIpxSapFilterName fdry.1.2.1.7.1.1.4 Syntax: Octet string	Read-write	Identifies the IPX SAP filter Name. Valid values: Up to 47 octets.
snIpxSapFilterRowStatus fdry.1.2.1.7.1.1.5 Syntax: Integer	Read-write	Controls the management of the table rows. The values that can be written are: • delete(3) – Delete the row • create(4) – Create a new row • modify(5) – Modify an existing row If the row exists, then a SET with a value of create(4) returns a "bad value" error. Deleted rows are removed from the table immediately. The following values can be returned on reads: • noSuch(0) – No such row • invalid(1) – Row is inoperative • valid(2) – Row exists and is valid

IPX IF Forward Access Table

Name, OID, and Syntax	Access	Description
snIpxIfFwdAccessTable fdry.1.2.1.8.1	None	IPX Interface (IF) Forward Access Table
snIpxIfFwdAccessEntry fdry.1.2.1.8.1.1	None	An entry in the IPX (IF) Forward Access Table
snIpxIfFwdAccessPort fdry.1.2.1.8.1.1.1 Syntax: Integer	Read only	The IPX interface to which the Forward Filter applies.
snIpxIfFwdAccessDir fdry.1.2.1.8.1.1.2 Syntax: Integer	Read only	Shows the direction of packets: • in(1) • out(2)

Name, OID, and Syntax	Access	Description
snIpxIfFwdAccessFilterList fdry.1.2.1.8.1.1.3 Syntax: Octet string	Read-write	An IPX IF Forward Filter List. There can be up to 32 octets in this object.
snIpxIfFwdAccessRowStatus fdry.1.2.1.8.1.1.4 Syntax: Integer	Read-write	Controls the management of the table rows. The values that can be written are: • delete(3) – Delete the row • create(4) – Create a new row • modify(5) – Modify an existing row If the row exists, then a SET with a value of create(4) returns a "bad value" error. Deleted rows are removed from the table immediately. The following values can be returned on reads: • noSuch(0) – No such row • invalid(1) – Row is inoperative • valid(2) – Row exists and is valid

IPX IF RIP Access Table

Name, OID, and Syntax	Access	Description
snIpxIfRipAccessTable fdry.1.2.1.9.1	None	IPX IF RIP Access Table
snIpxIfRipAccessEntry fdry.1.2.1.9.1.1	None	An entry in the IPX IF RIP Access Table
snIpxIfRipAccessPort fdry.1.2.1.9.1.1.1	Read only	The IPX interface to which the RIP Filter applies.
snIpxIfRipAccessDir fdry.1.2.1.9.1.1.2	Read only	Shows the direction of packets: • in(1) • out(2)
snIpxIfRipAccessFilterList fdry.1.2.1.9.1.1.3	Read-write	An IPX IF RIP Access Filter List.

Name, OID, and Syntax	Access	Description
snIpxIfRipAccessRowStatus fdry.1.2.1.9.1.1.4 Syntax: Integer	Read-write	Controls the management of the table rows. The values that can be written are: • delete(3) – Delete the row • create(4) – Create a new row • modify(5) – Modify an existing row If the row exists, then a SET with a value of create(4) returns a "bad value" error. Deleted rows are removed from the table immediately. The following values can be returned on reads: • noSuch(0) – No such row • invalid(1) – Row is inoperative • valid(2) – Row exists and is valid

IPX IF SAP Access Table

Name, OID, and Syntax	Access	Description
snIpxIfSapAccessTable fdry.1.2.1.10.1	None	IPX IF SAP Access Table
snIpxIfSapAccessEntry fdry.1.2.1.10.1.1	None	An entry in the IPX IF SAP Access Table
snIpxIfSapAccessPort fdry.1.2.1.10.1.1.1 Syntax: Integer	Read only	The IPX interface to which the SAP Filter applies.
snIpxIfSapAccessDir fdry.1.2.1.10.1.1.2 Syntax: Integer	Read only	Shows the direction of packets: • in(1) • out(2)
snIpxIfSapAccessFilterList fdry.1.2.1.10.1.1.3 Syntax: Octet string	Read-write	An IPX IF SAP Access Filter List. There can be up to 32 octets in this object.

Name, OID, and Syntax	Access	Description
snIpxIfSapAccessRowStatus fdry.1.2.1.10.1.1.4 Syntax: Integer	Read-write	Controls the management of the table rows. The values that can be written are: • delete(3) – Delete the row • create(4) – Create a new row • modify(5) – Modify an existing row If the row exists, then a SET with a value of create(4) returns a "bad value" error. Deleted rows are removed from the table immediately. The following values can be returned on reads: • noSuch(0) – No such row • invalid(1) – Row is inoperative • valid(2) – Row exists and is valid

IPX Port Address Table

Name, OID, and Syntax	Access	Description
snIpxPortAddrTable fdry.1.2.1.11.1	None	IPX Port Address Table
snIpxPortAddrEntry fdry.1.2.1.11.1.1	None	An entry in the IPX Port Address Table
snIpxPortAddrPort fdry.1.2.1.11.1.1.1 Syntax: PortIndex	Read only	The port index for port address entry.
snIpxPortAddrEncap fdry.1.2.1.11.1.1.2 Syntax: Integer	Read only	Shows the IPX frame encapsulation type. • Ethernet8022(1) • Ethernet8023(2) • EthernetII(3) • EthernetSnap(4) Each network number must be assigned a unique frame type; otherwise, an SNMP-SET error will be returned.
snIpxPortAddrNetNum fdry.1.2.1.11.1.1.3 Syntax: NetNumber	Read-write	An unique network number for the IPX interface port.

Name, OID, and Syntax	Access	Description
snIpxPortAddrRowStatus fdry.1.2.1.11.1.1.4 Syntax: Integer	Read-write	Controls the management of the table rows. The values that can be written are: • delete(3) – Delete the row • create(4) – Create a new row • modify(5) – Modify an existing row If the row exists, then a SET with a value of create(4) returns a "bad value" error. Deleted rows are removed from the table immediately. The following values can be returned on reads: • noSuch(0) – No such row • invalid(1) – Row is inoperative • valid(2) – Row exists and is valid
snIpxPortAddrNetBiosFilterMode fdry.1.2.1.11.1.1.5 Syntax: Integer	Read-write	Shows the status of the NetBios filter mode for each port address. • disabled(0) • enabled(1)

IPX Port Counters Tables

Name, OID, and Syntax	Access	Description
snIpxPortCountersTable fdry.1.2.1.12.1	None	IPX Port Counters Table
snIpxPortCountersEntry fdry.1.2.1.12.1.1	None	An entry in the IPX Port Counters Table
snIpxPortCountersPort fdry.1.2.1.12.1.1.1 Syntax: PortIndex	Read only	The port index for an entry in the table.
snIpxPortCountersRcvPktsCnt fdry.1.2.1.12.1.1.2 Syntax: Counter	Read only	IPX incoming packets counter for the interface.
snIpxPortCountersTxPktsCnt fdry.1.2.1.12.1.1.3 Syntax: Counter	Read only	IPX Outgoing packets counter for the interface.
snIpxPortCountersFwdPktsCnt fdry.1.2.1.12.1.1.4 Syntax: Counter	Read only	IPX forwarding packets counter for the interface.

Name, OID, and Syntax	Access	Description
snIpxPortCountersRcvDropPktsCnt fdry.1.2.1.12.1.1.5 Syntax: Counter	Read only	IPX receiving drop packets counter for the interface.
snIpxPortCountersTxDropPktsCnt fdry.1.2.1.12.1.1.6 Syntax: Counter	Read only	IPX transmitting drop packets counter for the interface.
snIpxPortCountersRcvFiltPktsCnt fdry.1.2.1.12.1.1.7 Syntax: Counter	Read only	IPX receiving filter packets counter for the interface.
snIpxPortCountersTxFiltPktsCnt fdry.1.2.1.12.1.1.8 Syntax: Counter	Read only	IPX transmitting filter packets counter for the interface.

Chapter 18
AppleTalk

This section contains objects for AppleTalk. The AppleTalk feature is available in Layer 3 Switches. For details on AppleTalk support in Foundry devices, refer to the *Foundry Enterprise Configuration and Management Guide*.

This chapter contains the following sections:

AppleTalk General Group

Name, OID, and Syntax	Access	Description
snRtATRoutingEnable fdry.1.2.10.1.1 Syntax: Integer	Read-write	Indicates if AppleTalk routing functions are enabled on this device: • disabled(0) • enabled(1)
snRtATClearArpCache fdry.1.2.10.1.2 Syntax: ClearStatus	Read-write	Indicates if the cache will be cleared: • normal(0) – Data in AppleTalk ARP cache table will not be cleared. • clear(1) – Data in AppleTalk ARP cache table will be cleared.

Name, OID, and Syntax	Access	Description
snRtATClearFwdCache fdry.1.2.10.1.3 Syntax: ClearStatus	Read-write	Indicates if all learned data from non-local networks that is currently in the AppleTalk forward cache table will be cleared: • normal(0) – Data will not be cleared. • clear(1) – Data will be cleared.
snRtATClearRoute fdry.1.2.10.1.4 Syntax: ClearStatus	Read-write	Indicates if all learned routes and zones (non-local routes and zones) that currently resident in the AppleTalk routing table and the AppleTalk route table will be cleared. • normal(0) – Data will not be cleared. • clear(1) – Data will be cleared.
snRtATClearTrafficCounters fdry.1.2.10.1.5 Syntax: ClearStatus	Read-write	Indicates if AppleTalk RTMP, ZIP, AEP, DDP, and AARP statistics counters will be cleared. • normal(0) – Counters will not be cleared. • clear(1) – Counters will be cleared.
snRtATArpRetransmitCount fdry.1.2.10.1.6 Syntax: Integer	Read-write	Indicates the maximum number of times that a packet will be sent out for ARP cache informational updates. The packet is sent out until the information is received or the maximum amount defined has been reached. Valid values: 1 – 10 Default: 2
snRtATArpRetransmitInterval fdry.1.2.10.1.7 Syntax: Integer	Read-write	The number of seconds the device waits for an AppleTalk ARP response before sending out the next ARP packet. Valid values: 1 – 120 seconds Default: 1 second
snRtATGleanPacketsEnable fdry.1.2.10.1.8 Syntax: Integer	Read-write	Indicates if the AppleTalk glean packets function is enabled on this device: • disabled(0) • enabled(1) If enabled, the device tries to learn the MAC address from the packet instead of sending out an ARP request. Default: disabled(0)
snRtATRtmpUpdateInterval fdry.1.2.10.1.9 Syntax: Integer	Read-write	Indicates how often the device sends RTMP updates on AppleTalk interfaces. Valid values: 1 – 3600 seconds. Default: 10 seconds.
snRtATZipQueryInterval fdry.1.2.10.1.10 Syntax: Integer	Read-write	Indicates how often the device transmits a ZIP query. Valid values: 1 – 1000 seconds Default: 10 seconds

Name, OID, and Syntax	Access	Description
snRtATInRtmpPkts fdry.1.2.10.1.11 Syntax: Counter	Read only	Shows the total number of RTMP packets received by this device.
snRtATOutRtmpPkts fdry.1.2.10.1.12 Syntax: Counter	Read only	Shows the total number of RTMP packets that were transmitted by this device.
snRtATFilteredRtmpPkts fdry.1.2.10.1.13 Syntax: Counter	Read only	Shows the total number of RTMP packets that were filtered by this device.
snRtATInZipPkts fdry.1.2.10.1.14 Syntax: Counter	Read only	Shows the total number of ZIP packets that were received by this device.
snRtATOutZipPkts fdry.1.2.10.1.15 Syntax: Counter	Read only	Shows the total number of ZIP packets that were transmitted by this device.
snRtATInZipGZLPkts fdry.1.2.10.1.16 Syntax: Counter	Read only	Shows the total number of ZIP get zone list packets that where received by this device.
snRtATOutZipGZLPkts fdry.1.2.10.1.17 Syntax: Counter	Read only	Shows the total number of ZIP get zone list packets that were transmitted by this device.
snRtATInZipNetInfoPkts fdry.1.2.10.1.18 Syntax: Counter	Read only	Shows the total number of ZIP network information packets that were received by this device.
snRtATOutZipNetInfoPkts fdry.1.2.10.1.19 Syntax: Counter	Read only	Shows the total number of ZIP network information packets that were transmitted by this device.
snRtATInDdpPkts fdry.1.2.10.1.20 Syntax: Counter	Read only	Shows the total number of DDP datagrams that were received by this device.
snRtATOutDdpPkts fdry.1.2.10.1.21 Syntax: Counter	Read only	Shows the total number of DDP datagrams that were transmitted by this device.

Name, OID, and Syntax	Access	Description
snRtATForwardedDdpPkts fdry.1.2.10.1.22 Syntax: Counter	Read only	Shows the number of input DDP datagrams whose DDP final destination was not this device. The device attempted to forward the datagrams to that final destination.
snRtATInDeliveredDdpPkts fdry.1.2.10.1.23 Syntax: Counter	Read only	Shows the total number of input DDP datagrams whose final DDP destination is this device.
snRtATDroppedNoRouteDdpPkts fdry.1.2.10.1.24 Syntax: Counter	Read only	Shows the total number of DDP datagrams dropped because this device could not find a route to their final destination.
snRtATDroppedBadHopCountsDdpPkts fdry.1.2.10.1.25 Syntax: Counter	Read only	Shows the total number of input DDP datagrams that were dropped because this device was not their final destination and their hop count exceeded 15.
snRtATDroppedOtherReasonsDdpPkts fdry.1.2.10.1.26 Syntax: Counter	Read only	Shows the total number of DDP datagrams dropped for various reasons. For example, the device ran out or resources so the datagrams were dropped.
snRtATInAarpPkts fdry.1.2.10.1.27 Syntax: Counter	Read only	Shows the total number of AppleTalk ARP packets received by this device.
snRtATOutAarpPkts fdry.1.2.10.1.28 Syntax: Counter	Read only	Shows the total number of AppleTalk ARP packets that were transmitted by this device.

AppleTalk Socket Priority Table

The AppleTalk Socket Priority Table shows the priority level assigned to each QoS socket. By default, all AppleTalk sockets are in the best effort queue (Chassis devices) or the normal queue (Stackable devices).

Name, OID, and Syntax	Access	Description
snRtATSocketPriorityTable fdry.1.2.10.2	None	AppleTalk Socket Priority Table.
snRtATSocketPriorityEntry fdry.1.2.10.2.1	None	An entry in the AppleTalk Socket Priority Table.
snRtATSocketPrioritySocket fdry.1.2.10.2.1.1 Syntax: Integer	Read only	The socket number for an entry. There can be up to 254 entries.

Name, OID, and Syntax	Access	Description
snRtATSocketPriorityPriority fdry.1.2.10.2.1.2 Syntax: Integer	Read-write	Indicates the QoS priority for the socket. The priority level for a socket that applies to stackable devices are: • low(0) – Low priority • high(1) – High priority The priority level for a socket that applies to Chassis devices are: • level0(0) • level1(1) • level2(2) • level3(3), • level4(4) • level5(5) • level6(6) • level7(7)

AppleTalk Port Zone Filter Table

The AppleTalk Zone Filter Table shows if access to network zones is permitted or denied.

Name, OID, and Syntax	Access	Description
snRtATPortZoneFilterTable fdry.1.2.10.3	None	AppleTalk Port Zone Filter Table.
snRtATPortZoneFilterEntry fdry.1.2.10.3.1	None	An entry in the AppleTalk Port Zone Filter Table.
snRtATPortZoneFilterPortIndex fdry.1.2.10.3.1.1 Syntax: PortIndex	Read only	Shows the port index for a zone filter entry.
snRtATPortZoneFilterZone fdry.1.2.10.3.1.2 Syntax: Display string	Read only	Shows the zone name granted for this filter: • 0 to 32 octets of AppleTalk • ASCII if outside of AppleTalk
snRtATPortZoneFilterAction fdry.1.2.10.3.1.3 Syntax: Integer	Read-write	Indicates what the device will do with the AppleTalk packet to take if it matches this filter. • deny(0) • permit(1)

Name, OID, and Syntax	Access	Description
snRtATPortZoneFilterRtmpEnable fdry.1.2.10.3.1.4 Syntax: Integer	Read-write	Indicates if Routing Table Maintenance Protocol (RMTP) filtering is enabled on this device. RMTP filtering provides the zone filtering capability that allows devices to filter on a network. When this filter is enabled on an interface, the denied network numbers are removed from the RTMP packet before the packet is transmitted out of the interface. • disabled(0) • enabled(1)
snRtATPortZoneFilterRowStatus fdry.1.2.10.3.1.5 Syntax: Integer	Read-write	Controls the management of the table rows. The values that can be written are: • delete(3) – Delete the row • create(4) – Create a new row • modify(5) – Modify an existing row If the row exists, then a SET with a value of create(4) returns a "bad value" error. Deleted rows are removed from the table immediately. The following values can be returned on reads: • noSuch(0) – No such row • invalid(1) – Row is inoperative • valid(2) – Row exists and is valid

AppleTalk Port Table

The AppleTalk Port Table defines how long a MAC address learned by a port through ARP remains valid.

The device resets the timer to zero each time the ARP entry is refreshed and removes the entry if the timer reaches the ARP age.

ARP age is managed on an individual port basis. However, when you enter an ARP age value for a port and apply the change to the running-config file or save the change to the startup-config file, the change is saved as the global setting. If you try to set different values for different ports, the interface does not display an error message. Instead, the most recent value you enter before saving the configuration change becomes the global setting.

Name, OID, and Syntax	Access	Description
snRtATPortTable fdry.1.2.10.4	None	The AppleTalk Port Table
snRtATPortEntry fdry.1.2.10.4.1	None	An entry in the AppleTalk Port Table
snRtATPortIndex fdry.1.2.10.4.1.1 Syntax: PortIndex	Read only	The port index for port table entry.

Name, OID, and Syntax	Access	Description
snRtATPortArpAge fdry.1.2.10.4.1.2 Syntax: Integer	Read-write	Shows the number of minutes an ARP entry can be valid without relearning. This can be from 0 – 240 minutes. Default: 10 minutes. If this is set to 0, then the ARP entry will always relearn.
snRtATPortState fdry.1.2.10.4.1.3 Syntax: Integer	Read only	Shows the state of this port: • other(1) • down(2) • up(3)
snRtATPortSeedRouter fdry.1.2.10.4.1.4 Syntax: Integer	Read only	Shows if this port is a seed or non-seed router: • other(1) • seedRouter(2) • nonSeedRouter(3)
snRtATPortOperationMode fdry.1.2.10.4.1.5 Syntax: Integer	Read only	Shows the operational state of this port: • other(1) • seedRouter(2) • nonSeedRouter(3) • notOperational(4) • routingDisabled(5)

AppleTalk Forwarding Cache Table

The AppleTalk Forwarding Cache Table contains data learned from non-local networks that is currently resident in the AppleTalk cache.

Name, OID, and Syntax	Access	Description
snRtATFwdCacheTable fdry.1.2.10.5	None	AppleTalk Forwarding Cache Table.
snRtATFwdCacheEntry fdry.1.2.10.5.1	None	An entry in the AppleTalk Forwarding Cache Table.
snRtATFwdCacheIndex fdry.1.2.10.5.1.1 Syntax: Integer	Read only	Shows the table index for a table entry.
snRtATFwdCacheNetAddr fdry.1.2.10.5.1.2 Syntax: Octet string	Read only	Shows the AppleTalk network address of a station.

Name, OID, and Syntax	Access	Description
snRtATFwdCacheMacAddr fdry.1.2.10.5.1.3 Syntax: Octet string	Read only	Shows the MAC address of an AppleTalk station. This object has six octets.
snRtATFwdCacheNextHop fdry.1.2.10.5.1.4 Syntax: Integer	Read only	Shows the network address of the router in the next hop.
snRtATFwdCacheOutgoingPort fdry.1.2.10.5.1.5 Syntax: Integer	Read only	Shows the outgoing port through which the packets will be forwarded. If set to zero, then no outgoing port has been defined.
snRtATFwdCacheType fdry.1.2.10.5.1.6 Syntax: Integer	Read only	Shows the type of AppleTalk forwarding cache type: • dynamic(1) • permanent(2)
snRtATFwdCacheAction fdry.1.2.10.5.1.7 Syntax: Integer	Read only	Determines what the device will do if a match if found: • other(1) • forward(2) • forUs(3) • waitForArp(4) • dropPacket(5)
snRtATFwdCacheVLanId fdry.1.2.10.5.1.8 Syntax: Integer	Read only	Shows the ID of the VLAN associated with this entry. If set to zero, then no VLAN is associated with this entry.

AppleTalk Zone Table

The AppleTalk Zone Table shows the network numbers and zones learned on the network.

Name, OID, and Syntax	Access	Description
snRtATZoneTable fdry.1.2.10.6	None	AppleTalk Zone Table
snRtATZoneEntry fdry.1.2.10.6.1	None	An entry in the AppleTalk Zone Table
snRtATZoneIndex fdry.1.2.10.6.1.1 Syntax: Integer	Read only	Shows the table index for an AppleTalk zone table entry.

Name, OID, and Syntax	Access	Description
snRtATZoneNetStart fdry.1.2.10.6.1.2 Syntax: ATNetworkNumber	Read only	Shows the first AppleTalk network address in the range under this zone name. (Refer to the “snRtATZoneName” object.)
snRtATZoneNetEnd fdry.1.2.10.6.1.3 Syntax: ATNetworkNumber	Read only	Shows the last AppleTalk network addresses in the range under this zone name.
snRtATZoneName fdry.1.2.10.6.1.4 Syntax: Display string	Read only	Shows the zone’s name. There can be up – 32 characters in this object.

AppleTalk Additional Zone Filter Table

The AppleTalk Additional Zone Filter Table contains information about zones that do not match any zones defined in the “AppleTalk Zone Table” on page 18-8.

Name, OID, and Syntax	Access	Description
snRtATAddZoneFilterTable fdry.1.2.10.7	None	The AppleTalk Additional Zone Filter Table.
snRtATAddZoneFilterEntry fdry.1.2.10.7.1	None	An entry in the AppleTalk Additional Zone Filter Table.
snRtATAddZoneFilterPortIndex fdry.1.2.10.7.1.1 Syntax: PortIndex	Read only	Shows the port index for additional zone filter table entry.
snRtATAddZoneFilterAction fdry.1.2.10.7.1.2 Syntax: Integer	Read-write	Indicates what the device will do when a match is found: • deny(0) • permit(1)
snRtATAddZoneFilterRtmpEnable fdry.1.2.10.7.1.3 Syntax: Integer	Read-write	Indicates if RTMP filtering on additional zone is enabled on this device: • disabled(0) • enabled(1)

Chapter 19
Monitoring and Logging

This chapter presents the MIB objects that can be used for monitoring and logging functions. It includes the following sections:

CPU Utilization

The following objects monitor CPU utilization in all Foundry devices. Refer to the *Foundry Switch and Router Installation and Basic Configuration Guide* for additional information on this feature.

Name, OID, and Syntax	Access	Description
snAgGblCpuUtilData fdry.1.1.2.1.35 Syntax: Gauge	Read only	Shows the CPU utilization since the last time the same command was given.
snAgGblCpuUtilCollect fdry.1.1.2.1.36 Syntax: Integer	Read-write	Enables or disables the collection of CPU utilization statistics in a device. This can be one of the following: • Enable(1) • Disable(0)
snAgGblCpuUtil1SecAvg fdry.1.1.2.1.50 Syntax: Gauge	Read only	Shows CPU utilization every one second.

Name, OID, and Syntax	Access	Description
snAgGblCpuUtil5SecAvg fdry.1.1.2.1.51 Syntax: Gauge	Read only	Shows CPU utilization every 5 seconds.
snAgGblCpuUtil1MinAvg fdry.1.1.2.1.52 Syntax: Gauge	Read only	Shows CPU utilization every one minute.

The following objects are available in all Foundry devices, except for ServerIron products.

Name, OID, and Syntax	Access	Description
snAgentCpuUtilTable fdry.1.1.2.11.1	None	A table listing the utilization of all CPUs in a device.
snAgentCpuUtilEntry fdry.1.1.2.11.1.1	None	A row in the CPU utilization table.
snAgentCpuUtilSlotNum fdry.1.1.2.11.1.1.1 Syntax: Integer	Read only	Shows the slot number of the module that contains the CPU.
snAgentCpuUtilCpuId fdry.1.1.2.11.1.1.2 Syntax: Integer	Read only	Available in all Foundry devices beginning with Release 07.2.x. Shows the ID of the CPU: • 1 – Management CPU • 2 or greater – Slave CPU A non-VM1/WSM management module has one CPU. A VM1/WSM module has one management CPU and 3 slave CPUs. The management CPU could be turned off. POS and ATM modules have no management CPU but have two slave CPUs.
snAgentCpuUtilInterval fdry.1.1.2.11.1.1.3 Syntax: Integer	Read only	Available in all Foundry devices beginning with Release 07.2.x. Shows the CPU utilization in seconds. CPU utilization of a primary module is displayed in 1, 5, 60, and 300 second intervals. CPU utilization of a secondary module is displayed in 1, 5, 60, and 300 second intervals.
snAgentCpuUtilValue fdry.1.1.2.11.1.1.4 Syntax: Gauge	Read only	Available in all Foundry devices beginning with Release 07.2.x. Shows the CPU utilization in one-hundredths of a percent.

Dynamic Memory Utilization

The following objects manage dynamic memory utilization in all Foundry devices, except for stackable ServerIron and ServerIron XL. There are no objects for memory utilization in the stackable ServerIron. Refer to the *Foundry Switch and Router Installation and Basic Configuration Guide* for additional information on this feature.

Name, OID, and Syntax	Access	Description
snAgGblDynMemUtil fdry.1.1.2.1.53 Syntax: Gauge	Read only	Shows the dynamic memory utilization of the device in percentage units.
snAgGblDynMemTotal fdry.1.1.2.1.54 Syntax: Integer	Read only	Shows the total amount of dynamic memory in a device in number of bytes.
snAgGblDynMemFree fdry.1.1.2.1.55 Syntax: Integer	Read only	Shows the amount of system dynamic memory that is currently available in number of bytes.

ARP Tables

The following tables are available to manage ARP using SNMP:

- “RARP Table” on page 19-3
- “Static ARP Table” on page 19-4

Refer to the *Foundry Switch and Router Installation and Basic Configuration Guide* for additional information on this feature.

RARP Table

The Reverse Address Resolution Protocol (RARP) provides a simple mechanism for directly-attached IP hosts to boot over the network. RARP allows an IP host that does not have a means of storing its IP address across power cycles or software reloads to query a directly-attached router for an IP address.

RARP is enabled by default. However, there must be a static RARP entry for each host that will use the Layer 3 Switch for booting. The following table contains the object that define each RARP entry. They are available in all Foundry devices, except ServerIron products.

Name, OID, and Syntax	Access	Description
snRtIpRarpTable fdry.1.2.2.4	None	IP RARP Table.
snRtIpRarpEntry fdry.1.2.2.4.1	None	An entry in the IP RARP Table.

Name, OID, and Syntax	Access	Description
snRtIpRarpIndex fdry.1.2.2.4.1.1 Syntax: Integer	Read only	An index for an entry in the RARP Table. There can be up to 16 entries.
snRtIpRarpMac fdry.1.2.2.4.1.2 Syntax: Octet string	Read-write	Shows the MAC address of the RARP client.
snRtIpRarpIp fdry.1.2.2.4.1.3 Syntax: IpAddress	Read-write	Shows the IP address for a RARP client.
snRtIpRarpRowStatus fdry.1.2.2.4.1.4 Syntax: Integer	Read-write	Controls the management of the table rows. The values that can be written are: • delete(3) – Delete the row • create(4) – Create a new row • modify(5) – Modify an existing row If the row exists, then a SET with a value of create(4) returns a "bad value" error. Deleted rows are removed from the table immediately. The following values can be returned on reads: • noSuch(0) – No such row • invalid(1) – Row is inoperative • valid(2) – Row exists and is valid

Static ARP Table

Address Resolution Protocol (ARP) is a standard IP protocol that enables an IP Layer 3 Switch to obtain the MAC address of another device's interface when the Layer 3 Switch knows the IP address of the interface. ARP is enabled by default and cannot be disabled.

The Static ARP Table in a Foundry Layer 3 Switch contains entries that are useful in cases where you want to pre-configure an entry for a device that is not connected to the Layer 3 Switch, or you want to prevent a particular entry from aging out. The software removes a dynamic entry from the ARP cache if the ARP aging interval expires before the entry is refreshed. Static entries do not age out, regardless of whether or not the Foundry device receives an ARP request from the device that has the entry's address.

Name, OID, and Syntax	Access	Description
snRtStaticArpTable fdry.1.2.2.5	None	IP static ARP Table.
snRtStaticArpEntry fdry.1.2.2.5.1	None	An entry in the IP static ARP Table.

Name, OID, and Syntax	Access	Description
snRtStaticArpIndex fdry.1.2.2.5.1.1 Syntax: Integer	Read only	An index for a static ARP entry. There can be up to 16 entries.
snRtStaticArpIp fdry.1.2.2.5.1.2 Syntax: IpAddress	Read-write	Shows the IP address of a static ARP entry.
snRtStaticArpMac fdry.1.2.2.5.1.3 Syntax: Octet string	Read-write	Specifies the MAC address of a static ARP entry.
snRtStaticArpPort fdry.1.2.2.5.1.4 Syntax: PortIndex	Read-write	Specifies the port number attached to the device that has the MAC address of the entry. • For FastIron or NetIron products, the value of this object is from 1 – 42 • For BigIron products, the value of this object is an encoded number: Bit 0 to bit 7 – Port number. Bit 8 to bit 11 – Slot number. Beginning with software release 07.2.00, the following values have been added: Bit 16, set to 1 – Virtual router interface Bit 17, set to 1 – Loopback interface
snRtStaticArpRowStatus fdry.1.2.2.5.1.5 Syntax: Integer	Read-write	Controls the management of the table rows. The values that can be written are: • delete(3) – Delete the row • create(4) – Create a new row • modify(5) – Modify an existing row If the row exists, then a SET with a value of create(4) returns a "bad value" error. Deleted rows are removed from the table immediately. The following values can be returned on reads: • noSuch(0) – No such row • invalid(1) – Row is inoperative • valid(2) – Row exists and is valid
snRtStaticArpIfIndex fdry.1.2.2.5.1.6 Syntax: InterfaceIndex	Read-write	The interface index for this entry.

sFlow

This section presents the sFlow objects that are proprietary to Foundry products. Refer to the section "RFC 3176: InMon Corporation's sFlow: A Method for Monitoring Traffic in Switched And Routed Networks." on page 2-6 to determine which standard objects can be used to manage sFlow in Foundry devices.

This section presents the following objects:

- "sFlow Source" on page 19-6
- "sFlow Collector" on page 19-6

Refer to the *Foundry Enterprise Configuration and Management Guide* for details on sFlow.

sFlow Source

The following object supports the sFlow feature, which is available on certain modules.

Name, OID, and Syntax	Access	Description
snAgSFlowSourceInterface fdry.1.1.2.1.59 Syntax: InterfaceIndex	Read-write	Identifies the source interface for sFlow packets sent by the Foundry device that is running sFlow Export. Use the ifIndex value for this object to specify the source interface to be used. The interface should have an IP address configured for sFlow. A value of 0 indicates that source interface has not been configured for sFlow. Port 65534 is used to specify a null port.

sFlow Collector

Currently, RFC 3176 allows only one sFlow destination to be configured. To configure two or more destinations, use the following table.

Name, OID, and Syntax	Access	Description
sFlowCollectorTable fdry.1.1.3.19.2	None	Table of sFlow collectors, beginning with the second collector. Configure the first sFlow collector using the sFlowCollectorAddress and sFlowCollectorPort objects in the RFC 3176 sFlowTable.
snSflowCollectorEntry fdry.1.1.3.19.2.1	None	A row in the sflow collector table
snSflowCollectorIndex fdry.1.1.3.19.2.1.1 Syntax: Integer	Read only	The index to the sFlow collector table
snSflowCollectorIP fdry.1.1.3.19.2.1.2 Syntax: IpAddress	Read-write	The IP address of the sFlow collector
snSflowCollectorUDPPort fdry.1.1.3.19.2.1.3 Syntax: Integer	Read-write	The number of the UDP port used by the sFlow collector

snSflowCollectorRowStatus fdry.1.1.3.19. 2.1.4 Syntax: Integer	Read-write	Controls the management of the table rows. The values that can be written are: • delete(3) – Delete the row • create(4) – Create a new row • modify(5) – Modify an existing row If the row exists, then a SET with a value of create(4) returns a "bad value" error. Deleted rows are removed from the table immediately. The following values can be returned on reads: • noSuch(0) – No such row • other(1) – Some other case • valid(2) – Row exists and is valid

NetFlow Export

The following objects provide configuration information on the NetFlow Export feature. They apply to all Foundry devices except the ServerIron products.

NetFlow Export collects information about the traffic that chassis devices receive, then forwards and exports that information to a third-party collector. Third-party applications can then use the information to create reports, bill customers for network usage and so on. For detailed information on the NetFlow Export feature, refer to the *Foundry Enterprise Configuration and Management Guide*.

The following sections present the objects available to manage NetFlow using SNMP:

- "Global NetFlow Objects" on page 19-7
- "NetFlow Export Collector Table" on page 19-8
- "NetFlow Export Aggregation Table" on page 19-9
- "NetFlow Export Interface Table" on page 19-11

Global NetFlow Objects

Name, OID, and Syntax	Access	Description
snNetFlowGblEnable fdry.1.1.3.18.1.1 Syntax: Integer	Read-write	Determines if NetFlow Export is enabled: • disabled(0) • enabled(1) Default: disabled(0)
snNetFlowGblVersion fdry.1.1.3.18.1.2 Syntax: Integer	Read-write	Shows the NetFlow Export version. Default: Version 5

Name, OID, and Syntax	Access	Description
snNetFlowGblProtocolDisable fdry.1.1.3.18.1.3 Syntax: Integer	Read-write	Indicates if TCP or UDP protocols are disabled: • Bit 0 – Disables the export of all protocol except UDP and TCP • Bit 1 – Disables the export of TCP protocol • Bit 2 – Disables the export of UDP protocol Default: 0
snNetFlowGblActiveTimeout fdry.1.1.3.18.1.4 Syntax: Integer	Read-write	Specifies the maximum number of minutes that an active flow can be in the NetFlow Export cache. Valid values: 1 – 60 minutes Default: 60 minutes
snNetFlowGblInactiveTimeout fdry.1.1.3.18.1.5 Syntax: Integer	Read-write	Specifies the maximum number of seconds that an inactive flow can be in the NetFlow Export cache. Valid values: 1 – 600 seconds Default: 60 seconds

NetFlow Export Collector Table

The following table provides information about the NetFlow Export collector. They apply to all Foundry devices except the ServerIron products.

Collectors are where expired UPD packets from Foundry devices are sent. Refer to the *Foundry Enterprise Configuration and Management Guide* for details on this feature.

Name, OID, and Syntax	Access	Description
snNetFlowCollectorTable fdry.1.1.3.18.2	None	A table of each NetFlow Export collector information.
snNetFlowCollectorEntry fdry.1.1.3.18.2.1	None	A row in the NetFlow Export Collector Table.
snNetFlowCollectorIndex fdry.1.1.3.18.2.1.1 Syntax: Integer	Read only	The index to the NetFlow Export Collector Table. Valid values:1 – 10.
snNetFlowCollectorIp fdry.1.1.3.18.2.1.2 Syntax: IpAddress	Read-write	Shows the IP address of the collector.
snNetFlowCollectorUdpPort fdry.1.1.3.18.2.1.3 Syntax: Integer	Read-write	Shows the UDP port number of the collector.

Name, OID, and Syntax	Access	Description
snNetFlowCollectorSourceInterface fdry.1.1.3.18.2.1.4 Syntax: Integer	Read-write	Shows the source port for the NetFlow Export packets. Packets will be exported through this port: • A valid port number – The port configured to be the source port. • 0 – No source port specified. The port connected to the collector to the collector is the source port.
snNetFlowCollectorRowStatus fdry.1.1.3.18.2.1.5 Syntax: Integer	Read-write	Creates or deletes a NetFlow Export Collector Table entry: • other(1) • valid(2) • delete(3) • create(4)

NetFlow Export Aggregation Table

The following table provides information on the NetFlow Export aggregation schemes. They apply to all Foundry devices except the ServerIron products.

By default, NetFlow Export exports a separate flow for each unique set of flow information. To streamline data export, you can consolidate flows by creating aggregate caches that contain individual flows based on specific information in the flow. Refer to the *Foundry Enterprise Configuration and Management Guide* for details on the NetFlow Export aggregation.

Name, OID, and Syntax	Access	Description
snNetFlowAggregationTable fdry.1.1.3.18.3	None	The NetFlow Export Aggregation Table
snNetFlowAggregationEntry fdry.1.1.3.18.3.1	None	An entry in the NetFlow Export Aggregation Table.
snNetFlowAggregationIndex fdry.1.1.3.18.3.1.1 Syntax: Integer	Read only	Specifies what information will be used to aggregate the flow: • as(1) – Autonomous system scheme uses the input and output interfaces and the source and destination BGP4 AS. • protocolPort(2) – IP protocol and application port source and destination IP protocol, and source and destination TCP or UDP port numbers. • destPrefix(3) – Destination prefix scheme uses output interface, destination network mask and prefix, and destination BGP4 AS. • sourcePrefix(4) – Source prefix scheme uses the input interface, source network mask and prefix, and source BGP4 AS. • prefix(5) – Source and destination prefix scheme use the input and output interfaces, source and destination network masks and prefixes, and source and destination BGP4 AS.

Name, OID, and Syntax	Access	Description
snNetFlowAggregationIp fdry.1.1.3.18.3.1.2 Syntax: IpAddress	Read-write	The IP address of the NetFlow Export aggregation collector.
snNetFlowAggregationUdpPort fdry.1.1.3.18.3.1.3 Syntax: Integer	Read-write	The UDP port of the NetFlow Export aggregation collector.
snNetFlowAggregationSourceInterface fdry.1.1.3.18.3.1.4 Syntax: Integer	Read-write	Shows the source port to export the NetFlow Export aggregation packets: • A valid port number – The port configured to be the source port. • 0 – No source port specified. The port connected to the collector to the collector is the source port.
snNetFlowAggregationNumberOfCacheEntries fdry.1.1.3.18.3.1.5 Syntax: Integer	Read-write	Shows the maximum number of aggregated flows that the aggregation cache can contain.
snNetFlowAggregationActiveTimeout fdry.1.1.3.18.3.1.6 Syntax: Integer	Read-write	Shows the maximum time in minutes that an active flow can remain in the NetFlow Export aggregation cache. Valid values: 1 – 60 minutes. Default: 30 minutes
snNetFlowAggregationInactiveTimeout fdry.1.1.3.18.3.1.7 Syntax: Integer	Read-write	Shows the maximum time in seconds that an inactive flow can remain in the NetFlow Export aggregation cache. The object can have a value from 10 – 600 seconds. Default: 15 seconds
snNetFlowAggregationEnable fdry.1.1.3.18.3.1.8 Syntax: Integer	Read-write	Indicates if NetFlow Export aggregation for this aggregation scheme is enabled: • disabled(0) • enabled(1) Default: disabled(0)
snNetFlowAggregationRowStatus fdry.1.1.3.18.3.1.9 Syntax: Integer	Read-write	Creates or deletes a NetFlow Export Aggregation table entry: • other(1) • valid(2) • delete(3) • create(4)

NetFlow Export Interface Table

The following table contains information about the switching type in every NetFlow Export interface. They apply to all Foundry devices except the ServerIron products.

Name, OID, and Syntax	Access	Description
snNetFlowIfTable fdry.1.1.3.18.4	None	Shows a list of interface entries. The number of entries is given by the value of ifNumber.
snNetFlowIfEntry fdry.1.1.3.18.4.1	None	Entry containing the type of switching performed on that interface.
snNetFlowIfIndex fdry.1.1.3.18.4.1.1 Syntax: Integer	Read only	Shows a unique value, greater than zero, for each interface. Valid values: 1 – 65536. It is recommended that values are assigned contiguously starting with 1. The value for each interface sub-layer must remain constant at least from one re-initialization of the entity's network management system to the next re-initialization.
snNetFlowIfFlowSwitching fdry.1.1.3.18.4.1.2 Syntax: Integer	Read-write	Indicates if flow switching in a particular interface is enabled: • disable(0) • enable(1)

System Logging

The objects in this section manage system logging functions (Syslog) using SNMP. The objects are grouped in the following sections:

- "Global Objects" on page 19-11
- "Dynamic System Logging Buffer Table" on page 19-14
- "Static System Logging Buffer Table" on page 19-15

Refer to the *Foundry Switch and Router Installation and Basic Configuration Guide* and *Foundry ServerIron Installation and Configuration Guide* for additional information on Syslog.

Global Objects

The objects below are for global system logging processes for all Foundry devices.

Name, OID, and Syntax	Access	Description
snAgSysLogGblEnable fdry.1.1.2.6.1.1 Syntax: Integer	Read-write	Enables or disables system logging. Set this object to one of the following values: • Disable(0) • Enable(1) Default: enable(1)

Name, OID, and Syntax	Access	Description
snAgSysLogGblBufferSize fdry.1.1.2.6.1.2 Syntax: Integer	Read-write	Sets the number of dynamic system logging entries. Valid values: Up to 100 entries. Default: 50 entries
snAgSysLogGblClear fdry.1.1.2.6.1.3 Syntax: Integer	Read-write	Clears the dynamic and static system log buffers. Set this object to one of the following values: • normal(0) – System logs will not be cleared • clearAll(1) – Clears both dynamic and static system log buffers • clearDynamic(2) – Clears only the dynamic system log • clearStatic(3) – Clears only the static system log
snAgSysLogGblCriticalLevel fdry.1.1.2.6.1.4 Syntax: Integer	Read-write	Filters and identifies the events that will be logged in the logging buffer. This object consists of 32 bits. The following shows the meaning of each bit: **Bit** — **Meaning** 8 to 31 — reserved 7 — Warning (warning conditions) 6 — Notification (normal but significant conditions) 5 — Informational (informational messages) 4 — Error (error conditions) 2 — Debugging (debugging messages) 1 — Critical (critical conditions). Setting this bit to 1 tells the logging buffer to accept the corresponding event. 0 — Alert (immediate action needed). Setting this bit to 0 makes the logging buffer reject the corresponding event. Default: 255
snAgSysLogGblLoggedCount fdry.1.1.2.6.1.5 Syntax: Counter	Read only	Shows the number events logged in the system logging buffer.
snAgSysLogGblDroppedCount fdry.1.1.2.6.1.6 Syntax: Counter	Read only	Shows the number of events dropped from the system logging buffer.
snAgSysLogGblFlushedCount fdry.1.1.2.6.1.7 Syntax: Counter	Read only	Shows the number of times that the system logging buffer was cleared.

Name, OID, and Syntax	Access	Description
snAgSysLogGblOverrunCount fdry.1.1.2.6.1.8 Syntax: Counter	Read only	Shows the number of times that the system logging buffer has wrapped around.
snAgSysLogGblServer fdry.1.1.2.6.1.9 Syntax: IpAddress	Read-write	Shows the IP address of system log server.
snAgSysLogGblFacility fdry.1.1.2.6.1.10 Syntax: Integer	Read-write	Shows the facility code: • kern(1) • user(2) • mail(3) • daemon(4) • auth(5) • syslog(6) • lpr(7) • news(8) • uucp(9) • sys9(10) • sys10(11) • sys11(12) • sys12(13) • sys13(14) • sys14(15) • cron(16) • local0(17) • local1(18) • local2(19) • local3(20) • local4(21) • local5(22) • local6(23) • local7(24) Default: user(2)

Dynamic System Logging Buffer Table

The following table applies to all Foundry devices. It contains the events logged in the Dynamic System Log. Events that are not logged in the Static System Log are logged in the Dynamic System Log.

Name, OID, and Syntax	Access	Description
snAgSysLogBufferTable fdry.1.1.2.6.2	None	Dynamic system logging buffer table.
snAgSysLogBufferEntry fdry.1.1.2.6.2.1	None	A row in the dynamic system logging buffer table.
snAgSysLogBufferIndex fdry.1.1.2.6.2.1.1 Syntax: Integer	Read only	Shows the index to the dynamic system logging buffer table.
snAgSysLogBufferTimeStamp fdry.1.1.2.6.2.1.2 Syntax: Time ticks	Read only	Shows the time stamp for when the event is logged.
snAgSysLogBufferCriticalLevel fdry.1.1.2.6.2.1.3 Syntax: Integer	Read only	Show how critical this event is: • other(1) • alert(2) • critical(3) • debugging(4) • emergency(5) • error(6) • informational(7) • notification(8) • warning(9)
snAgSysLogBufferMessage fdry.1.1.2.6.2.1.4 Syntax: Display string	Read only	Displays the system logging message.
snAgSysLogBufferCalTimeStamp fdry.1.1.2.6.2.1.5 Syntax: Display string	Read only	Shows the time stamp when the event is logged. This object is used only if an external time source, such as an SNTP server, is configured. Otherwise, the value of this object is 0. This object returns a NULL terminated time stamp string if the system calendar time was set. It returns a blank if the system calendar time was not set.

Static System Logging Buffer Table

The following table applies to all Foundry devices. It contains the events logged in the Static System Log. The Static System Log receives power failures, fan failures, temperature warnings, or shutdown messages.

Name, OID, and Syntax	Access	Description
snAgStaticSysLogBufferTable fdry.1.1.2.6.3	None	Static system logging buffer table.
snAgStaticSysLogBufferEntry fdry.1.1.2.6.3.1	None	A row in the static system logging buffer table.
snAgStaticSysLogBufferIndex fdry.1.1.2.6.3.1.1 Syntax: Integer	Read only	The index to the static system logging buffer table.
snAgStaticSysLogBufferTimeStamp fdry.1.1.2.6.3.1.2 Syntax: Time ticks	Read only	A time stamp, in number of time ticks, when the event is logged.
snAgStaticSysLogBufferCriticalLevel fdry.1.1.2.6.3.1.3 Syntax: Integer	Read only	The critical level of this event: • alert(2) • critical(3) • debugging(4) • emergency(5) • error(6) • informational(7) • notification(8) • warning(9)
snAgStaticSysLogBufferMessage fdry.1.1.2.6.3.1.4 Syntax: Display string	Read only	The system logging message.
snAgStaticSysLogBufferCalTimeStamp fdry.1.1.2.6.3.1.5 Syntax: Display string	Read only	A time stamp when the event is logged. This object is used only if an external time source, such as an SNTP server, is configured. Otherwise, the value of this object is 0. If an SNTP server is used to maintain time, then this object adds the value of the object "snAgStaticSysLogBufferTimeStamp" to the SNTP base to calculate the absolute time. This object returns a NULL terminated time stamp string if the system calendar time was set. It returns a blank if the system calendar time was not set.

System Log Server Table

The System Log (Syslog) Server Table shows which servers will receive Syslog messages. Every server in this table will receive all Syslog messages.

Name, OID, and Syntax	Access	Description
snAgSysLogServerTable fdry.1.1.2.6.4	None	System Log Server Table
snAgSysLogServerEntry fdry.1.1.2.6.4.1	None	A row in the System Log Server Table
snAgSysLogServerIP fdry.1.1.2.6.4.1.1 Syntax: IpAddress	Read-write	IP address of System Log server
snAgSysLogServerUDPPort fdry.1.1.2.6.4.1.2 Syntax: Integer	Read-write	UDP port number of the Syslog server. Valid values: 0 – 65535
snAgSysLogServerRowStatus fdry.1.1.2.6.4.1.3 Syntax: Integer	Read-write	Controls the management of the table rows. The values that can be written are: • delete(3) – Delete the row • create(4) – Create a new row If the row exists, then a SET with a value of create(4) returns a "bad value" error. Deleted rows are removed from the table immediately. The following values can be returned on reads: • other(1) – Other • valid(2) – Row exists and is valid

Chapter 20
Layer 4 Switch Group

This chapter presents objects in the Foundry MIB and are specific to Layer 4 to 7 functionality. These objects are presented in the following sections:

For trap objects and object to enable traps specific to ServerIron, refer to the following sections:

Refer to the ServerIron manuals for details on the features discussed in this section. ServerIron manuals are listed in the section “Related Publications” on page 1-1.

Session

The following objects define TCP and UDP sessions in a ServerIron.

Name, OID, and Syntax	Access	Description
snL4MaxSessionLimit fdry.1.1.4.1.1 Syntax: Integer	Read-write	Specifies the maximum number of active sessions the ServerIron allows. An active session is an entry in the ServerIron session table. A UDP or TCP session that has become idle but has not yet timed out (according to the UDP or TCP age timer) is an active session in the table. Valid values: Depends on the target system configuration, but cannot exceed 2000000 Default: Depends on the target system configuration
snL4TcpSynLimit fdry.1.1.4.1.2 Syntax: Integer	Read-write	Shows the maximum number of TCP SYN requests per second per real server that the ServerIron is allowed to send. A TCP SYN request is a packet that a client sends to request a TCP connection to the server. Limiting the number of TCP SYN requests that can be sent to the server each second protects the ServerIron from TCP SYN attacks. Valid values: 1 – 65535 Default: 65535
snL4slbGlobalSDAType fdry.1.1.4.1.3 Syntax: Integer	Read-write	Shows the method the ServerIron uses to select a real server for client request: • leastconnection(1) – The ServerIron sends the request to the real server that currently has the fewest number of active connections with clients. • roundrobin(2) – The ServerIron sends the request to each server in rotation, regardless of how many connections each server has. • weighted(3) – The ServerIron uses the weights you assign to the real servers to select a real server. The weights are based on the number of entries the ServerIron has for each server in the sessions table. Default: leastconnection(1)
snL4slbTotalConnections fdry.1.1.4.1.4 Syntax: Counter	Read only	Shows the total number of client connections on the ServerIron since its last reboot. A connection consists of two sessions: client-to-server session and server-to-client session.
snL4slbLimitExceeds fdry.1.1.4.1.5 Syntax: Integer	Read only	Shows the number of times the TCP SYN requests from clients exceeded the configured “snL4TcpSynLimit” value.
snL4FreeSessionCount fdry.1.1.4.1.13 Syntax: Integer	Read only	Shows the number of sessions that are still available for use. This number is the maximum number of sessions configured, minus the number of active sessions.

Name, OID, and Syntax	Access	Description
snL4TcpAge fdry.1.1.4.1.28 Syntax: Integer	Read-write	Specifies how many minutes a TCP server connection can remain inactive before the session times out and the ServerIron disconnects the session. Changing the value of this object affects only the new TCP sessions that are opened after the change is made. Current sessions will use the maximum age that was specified before the change occurred. This object globally sets the age for all TCP ports. To override this value for a port, specify the age locally on the individual port using the device's CLI. Valid values: 2 – 60 minutes Default value: 30 minutes
snL4UdpAge fdry.1.1.4.1.29 Syntax: Integer	Read-write	Specifies how many minutes a UDP server connection can remain inactive before the session times out and the ServerIron closes the session. Changing the value of this object affects only the new UDP sessions that are opened after the change is made. Current sessions will use the maximum age that was specified before the change occurred. This object globally sets the age for all TCP ports. To override this value for a port, specify the age locally on the individual port using the device's CLI. Valid values: 2 – 60 minutes Default: 5 minutes

Server Load Balancing Traffic Information

Server Load Balancing (SLB) is based on associations between real servers and virtual servers. The real servers are your application servers. The virtual servers have one or more virtual IP addresses (VIPs). You associate a real server with a virtual server by binding TCP/UDP ports on the real servers with TCP/UDP ports on the virtual server. When a client sends a TCP/UDP request for a port on the virtual server, the ServerIron sends the client's request to the real server.

The following objects provide information on the SLB traffic packets that were transmitted between the server and the clients.

Name, OID, and Syntax	Access	Description
snL4slbForwardTraffic fdry.1.1.4.1.6 Syntax: Counter	Read only	Shows the number of packets sent by clients to the server.
snL4slbReverseTraffic fdry.1.1.4.1.7 Syntax: Counter	Read only	Shows the number of packets sent by servers to clients. Generally, this value is 0 unless the client is using FTP or another application that causes the server to initiate connections.

Name, OID, and Syntax	Access	Description
snL4slbDrops fdry.1.1.4.1.8 Syntax: Integer	Read only	Shows the total number of packets dropped by the ServerIron. This statistic includes the following: • TCP Resets – Resets sent by the ServerIron • Forward Resets – Resets from the client • Unsuccessful requests – Requests sent to a TCP or UDP port that is not bound to the request's destination VIP.
snL4slbDangling fdry.1.1.4.1.9 Syntax: Integer	Read only	Shows the number of old types of connections. For use by Foundry technical support.
snL4slbDisableCount fdry.1.1.4.1.10 Syntax: Integer	Read only	Shows the number of packets the ServerIron dropped because they were sent by a client to a VIP port that is bound to a disabled real server port.
snL4slbAged fdry.1.1.4.1.11 Syntax: Integer	Read only	Shows the total number of TCP and UDP sessions that have been aged out and closed. A session ages out when the age timer configured on the ServerIron expires.
snL4slbFinished fdry.1.1.4.1.12 Syntax: Integer	Read only	The total number of TCP connections that are either in the FIN or RST state.
snL4unsuccessfulConn fdry.1.1.4.1.25 Syntax: Integer	Read only	Shows the number of packets that were dropped due to one of the following reasons: • A deny filter configured on the switch matched the packet, causing the switch to drop the packet. • A client requested a TCP or UDP port that is not bound on the VI.

Hot Standby

Hot standby redundancy is a backup feature that allows a Foundry ServerIron to serve as an automatic backup for another ServerIron. Each hot-standby pair consists of two ServerIrons. One ServerIron serves as the primary or active ServerIron, and the other serves as the secondary or standby ServerIron. The standby ServerIron becomes active only if the primary ServerIron fails due to loss of power or loss of data path. The active and standby ServerIrons must have the same SLB or TCS configuration and share the same virtual MAC address. The shared MAC address can be selected from the available pool on either the active ServerIron or the standby ServerIron.

For more information on the Hot standby feature, refer to the *Foundry ServerIron Installation and Configuration Guide*.

The following objects apply to the Hot standby redundancy feature.

Name, OID, and Syntax	Access	Description
snL4BackupInterface fdry.1.1.4.1.14 Syntax: Integer	Read-write	Identifies which port is the hot standby port. This is the port that serves as a private link between the active and the redundant ServerIrons. The ServerIrons use this port to monitor any failover and to communicate those events to the standby. Valid values: 0 – 26
snL4BackupMacAddr fdry.1.1.4.1.15 Syntax: Physical address	Read-write	Identifies the associated MAC address for the backup monitoring port. The active and backup ServerIron must have the same MAC address.
snL4Active fdry.1.1.4.1.16 Syntax: L4flag	Read only	The “snL4Redundancy” object and this object are the same. Indicates if this ServerIron has been configured as redundant or hot standby: • false(0) – This ServerIron is the active one. • true(1) – This ServerIron is the standby.
snL4Redundancy fdry.1.1.4.1.17 Syntax: Integer	Read only	The “snL4Active” object and this object are the same. Indicates if this ServerIron has been configured as redundant or hot standby: • false(0) – This ServerIron is the active one. • true(1) – This ServerIron is the standby.
snL4Backup fdry.1.1.4.1.18 Syntax: L4flag	Read only	Indicates if the ServerIron is the backup (standby) ServerIron: • false(0) – This ServerIron is the active one. • true(1) – This ServerIron is the standby.
snL4BecomeActive fdry.1.1.4.1.19 Syntax: Integer	Read only	Shows the number of times this ServerIron has changed from standby to active.
snL4BecomeStandBy fdry.1.1.4.1.20 Syntax: Integer	Read only	Shows the number of times this ServerIron has changed from active to standby.

Name, OID, and Syntax	Access	Description
snL4BackupState fdry.1.1.4.1.21 Syntax: Integer	Read only	Shows the state of the backup or redundancy link of the active or standby ServerIron: • slbSyncComplete(0) – Synchronization is complete. • slbSyncReqMap(1) – Port map has been synchronized. • slbSyncreqMac(2) – MAC addresses have been synchronized. • slbSyncreqServers(3) – Server information has been synchronized. • slbSyncReqL4(4) – L4 packets have been synchronized.
snL4NoPDUSent fdry.1.1.4.1.22 Syntax: Integer	Read only	This object has been deprecated and is not supported.
snL4NoPDUCount fdry.1.1.4.1.23 Syntax: Integer	Read only	The number of missed Layer 4 or MAC-layer PDUs.
snL4NoPortMap fdry.1.1.4.1.24 Syntax: Integer	Read only	Shows the number of missed port map PDUs, which are PDUs used by ServerIron to discover information about the maps on the other ServerIron.

Layer 4 Policies

This section presents the objects associated with Layer 4 policies. It contains the following tables:

- “Layer 4 Policy Table” on page 20-6
- “Layer 4 Policy Port Access Table” on page 20-8

Layer 4 Policy Table

The Layer 4 Policy table allows you to configure Layer 4 policies and specify the ports to which they will be applied.

Name, OID, and Syntax	Access	Description
snL4PolicyTable fdry.1.1.4.11.1	None	The Layer 4 Policy Table.
snL4PolicyEntry fdry.1.1.4.11.1.1	None	An entry in the Layer 4 Policy Table.

Name, OID, and Syntax	Access	Description
snL4PolicyId fdry.1.1.4.11.1.1.1 Syntax: Integer	Read only	Specifies the ID of the policy. Valid values: 1 – 64
snL4PolicyPriority fdry.1.1.4.11.1.1.2 Syntax: Integer	Read-write	Shows the priority of the policy in the ServerIron: Standalone stackable ServerIrons have the following priorities: • normal(0) – normal priority • high(1) – high priority • cache(2) – priority for cache • transparent(3) – priority for transparent Non-stackable ServerIron Layer 4 priority values are: • level0(0) • level1(1) • level2(2) • level3(3) • level4(4) • level5(5) • level6(6) • level7(7)
snL4PolicyScope fdry.1.1.4.11.1.1.3 Syntax: Integer	Read-write	Indicates if the policy applies to one or all ports: • global(0) – Applies to all ports. • local(1) – Applies to one port.
snL4PolicyProtocol fdry.1.1.4.11.1.1.4 Syntax: Integer	Read-write	Indicates if the policy is for a UDP or TCP protocol: • udp(0) • tcp(1)
snL4PolicyPort fdry.1.1.4.11.1.1.5 Syntax: Integer	Read-write	Indicates the TCP or UDP port number to which this policy will be applied. Valid values: 1 – 65535

Name, OID, and Syntax	Access	Description
snL4PolicyRowStatus fdry.1.1.4.11.1.1.6 Syntax: Integer	Read-write	Controls the management of the table rows. The values that can be written are: • delete(3) – Delete the row • create(4) – Create a new row • modify(5) – Modify an existing row If the row exists, then a SET with a value of create(4) returns a "bad value" error. Deleted rows are removed from the table immediately. The following values can be returned on reads: • noSuch(0) – No such row • invalid(1) – Row is inoperative • valid(2) – Row exists and is valid

Layer 4 Policy Port Access Table

The Layer 4 Policy Port Access table lists all access policy entries. These access policies are applied to IP interfaces (ports) that have Layer 4 IP policies configured on them. IP policies are described in the “snL4PolicyTable”.

Name, OID, and Syntax	Access	Description
snL4PolicyPortAccessTable fdry.1.1.4.12.1	None	The IP Layer 4 Policy Interface (Port) Access Table.
snL4PolicyPortAccessEntry fdry.1.1.4.12.1.1	None	An entry in the table.
snL4PolicyPortAccessPort fdry.1.1.4.12.1.1.1 Syntax: Integer	Read only	The IP interface (port) to which the Layer 4 policy applies.
snL4PolicyPortAccessList fdry.1.1.4.12.1.1.2 Syntax: Octet string	Read-write	This list consists of the policies configured in “snL4PolicyTable”. Each octet in the list contains a valid ID number (“snL4PolicyId”) that identifies a policy in the snL4PolicyTable. That policy must have been created prior to the using this object. Valid values: 1 – 64 octets

Name, OID, and Syntax	Access	Description
snL4PolicyPortAccessRowStatus fdry.1.1.4.12.1.1.3 Syntax: Integer	Read-write	Controls the management of the table rows. The values that can be written are: • delete(3) – Delete the row • create(4) – Create a new row • modify(5) – Modify an existing row If the row exists, then a SET with a value of create(4) returns a "bad value" error. Deleted rows are removed from the table immediately. The following values can be returned on reads: • noSuch(0) – No such row • invalid(1) – Row is inoperative • valid(2) – Row exists and is valid

Health Checks

The following are objects to check on the health of of a server. The ServerIron automatically uses a Layer 3 ping to check a server's health. Ping is enabled by default and cannot be disabled.

snL4PingInterval fdry.1.1.4.1.26 Syntax: Integer	Read-write	Shows how often the ServerIron sends a Layer 3 IP ping to test the basic health and reachability of the real servers. This object allows you to change the interval between the ping packets. Valid values: 1 – 10 seconds Default: 2 seconds
snL4PingRetry fdry.1.1.4.1.27 Syntax: Integer	Read-write	Shows the number of times the ServerIron resends a ping to a real server that is not responding before the server fails the health check. Valid values: 2 – 10 tries Default: 4 tries

Web Cache Server Objects

Transparent Cache Switching (TCS) allows a ServerIron or Foundry backbone switch to detect and switch Web traffic to a local cache server within the network. Cache servers process Web queries faster and more efficiently by temporarily storing details about repetitive Web queries locally, reducing the number of external inquiries required to process a Web query. By limiting the number of queries sent to remote Web servers, the overall WAN access capacity required is lessened as is the overall operating cost for WAN access.

A single ServerIron (or hot standby pair) can provide transparent cache switching for up to 1024 Web cache servers. (A Web cache server must be a real server.) Foundry switches increase the reliability of transparent caching within a network by supporting redundant Web cache server configurations known as Web cache server groups, as well as supporting redundant paths to those server groups with the server backup option.

This section contains the following objects that are associated with Web cache servers:

- "Server Cache Groups" on page 20-10
- "Web Cache Group Table" on page 20-11

Server Cache Groups

All cache servers must belong to a cache group. The ServerIron uses a hashing algorithm to distribute HTTP requests among the servers in the cache group. In addition, cache groups provide automatic recovery from a failed or otherwise out-of-service Web cache server. If a Web cache server failure occurs, the ServerIron detects the failure and directs subsequent requests to the next available cache server or forwards the request directly to the WAN link. Up to four server cache groups can be assigned to a ServerIron.

Name, OID, and Syntax	Access	Description
snL4MaxNumWebCacheGroup fdry.1.1.4.1.40 Syntax: Integer	Read only	Shows the maximum number of Web cache groups that can be configured on this ServerIron.
snL4MaxNumWebCachePerGroup fdry.1.1.4.1.41 Syntax: Integer	Read only	Shows the maximum number of Web cache servers that a Web cache group can have.
snL4WebCacheStateful fdry.1.1.4.1.42 Syntax: Integer	Read-write	This object has been deprecated and is no longer supported.
snL4slbRouterInterfacePortMask fdry.1.1.4.1.39 Syntax: Integer	Read only	Shows the router interface port mask. This object is not used or supported.
snL4slbRouterInterfacePortList fdry.1.1.4.1.51 Syntax: Octet string	Read-write	Shows Router interface port list. Each port index is a 16-bit integer in big endian order. The first 8-bit is the slot number, the other 8-bit is the port number.

Web Cache Group Table

Web Cache Group table lists the configured group of Web cache servers on the ServerIron. The ServerIron uses a hashing algorithm to distribute the incoming HTTP requests among the servers in the cache group. In addition, cache groups provide automatic recovery from a failed or out-of-service Web cache server. If a Web cache server failure occurs, the ServerIron detects the failure and directs subsequent requests to the next available Web cache server or forwards the request directly to the WAN link. The “snL4MaxNumWebCachePerGroup” object defines the maximum number of Web cache servers that can be configured in a group. The “snL4MaxNumWebCacheGroup” defines the maximum number of cache groups that can be configured on a Web cache server.

Name, OID, and Syntax	Access	Description
snL4WebCacheGroupTable fdry.1.1.4.15.1	None	Web Cache Group table.
snL4WebCacheGroupEntry fdry.1.1.4.15.1.1	None	An entry in the Web Cache Group table.
snL4WebCacheGroupId fdry.1.1.4.15.1.1.1 Syntax: Integer	Read only	Shows the ID of an entry in the Web cache group entry. Valid values: 1 – value of the “snL4MaxNumWebCacheGroup” object.
snL4WebCacheGroupName fdry.1.1.4.15.1.1.2 Syntax: L4ServerName	Read-write	Shows the name of the Web cache group. This name must be unique among the Web cache group names. Valid values: 1 – 32 octets.
snL4WebCacheGroupWebCacheIpList fdry.1.1.4.15.1.1.3 Syntax: Octet string	Read-write	Contains a list of IP addresses of the Web cache servers in the group. Valid values: The maximum of IP addresses that a group can contain is equal to the value of the “snL4MaxNumWebCachePerGroup” object. Each IP address contains up to four octets.
snL4WebCacheGroupDestMask fdry.1.1.4.15.1.1.4 Syntax: IpAddress	Read-write	Shows the destination hash-mask for the Web cache group. The ServerIron uses the destination hash-mask (this object) and the source hash-mask (“snL4WebCacheGroupSrcMask”) to forward the requests to the Web cache servers. This method ensures that a particular Web site is always cached on the same Web cache server to minimizes duplication of content on the Web cache servers. Default: 255.255.255.0
snL4WebCacheGroupSrcMask fdry.1.1.4.15.1.1.5 Syntax: IpAddress	Read-write	Specifies the source hash-mask for the Web cache group The ServerIron uses the destination hash-mask (this object) and the source hash-mask (“snL4WebCacheGroupSrcMask”) to forward the requests to the Web cache servers. This method ensures that a particular Web site is always cached on the same Web cache server to minimizes duplication of content on the Web cache servers. Default: 0.0.0.0

Name, OID, and Syntax	Access	Description
snL4WebCacheGroupAdminStatus fdry.1.1.4.15.1.1.6 Syntax: Integer	Read-write	Indicates if the Web cache group feature is enabled. • disabled(0) • enabled(1)
snL4WebCacheGroupRowStatus fdry.1.1.4.15.1.1.7 Syntax: L4RowStatus	Read-write	Controls the management of the table rows. The values that can be written are: • delete(3) – Delete the row • create(4) – Create a new row • modify(5) – Modify an existing row If the row exists, then a SET with a value of create(4) returns a "bad value" error. Deleted rows are removed from the table immediately. The following values can be returned on reads: • noSuch(0) – No such row • invalid(1) – Row is inoperative • valid(2) – Row exists and is valid

Web Cache Table

A Web cache server is an application server which is load-balanced by the Server Load Balancing (SLB) switch. The following table contains the configuration of the Web cache servers in the network.

Name, OID, and Syntax	Access	Description
snL4WebCacheTable fdry.1.1.4.14.1	None	The Web Cache Table.
snL4WebCacheEntry fdry.1.1.4.14.1.1	None	An entry in the Web Cache Table.
snL4WebCacheIP fdry.1.1.4.14.1.1.1 Syntax: IpAddress	Read only	Indicates the IP address of the real server that is serving as the Web cache server.
snL4WebCacheName fdry.1.1.4.14.1.1.2 Syntax: L4ServerName	Read-write	Name of the real server that is serving as the Web cache server. This name must be unique among other Web cache server names. Valid values: 1 – 32 octets

Name, OID, and Syntax	Access	Description
snL4WebCacheAdminStatus fdry.1.1.4.14.1.1.3 Syntax: L4Status	Read-write	Indicates if the TCS feature is enabled in the real server that is serving as the Web cache server: • disabled(0) • enabled(1) – When TCS is enabled, the feature detects HTTP traffic addressed for output to the Internet and redirects the traffic to the CPU. The CPU processes the traffic and forwards it to the cache servers instead. **NOTE:** You cannot enable TCS on both a global (switch) and local (interface) basis.
snL4WebCacheMaxConnections fdry.1.1.4.14.1.1.4 Syntax: Integer	Read-write	The maximum number of connections the ServerIron can maintain in its session table for a Web cache server. When a Web cache server reaches this threshold, an SNMP trap is sent. When all the real servers in a server pool reach this threshold, additional TCP or UDP packets are dropped, and an ICMP destination unreachable message is sent. Valid values: 0 – 1000000 Default: 1000000
snL4WebCacheWeight fdry.1.1.4.14.1.1.5 Syntax: Integer	Read-write	Shows the Web cache server's least-connections weight. This parameter specifies the server's weight relative to other Web cache servers in terms of the number of connections on the server. This weight is based on the number of session table entries the ServerIron has for TCP or UDP sessions with the real server. However, if a weight based on the server response time is desired, this must be disabled (set to 0). Valid values: 0 – 65535 Default: 1
snL4WebCacheRowStatus fdry.1.1.4.14.1.1.6 Syntax: L4Status	Read-write	Controls the management of the table rows. The values that can be written are: • delete(3) – Delete the row • create(4) – Create a new row • modify(5) – Modify an existing row If the row exists, then a SET with a value of create(4) returns a "bad value" error. Deleted rows are removed from the table immediately. The following values can be returned on reads: • noSuch(0) – No such row • invalid(1) – Row is inoperative • valid(2) – Row exists and is valid
snL4WebCacheDeleteState fdry.1.1.4.14.1.1.7 Syntax: L4DeleteState	Read only	Shows the state of the port being deleted: • done(0) – The port is deleted • waitunbind(1) – The port is in an unbind state • waitdelete(2) – The port is in a delete state

Web Cache Real Server Port Table

The Web Cache Real Server Port Table consists of all the ports configured for the real server. Most attributes are configured globally for the port. Some additional and overriding local attributes can be configured in this table.

Name, OID, and Syntax	Access	Description
snL4WebCachePortTable fdry.1.1.4.18.1	None	Web Cache Server Port Table.
snL4WebCachePortEntry fdry.1.1.4.18.1.1	None	An entry in the Real Server Port table.
snL4WebCachePortServerIp fdry.1.1.4.18.1.1.1 Syntax: IpAddress	Read only	Shows the IP address of the Web cache server.
snL4WebCachePortPort fdry.1.1.4.18.1.1.2 Syntax: Integer	Read only	Shows the port that the Web cache server uses to listen for connections: Valid values: 0 – 65535
snL4WebCachePortAdminStatus fdry.1.1.4.18.1.1.3 Syntax: L4Status	Read-write	Indicates if the Web cache server port is enabled: • disabled(0) • enabled(1)
snL4WebCachePortRowStatus fdry.1.1.4.18.1.1.4 Syntax: L4RowStatus	Read-write	Controls the management of the table rows. The values that can be written are: • delete(3) – Delete the row • create(4) – Create a new row • modify(5) – Modify an existing row If the row exists, then a SET with a value of create(4) returns a "bad value" error. Deleted rows are removed from the table immediately. The following values can be returned on reads: • noSuch(0) – No such row • invalid(1) – Row is inoperative • valid(2) – Row exists and is valid
snL4WebCachePortDeleteState fdry.1.1.4.18.1.1.5 Syntax: L4DeleteState	Read only	Shows the state of the port being deleted: • done(0) – The port is deleted. • waitunbind(1) – The port is in an unbind state • waitdelete(2) – The port is in a delete state

Web Cache Traffic Statistics Table

The Web Cache Traffic Statistics table contains traffic statistics for the client requests that go to the Web cache server.

Name, OID, and Syntax	Access	Description
snL4WebCacheTrafficStatsTable fdry.1.1.4.16.1	None	Web Cache Traffic Statistics Table.
snL4WebCacheTrafficStatsEntry fdry.1.1.4.16.1.1	None	An entry in the Web Cache Traffic Statistics Table.
snL4WebCacheTrafficIp fdry.1.1.4.16.1.1.1 Syntax: IpAddress	Read only	Shows the IP address of the Web cache server.
snL4WebCacheTrafficPort fdry.1.1.4.16.1.1.2 Syntax: Integer	Read only	Shows the port that the Web cache server uses to listen for connections. Valid values: 0 – 65535
snL4WebCacheCurrConnections fdry.1.1.4.16.1.1.3 Syntax: Integer	Read only	Shows the number of the active connections between the clients and the Web cache server.
snL4WebCacheTotalConnections fdry.1.1.4.16.1.1.4 Syntax: Integer	Read only	Shows the total number of connections between clients and the Web cache server.
snL4WebCacheTxPkts fdry.1.1.4.16.1.1.5 Syntax: Counter	Read only	Shows the number of packets that was sent from the client or the Web server to the Web cache server.
snL4WebCacheRxPkts fdry.1.1.4.16.1.1.6 Syntax: Counter	Read only	Shows the number of packets that was sent from the Web cache server to the client or Web server.
snL4WebCacheTxOctets fdry.1.1.4.16.1.1.7 Syntax: Counter	Read only	Shows the number of octets that was sent from the client or Web server to the Web cache server.
snL4WebCacheRxOctets fdry.1.1.4.16.1.1.8 Syntax: Counter	Read only	Shows the number of octets that was sent from the Web cache server to the client or Web server.

Name, OID, and Syntax	Access	Description
snL4WebCachePortState fdry.1.1.4.16.1.1.9 Syntax: WebCacheState	Read only	Shows the operational state of the server port: • disabled(0) – This state has been deprecated. • enabled(1) – The server is ready. There is no physical link to the Web cache server. The Web cache server is configured on the ServerIron but is not physically connected to the ServerIron. • failed(2) – The server failed. The Web cache server has failed to respond to repeated Layer 3 health checks (IP pings) Typically, a real server changes from the suspect(4) state to the failed(2) state. • testing(3) – The Web cache server is in testing mode. It is still reachable at Layer 3, but at least one of its application ports has failed to respond to its health checks. If the application port is not a TCP or UDP port known to the ServerIron, or if the Layer 7 health check for the port is disabled, only the Layer 4 health check is used. If the service is a TCP or UDP port known to the ServerIron and the Layer 7 health check is enabled, then the application must pass both health checks to avoid entering the testing(3) state. The ServerIron continues to try to the reach the application indefinitely. Thus, if the server continues to be reachable at Layer 3, the state will remain in the testing(3) state as long as the ServerIron cannot reach the application that is failing its health check. • suspect(4) – The Web cache server is responding slowly. The ServerIron associates a time stamp with each packet sent to and received from the Web cache servers. If the time gap between the last packet received from the server and the last packet sent to the server increases to three or four seconds, the ServerIron sends a ping (Layer 3 health check) to the server. If the server does not respond within the ping interval (configured in the “snL4PingInterval” object), the ServerIron changes the state to suspect(4) and resends the ping. The ping will be sent up to the number of retries specified by the ping retries parameter (configured in the “snL4PingRetry” object). If the server still does not respond after all the retries, the state changes to failed(2). If the server does respond, the state changes to active(6). • shutdown(5) – The Web cache server has been forced to shutdown. This option is used to gracefully shut down the Web cache server. • active(6) – The Web cache server responded to the Layer 3 health check (IP ping), and all the services on the real server have passed their Layer 4, and if applicable, Layer 7) health checks.

Web Uncached Traffic Statistics Table

The Web Uncached Traffic Statistics table contains traffic statistics for the client requests that go directly to the Web server. Client requests are directed to the Web server when the Web cache server is not available.

Name, OID, and Syntax	Access	Description
snL4WebUncachedTrafficStatsTable fdry.1.1.4.17.1	None	Web Uncached Traffic Statistics Table.
snL4WebUncachedTrafficStatsEntry fdry.1.1.4.17.1.1	None	An entry in the Web Uncached Traffic Statistics Table.
snL4WebServerPort fdry.1.1.4.17.1.1.1 Syntax: Integer	Read only	Identifies the ServerIron port that is attached to the Web servers. This port is typically the port attached to the Border Access Point (BAP) router that goes to the rest of the network or to the Internet.
snL4WebClientPort fdry.1.1.4.17.1.1.2 Syntax: Integer	Read only	Identifies the SLB switch port or Web client port, which connects the client to the ServerIron.
snL4WebUncachedTxPkts fdry.1.1.4.17.1.1.3 Syntax: Counter	Read only	Shows the number of uncached packets that was sent from the client port to the Web server.
snL4WebUncachedRxPkts fdry.1.1.4.17.1.1.4 Syntax: Counter	Read only	Shows the number of uncached packets that was sent from the Web server to the client port.
snL4WebUncachedTxOctets fdry.1.1.4.17.1.1.5 Syntax: Counter	Read only	Shows the number of uncached octets that was sent from the client port to the Web server.
snL4WebUncachedRxOctets fdry.1.1.4.17.1.1.6 Syntax: Counter	Read only	Shows the number of uncached octets that was sent from the Web server to the client port.
snL4WebServerPortName fdry.1.1.4.17.1.1.7 Syntax: Display string	Read only	Shows the name of the Web server port. Valid values: Up to 16 characters.
snL4WebClientPortName fdry.1.1.4.17.1.1.8 Syntax: Display string	Read only	Shows the name of the Web client port. Valid values: Up to 16 characters.

Real Server Objects

A real server is an application server which is load-balanced by the Server Load Balancing (SLB) switch.

NOTE: The following tables have been replaced:

- The Real Server Table (snL4RealServerTable) has been replaced by the Real Server Configuration Table (snL4RealServerCfg). Refer to page 20-18.
- Real Server Port Table (snL4RealServerPortTable) has been replaced by the Real Server Port Configuration Table (snL4RealServerPortCfg). Refer to page 20-19.
- Real Server Status Table (snL4RealServerStatusTable) has been replaced by the Real Server Statistics Table (snL4RealServerStatistic). Refer to page 20-21.
- The Real Server Port Status Table (snL4RealServerPortStatusTable) has been replaced by the Real Server Statistics Table (“snL4RealServerPortStatisticTable”). Refer to page 20-23.

This section presents the following tables:

Additional tables for real servers are included in the section “Monitor Groups” on page 20-36. Those tables provide historical information on data samples for real servers and real server ports.

Real Server Configuration Table

The Real Server Configuration table shows the configuration of real servers. A real server is an application server which is load-balanced by the SLB switch.

Name, OID, and Syntax	Access	Description
snL4RealServerCfgTable fdry.1.1.4.19.1	None	Real Server Configuration Table.
snL4RealServerCfgEntry fdry.1.1.4.19.1.1	None	An entry in the Real Server Configuration Table.
snL4RealServerCfgIP fdry.1.1.4.19.1.1.1 Syntax: IpAddress	Read only	Shows the IP address of the real server.
snL4RealServerCfgName fdry.1.1.4.19.1.1.2 Syntax: L4ServerName	Read-write	Shows the name of the real server. This name must be unique among the real server names. Valid values: 1– 32 octets
snL4RealServerCfgAdminStatus fdry.1.1.4.19.1.1.3 Syntax: L4Status	Read-write	Enables or disables the real server: • disabled(0) • enabled(1)

Name, OID, and Syntax	Access	Description
snL4RealServerCfgMaxConnections fdry.1.1.4.19.1.1.4 Syntax: Integer	Read-write	Specifies the maximum number of connections the ServerIron can maintain in its session table for a real server. When a real server reaches this threshold, an SNMP trap is sent. When all the real servers in a server pool reach this threshold, additional TCP or UDP packets are dropped, and an ICMP destination unreachable message is sent. Valid values: 0 – 1000000 Default: 1000000
snL4RealServerCfgWeight fdry.1.1.4.19.1.1.5 Syntax: Integer	Read-write	Specifies the server's weight relative to other real servers. This weight is based on the number of session table entries the ServerIron has for TCP or UDP sessions with the real server. Set this object to 0 to disable it if a weight based on the server response time is desired. Valid values: 0 – 65000. Setting this object to 0 disables it. Default: 1
snL4RealServerCfgRowStatus fdry.1.1.4.19.1.1.6 Syntax: L4RowStatus	Read-write	Controls the management of the table rows. The values that can be written are: • delete(3) – Delete the row • create(4) – Create a new row • modify(5) – Modify an existing row If the row exists, then a SET with a value of create(4) returns a "bad value" error. Deleted rows are removed from the table immediately. The following values can be returned on reads: • noSuch(0) – No such row • invalid(1) – Row is inoperative • valid(2) – Row exists and is valid
snL4RealServerCfgDeleteState fdry.1.1.4.19.1.1.7 Syntax: L4DeleteState	Read only	Shows the state of the port being deleted: • done(0) – The port is deleted. • waitunbind(1) – The port is in an unbind state • waitdelete(2) – The port is in a delete state

Real Server Port Configuration Table

Real Server Port table contains all the ports that have been configured for the real server. Most attributes are configured globally for the port. This table allows you to change individual port attributes and override global settings.

Name, OID, and Syntax	Access	Description
snL4RealServerPortCfgTable fdry.1.1.4.20.1	None	Real Server Port table.

Name, OID, and Syntax	Access	Description
snL4RealServerPortCfgEntry fdry.1.1.4.20.1.1	None	An entry in the Real Server Port Configuration table.
snL4RealServerPortCfgIP fdry.1.1.4.20.1.1.1 Syntax: IpAddress	Read only	Specifies the IP address for the real server.
snL4RealServerPortCfgServerName fdry.1.1.4.20.1.1.2 Syntax: L4ServerName	Read only	Specifies the name of the real server. This name must be unique among the other real servers. Valid values: 1 – 32 octets
snL4RealServerPortCfgPort fdry.1.1.4.20.1.1.3 Syntax: Integer	Read only	Specifies the port that the real server port uses to listen for connections Valid values: 0 – 65535
snL4RealServerPortCfgAdminStatus fdry.1.1.4.20.1.1.4 Syntax: L4Status	Read-write	Enables or disable the application port on the real server: • disabled(0) • enabled(1)
snL4RealServerPortCfgRowStatus fdry.1.1.4.20.1.1.5 Syntax: L4RowStatus	Read-write	Controls the management of the table rows. The values that can be written are: • delete(3) – Delete the row • create(4) – Create a new row • modify(5) – Modify an existing row If the row exists, then a SET with a value of create(4) returns a "bad value" error. Deleted rows are removed from the table immediately. The following values can be returned on reads: • noSuch(0) – No such row • invalid(1) – Row is inoperative • valid(2) – Row exists and is valid
snL4RealServerPortCfgDeleteState fdry.1.1.4.20.1.1.6 Syntax: L4DeleteState	Read only	Shows the state of the port being deleted: • done(0) – The port is deleted. • waitunbind(1) – The port is in an unbind state • waitdelete(2) – The port is in a delete state

Real Server Statistics Table

Real Server Statistics table contains statistics for all real servers configured as SLB switches on the ServerIron

Name, OID, and Syntax	Access	Description
snL4RealServerStatisticTable fdry.1.1.4.23.1	None	The Real Server Statistic Table.
snL4RealServerStatisticEntry fdry.1.1.4.23.1.1	None	An entry in the Real Server Statistic Table.
snL4RealServerStatisticRealIP fdry.1.1.4.23.1.1.1 Syntax: IpAddress	Read only	Shows the IP address of the real server.
snL4RealServerStatisticName fdry.1.1.4.23.1.1.2 Syntax: L4ServerName	Read only	Shows the name of the real server.
snL4RealServerStatisticReceivePkts fdry.1.1.4.23.1.1.3 Syntax: Counter	Read only	Shows the number of packets the ServerIron has received from the real server.
snL4RealServerStatisticTransmitPkts fdry.1.1.4.23.1.1.4 Syntax: Counter	Read only	Shows the number of packets the ServerIron has sent to the real server.
snL4RealServerStatisticCurConnections fdry.1.1.4.23.1.1.5 Syntax: Integer	Read only	Shows the number of client connections currently on the real server. A connection consists of two sessions: the client-to-server session and the server-to-client session.
snL4RealServerStatisticTotalConnections fdry.1.1.4.23.1.1.6 Syntax: Counter	Read only	Shows the number of client connections on the real server since the last time the ServerIron was rebooted. A connection consists of two sessions: the client-to-server session and the server-to-client session.
snL4RealServerStatisticAge fdry.1.1.4.23.1.1.7 Syntax: Integer	Read only	Shows the total number of TCP and UDP sessions that the ServerIron closed because the connection aged out. A session ages out when the age timer configured on the ServerIron expires.

Name, OID, and Syntax	Access	Description
snL4RealServerStatisticState fdry.1.1.4.23.1.1.8 Syntax: Integer	Read only	Shows the operational state of the real server when the statistics were obtained: • disabled(0) – This value has been deprecated and is not used. • enabled(1) – There is no link to the real server. The real server is configured on the ServerIron but is not physically connected to the ServerIron. • failed(2) – The server has failed to respond to repeated Layer 3 health checks (IP pings). Typically, a real server changes to the failed(2) state from the suspect(4) state. • testing(3) – The real server is still reachable at Layer 3, but at least one of the application ports on the real server has failed to respond to its health checks. If the application port is not a TCP or UDP port known to the ServerIron, or if the Layer 7 health check for the port is disabled, only the Layer 4 health check is used. If the service is a TCP or UDP port known to the ServerIron and the Layer 7 health check is enabled, then the application must pass both health checks to avoid entering the testing(3) state. The ServerIron continues to try to reach the application indefinitely. If the server continues to be reachable at Layer 3, the state will remain testing(3) as long as the ServerIron cannot reach the application that is failing its health check. • suspect(4) – The ServerIron associates a time stamp with each packet sent to and received from the real servers. If the time gap between the last packet received from the real server and the last packet sent to the real server increases to three or four seconds, the ServerIron sends a Layer 3 health check (ping) to the real server. If the real server does not respond within the ping interval (configured in the “snL4PingInterval” object), the ServerIron changes the state to suspect(4) and resends the ping, up to the number of retries specified by the “snL4PingRetry” object. If the server still doesn't respond after all the retries, the state changes to failed(2). If the server does respond, the state changes to active(6). • shutdown(5) – The forced-shutdown option has been used to gracefully shut down the real server. • active(6) – The real server has responded to the Layer 3 health check (IP ping) and all the services on the real server have passed their Layer 4, and if applicable, Layer 7) health checks.
snL4RealServerStatisticReassignments fdry.1.1.4.23.1.1.9 Syntax: Integer	Read only	Shows the number of times the ServerIron has reassigned the connection to another real server in the rotation because the real server that is in use has not responded to two TCP SYNs from the client.

Name, OID, and Syntax	Access	Description
snL4RealServerStatisticReassignmentLimit fdry.1.1.4.23.1.1.10 Syntax: Integer	Read only	Shows the number of missed connection requests (TCP SYN) the ServerIron accepts before moving the connection to another ServerIron.
snL4RealServerStatisticFailedPortExists fdry.1.1.4.23.1.1.11 Syntax: Integer	Read only	Shows the number of times a client request could not be fulfilled because the client requested a port that is not configured on the real server.
snL4RealServerStatisticFailTime fdry.1.1.4.23.1.1.12 Syntax: Integer	Read only	Show the number of seconds from the last retry attempt to connect to the real server. The object value is valid only if the real server's state is failed(2).
snL4RealServerStatisticPeakConnections fdry.1.1.4.23.1.1.13 Syntax: Integer	Read only	Shows the highest number of simultaneous client connections on the real server since the last time the ServerIron was rebooted. A connection consists of two sessions: the client-to-server session and the server-to-client session.
snL4RealServerStatisticTotalReverseConnections fdry.1.1.4.23.1.1.14 Syntax: Integer	Read only	Shows the total number of connections to the client that was initiated by the real server.
snL4RealServerStatisticCurrentSessions fdry.1.1.4.23.1.1.15 Syntax: Integer	Read only	Shows the total number of open sessions on the ServerIron. A connection consists of two sessions: the client-to-server session and the server-to-client session.

Real Server Port Statistic Table

Real Server Port Statistics contains statistics for all the ports configured for all the real servers.

Name, OID, and Syntax	Access	Description
snL4RealServerPortStatisticTable fdry.1.1.4.24.1	None	Real Server Port Statistic table.
snL4RealServerPortStatisticEntry fdry.1.1.4.24.1.1	None	An entry in the Real Server Port Statistic table.
snL4RealServerPortStatisticIP fdry.1.1.4.24.1.1.1 Syntax: IpAddress	Read only	Shows the IP address of the real server where the port is located.

Name, OID, and Syntax	Access	Description
snL4RealServerPortStatisticPort fdry.1.1.4.24.1.1.2 Syntax: Integer	Read only	The port number that the real server uses to listen for connections.
snL4RealServerPortStatisticServerName fdry.1.1.4.24.1.1.3 Syntax: L4ServerName	Read only	Shows the name of the real server.
snL4RealServerPortStatisticReassignCount fdry.1.1.4.24.1.1.4 Syntax: Integer	Read only	Shows the number of times the ServerIron has reassigned the connection to another real server in the rotation because the real server that is in use has not responded to two TCP SYNs from the client.

Name, OID, and Syntax	Access	Description
snL4RealServerPortStatisticState fdry.1.1.4.24.1.1.5 Syntax: Integer	Read only	Shows the operational state of the real server when the statistics were obtained: • disabled(0) – This value has been deprecated and is not used. • enabled(1) – There is no link to the real server. The real server is configured on the ServerIron but is not physically connected to the ServerIron. • failed(2) – The server has failed to respond to repeated Layer 3 health checks (IP pings). Typically, a real server changes to the failed(2) state from the suspect(4) state. • testing(3) – The real server is still reachable at Layer 3, but at least one of the application ports on the real server has failed to respond to its health checks. If the application port is not a TCP or UDP port known to the ServerIron or if the Layer 7 health check for the port is disabled, only the Layer 4 health check is used. If the service is a TCP or UDP port known to the ServerIron and the Layer 7 health check is enabled, then the application must pass both health checks to avoid entering the testing(3) state. The ServerIron continues to try to reach the application indefinitely. If the server continues to be reachable at Layer 3, the state will remain testing(3) as long as the ServerIron cannot reach the application that is failing its health check. • suspect(4) – The ServerIron associates a time stamp with each packet sent to and received from the real servers. If the time gap between the last packet received from the real server and the last packet sent to the real server increases to three or four seconds, the ServerIron sends a Layer 3 health check (ping) to the real server. If the real server does not respond within the ping interval (configured in the “snL4PingInterval” object) the ServerIron changes the state to suspect(4) and resends the ping, up to the number of retries specified by the “snL4PingRetry” object. If the server still doesn't respond after all the retries, the state changes to failed(2). If the server does respond, the state changes to active(6). • shutdown(5) – The forced-shutdown option has been used to gracefully shut down the real server. • active(6) – The real server has responded to the Layer 3 health check (IP ping), and all the services on the real server have passed their Layer 4, and if applicable, Layer 7) health checks.
snL4RealServerPortStatisticFailTime fdry.1.1.4.24.1.1.6 Syntax: Integer	Read only	This object applies only ports whose operational state is failed(2). Shows the number of seconds that has elapsed since the last time the port tried to re-establish connection with the real server.

Name, OID, and Syntax	Access	Description
snL4RealServerPortStatisticCurrentConnection fdry.1.1.4.24.1.1.7 Syntax: Integer	Read only	Shows the number of client connections currently on the this port of the real server. A connection consists of two sessions, the client-to-server session and the server-to-client session.
snL4RealServerPortStatisticTotalConnection fdry.1.1.4.24.1.1.8 Syntax: Counter	Read only	Shows the number of client connections on the real server since the last time the ServerIron rebooted. A connection consists of two sessions: the client-to-server session and the server-to-client session.
snL4RealServerPortStatisticRxPkts fdry.1.1.4.24.1.1.9 Syntax: Counter	Read only	Shows the number of packets that the ServerIron has received from the real server.
snL4RealServerPortStatisticTxPkts fdry.1.1.4.24.1.1.10 Syntax: Counter	Read only	Shows the number of packets the ServerIron has sent to the real server.
snL4RealServerPortStatisticRxBytes fdry.1.1.4.24.1.1.11 Syntax: Counter	Read only	Shows the number of bytes the ServerIron has received from the real server.
snL4RealServerPortStatisticTxBytes fdry.1.1.4.24.1.1.12 Syntax: Counter	Read only	Shows the number of bytes the ServerIron has sent to the real server.
snL4RealServerPortStatisticPeakConnection fdry.1.1.4.24.1.1.13 Syntax: Integer	Read only	Shows the highest number of simultaneous client connections on the real server since the last time the ServerIron was rebooted. A connection consists of two sessions: the client-to-server session and the server-to-client session.

Virtual Server Objects

The SLB switch serves as the front-end for real servers and load balances the real servers. To allow the SLB switches to perform this function, virtual servers should be configured on the ServerIron and must be bound to their related real servers. The virtual servers are visible to the clients while real servers are hidden by the virtual servers

This section presents the following tables for virtual servers:

- “Virtual Server Configuration Table” on page 20-27
- “Virtual Server Port Configuration Table” on page 20-29
- “Virtual Server Statistic Table” on page 20-31

NOTE: The following tables have been replaced:

- The Virtual Server Table (snL4VirtualServerTable) has been replaced by the Virtual Server Configuration Table (snL4VirtualServerCfg). Refer to page 20-27.
- The Virtual Server Port Table (snL4VirtualServerPortTable) has been replaced by the Virtual Server Port Configuration Table (snL4VirtualServerPortCfg). Refer to page 20-29.
- The Virtual Server Status Table (snL4VirtualServerStatusTable) has been replaced by the Virtual Server Statistics Table (snL4VirtualServerStatistic). Refer to page 20-31.
- The Virtual Server Port Status Table (snL4VirtualServerPortStatusTable) has been replaced by the Virtual Server Port Statistics Table (snL4VirtualServerPortStatisticTable). Refer to page 20-33.

Additional tables for virtual servers are included in the section “Monitor Groups” on page 20-36. Those tables provide historical information on data samples for virtual servers and virtual server ports.

Virtual Server Configuration Table

The Virtual Server Configuration table allows you to configure virtual servers on the ServerIron.

Name, OID, and Syntax	Access	Description
snL4VirtualServerCfgTable fdry.1.1.4.21.1	None	The Virtual Server Configuration table.
snL4VirtualServerCfgEntry fdry.1.1.4.21.1.1	None	An entry in the Virtual Server Configuration table.
snL4VirtualServerCfgVirtualIP fdry.1.1.4.21.1.1.1 Syntax: IpAddress	Read only	Specifies the virtual server IP Address.
snL4VirtualServerCfgName fdry.1.1.4.21.1.1.2 Syntax: L4ServerName	Read-write	Specifies the name of the virtual server. This name must be unique among the other virtual servers. Valid values: 1 – 32 octets
snL4VirtualServerCfgAdminStatus fdry.1.1.4.21.1.1.3 Syntax: L4Status	Read-write	Indicates if the virtual server feature is enabled on the ServerIron: • disabled(0) • enabled(1) Default: enabled(1)

Name, OID, and Syntax	Access	Description
snL4VirtualServerCfgSDAType fdry.1.1.4.21.1.1.4 Syntax: Integer	Read-write	Specifies the load-balancing or Session Distribution Algorithm method that the ServerIron uses to select a real server for a client request. The following methods are supported: • default(0) – The ServerIron uses the global SDAType configured (snL4SlbGlobalSDAType) • leastconnection(1) – The ServerIron sends the request to the real server that currently has the fewest active connections with clients. • roundrobin(2) – The ServerIron sends the request to each real server in rotation, regardless of how many connections or sessions each real server has. • weighted(3) – The ServerIron uses the weights you assign to the real servers to select a real servers. The weights are based on the number of session table entries the switch has for each server. Default: default(0)
snL4VirtualServerCfgRowStatus fdry.1.1.4.21.1.1.5 Syntax: L4RowStatus	Read-write	Controls the management of the table rows. The values that can be written are: • delete(3) – Delete the row • create(4) – Create a new row • modify(5) – Modify an existing row If the row exists, then a SET with a value of create(4) returns a "bad value" error. Deleted rows are removed from the table immediately. The following values can be returned on reads: • noSuch(0) – No such row • invalid(1) – Row is inoperative • valid(2) – Row exists and is valid
snL4VirtualServerCfgDeleteState fdry.1.1.4.21.1.1.6 Syntax: L4DeleteState	Read only	Shows the state of the port being deleted: • done(0) – The port is deleted. • waitunbind(1) – The port is in an unbind state. • waitdelete(2) – The port is in a delete state.

Name, OID, and Syntax	Access	Description
snL4VirtualServerCfgSymPriority fdry.1.1.4.21.1.1.7 Syntax: Integer	Read-write	When a pair of SLB switches are configured to provide redundancy for individual virtual IP addresses (VIPs), an symmetric SLB priority must be specified on each switch for each of the VIPs. The switch with the higher priority for a given VIP is the default active switch for that VIP. The other switch is the default standby for the VIP. It is recommended that you use a priority of 2 (instead of 1) as a low priority or 254 (instead of 255) as a high priority. This method would make it easy to force a failover of the high priority switch to a low priority switch by simply changing the priority on one of the switches. For example, we can force a failover by changing the priority on the high priority switch from 254 to 1. Since the priority on the low priority switch is 2, the low priority switch takes over for the VIP. Likewise, we can force the low priority switch to take over by changing its priority to 255, since the priority on the high priority switch is only 254. Valid values: 0 – 255 Default: 0

Virtual Server Port Configuration Table

The Virtual Server Port Configuration Table contains all the ports configured for the virtual server. This table allows you to configure attributes for individual ports and override global attributes for those ports.

Name, OID, and Syntax	Access	Description
snL4VirtualServerPortCfgTable fdry.1.1.4.22.1	None	Virtual Server Port Configuration table.
snL4VirtualServerPortCfgEntry fdry.1.1.4.22.1.1	None	An entry in the Virtual Server Port Configuration table.
snL4VirtualServerPortCfgIP fdry.1.1.4.22.1.1.1 Syntax: IpAddress	Read only	Indicates the IP address of the virtual server where the port is located.
snL4VirtualServerPortCfgPort fdry.1.1.4.22.1.1.2 Syntax: Integer	Read only	Specifies the port that the virtual server (SLB switch) uses to listen for connections from clients. Valid values: 0 – 65535
snL4VirtualServerPortCfgServerName fdry.1.1.4.22.1.1.3 Syntax: L4ServerName	Read only	Specifies the name of the virtual server. This name must be different from the names of other virtual servers. Valid values: 1 – 32 octets

Name, OID, and Syntax	Access	Description
snL4VirtualServerPortCfgAdminStatus fdry.1.1.4.22.1.1.4 Syntax: L4Status	Read-write	Enables or disables the port on the virtual server for accepting client requests and load balancing those request among the real servers. • disable(0) • enable(1) Default: enable(1)
snL4VirtualServerPortCfgSticky fdry.1.1.4.22.1.1.5 Syntax: L4Status	Read-write	Enables or disables the “sticky” feature. If enabled, the ServerIron sends all requests from the same client to this application and to the same real server during the current session. By default, the ServerIron sends a client request to the next available real server, based on the load balancing method. This is true regardless of whether the client has already sent a request for the same application. If the switch has to send all of a client requests for a given application to the same real server during a client session with the server, set this object to enable(1) for the application port. Set this object and the “snL4VirtualServerPortCfgConcurrent” object to enable(1), on ServerIron FTP ports that use passive FTP: • disable(0) • enable(1) Default: disable(0)
snL4VirtualServerPortCfgConcurrent fdry.1.1.4.22.1.1.6 Syntax: L4Status	Read-write	Enables or disables the port for concurrent connections. A port that allows concurrent connections can have more than one connection open to the same client at the same time. The concurrent feature allows a client to have sessions on different application ports on the same real server at the same time. When an application port is enabled to be concurrent, the real server can open additional concurrent TCP or UDP sessions with the client using arbitrary TCP or UDP port numbers. Set this object and the “snL4VirtualServerPortCfgSticky” object to enable(1) on ServerIron FTP ports that use passive FTP: • disable(0) • enable(1) Default: disable(0)

Name, OID, and Syntax	Access	Description
snL4VirtualServerPortCfgRowStatus fdry.1.1.4.22.1.1.7 Syntax: L4RowStatus	Read-write	Controls the management of the table rows. The values that can be written are: • delete(3) – Delete the row • create(4) – Create a new row • modify(5) – Modify an existing row If the row exists, then a SET with a value of create(4) returns a "bad value" error. Deleted rows are removed from the table immediately. The following values can be returned on reads: • noSuch(0) – No such row • invalid(1) – Row is inoperative • valid(2) – Row exists and is valid
snL4VirtualServerPortCfgDeleteState fdry.1.1.4.22.1.1.8 Syntax: L4DeleteState	Read only	Shows the state of the port being deleted: • done(0) – The port is deleted. • waitunbind(1) – The port is in an unbind state. • waitdelete(2) – The port is in a delete state.

Virtual Server Statistic Table

Virtual Server Statistics table contains statistics for all the virtual servers configured in the ServerIron.

Name, OID, and Syntax	Access	Description
snL4VirtualServerStatisticTable fdry.1.1.4.25.1	None	The Virtual Server Statistic Table.
snL4VirtualServerStatisticEntry fdry.1.1.4.25.1.1	None	An entry in the Virtual Server Statistic Table.
snL4VirtualServerStatisticIP fdry.1.1.4.25.1.1.1 Syntax: IpAddress	Read only	Shows the IP address of the virtual server.
snL4VirtualServerStatisticName fdry.1.1.4.25.1.1.2 Syntax: L4ServerName	Read only	Shows the name of the virtual server.
snL4VirtualServerStatisticReceivePkts fdry.1.1.4.25.1.1.3 Syntax: Counter	Read only	Shows the number of packets the ServerIron has received from the real server.

Name, OID, and Syntax	Access	Description
snL4VirtualServerStatisticTransmitPkts fdry.1.1.4.25.1.1.4 Syntax: Counter	Read only	Shows the number of packets the ServerIron has sent to the real server.
snL4VirtualServerStatisticTotalConnections fdry.1.1.4.25.1.1.5 Syntax: Counter	Read only	Shows the number of client connections on the virtual server since the last time the ServerIron was booted. A connection consists of two sessions: the client-to-server session and the server-to-client session.
snL4VirtualServerStatisticReceiveBytes fdry.1.1.4.25.1.1.6 Syntax: Counter64	Read only	The number of bytes the switch has received from the real server.
snL4VirtualServerStatisticTransmitBytes fdry.1.1.4.25.1.1.7 Syntax: Counter64	Read only	The number of bytes the switch has sent to the real server
snL4VirtualServerStatisticSymmetricState fdry.1.1.4.25.1.1.8 Syntax: Integer	Read only	Shows which ServerIron is the active one: • other(3) – Not the active ServerIron • active(5) – Active ServerIron
snL4VirtualServerStatisticSymmetricPriority fdry.1.1.4.25.1.1.9 Syntax: Integer	Read only	Shows the Symmetric SLB priority configured on the ServerIron.
snL4VirtualServerStatisticSymmetricKeep fdry.1.1.4.25.1.1.10 Syntax: Integer	Read only	This object is applicable only to the active ServerIrons. Shows the number of times an SSLB backup has failed to communicate with the active ServerIron. By default, the counter is incremented by 1 every 400 milliseconds, if the backup switch is responding slowly to the active switch's keepalive message. The counter is reset to 0 each time the backup switch replies to a keepalive message. If the counter exceeds the maximum number allowed (20 by default, thus 8 seconds), the standby switch takes over as the new active switch. Normally, this field almost always contains 0.
snL4VirtualServerStatisticSymmetricActivates fdry.1.1.4.25.1.1.11 Syntax: Counter	Read only	The number of times this ServerIron has become the active switch.

Name, OID, and Syntax	Access	Description
snL4VirtualServerStatisticSymmetricInactives fdry.1.1.4.25.1.1.12 Syntax: Counter	Read only	Shows the number of times this ServerIron has changed from being the active switch to the backup switch.
snL4VirtualServerStatisticSymmetricBestStandbyMacAddr fdry.1.1.4.25.1.1.13 Syntax: Physical address	Read only	Shows the MAC address of the backup ServerIron with the second-highest priority. This ServerIron will become the active switch if a failover occurs.
snL4VirtualServerStatisticSymmetricActiveMacAddr fdry.1.1.4.25.1.1.14 Syntax: Physical address	Read only	Shows the MAC address of the active ServerIron with the highest priority. This ServerIron will become the backup switch if a failover occurs.

Virtual Server Port Statistics Table

Virtual Server Port Statistics table contains statistics for all the ports configured for all the virtual servers.

Name, OID, and Syntax	Access	Description
snL4VirtualServerPortStatisticTable fdry.1.1.4.26.1	None	The Virtual Server Port Statistic table.
snL4VirtualServerPortStatisticEntry fdry.1.1.4.26.1.1	None	An entry in the Virtual Server Port Statistic table.
snL4VirtualServerPortStatisticIP fdry.1.1.4.26.1.1.1 Syntax: IpAddress	Read only	The IP address of the virtual server that the port is located.
snL4VirtualServerPortStatisticPort fdry.1.1.4.26.1.1.2 Syntax: Integer	Read only	Shows the ID of the port that the virtual server (SLB switch) uses to listen for connections.
snL4VirtualServerPortStatisticServerName fdry.1.1.4.26.1.1.3 Syntax: L4ServerName	Read only	Shows the name of the virtual server.
snL4VirtualServerPortStatisticCurrentConnection fdry.1.1.4.26.1.1.4 Syntax: Integer	Read only	Shows the number of client connections currently on the virtual server. A connection consists of two sessions: the client-to-server session and the server-to-client session.

Name, OID, and Syntax	Access	Description
snL4VirtualServerPortStatisticTotalConnection fdry.1.1.4.26.1.1.5 Syntax: Counter	Read only	The number of client connections on the virtual server since the last time the ServerIron was rebooted. A connection consists of two sessions: the client-to-server session and the server-to-client session.
snL4VirtualServerPortStatisticPeakConnection fdry.1.1.4.26.1.1.6 Syntax: Integer	Read only	The highest number of connections the VIP has had at any time.

Bind Table

Virtual servers must be bound to real servers. The Bind table contains information about the bindings between the virtual servers (external or front-end servers visible to clients) and real or application servers (servers that serve the client requests).

Name, OID, and Syntax	Access	Description
snL4BindTable fdry.1.1.4.6.1	None	The Bind table.
snL4BindEntry fdry.1.1.4.6.1.1	None	An entry in the Bind table.
snL4BindIndex fdry.1.1.4.6.1.1.1 Syntax: Integer	Read only	The index for this entry. This must be unique and care must be taken to assign an unused index when creating an entry.
snL4BindVirtualServerName fdry.1.1.4.6.1.1.2 Syntax: L4ServerName	Read-write	Indicates the name of the virtual server. Valid values: 1 – 32 octets
snL4BindVirtualPortNumber fdry.1.1.4.6.1.1.3 Syntax: Integer	Read-write	Specifies the TCP or UDP port number on the virtual server that will be bound to the real server. Valid values: 0 – 65535
snL4BindRealServerName fdry.1.1.4.6.1.1.4 Syntax: L4ServerName	Read-write	Indicates the name of the real server that has been configured on the ServerIron. Valid values: 1 – 32 octets
snL4BindRealPortNumber fdry.1.1.4.6.1.1.5 Syntax: Integer	Read-write	Specifies the TCP or UDP port number of the real server to which the virtual port is bound. Valid values: 0 – 65535

Name, OID, and Syntax	Access	Description
snL4BindRowStatus fdry.1.1.4.6.1.1.6 Syntax: Integer	Read-write	Controls the management of the table rows. The values that can be written are: • delete(3) – Delete the row • create(4) – Create a new row • modify(5) – Modify an existing row If the row exists, then a SET with a value of create(4) returns a "bad value" error. Deleted rows are removed from the table immediately. The following values can be returned on reads: • noSuch(0) – No such row • invalid(1) – Row is inoperative • valid(2) – Row exists and is valid

GSLB Site Remote ServerIron Configuration Table

Global Server Load Balancing (GSLB) enables a ServerIron to add intelligence to authoritative Domain Name Servers (DNSs) by serving as a proxy to the servers. As a DNS proxy, the GSLB ServerIron evaluates the server IP addresses in the replies from the DNS for which the ServerIron is a proxy. Based on the results of the evaluation, the GSLB ServerIron can change the order of the addresses in the reply so that the “best” host address for the client is first on the list.

The GSLB Site Remote ServerIron Configuration table contains the configuration of ServerIrons that act as DNS proxies to the clients. They also intercept the IP addresses replied by the DNS authoritative servers to select the best address for the requesting client.

Name, OID, and Syntax	Access	Description
snL4GslbSiteRemoteServerIronTable fdry.1.1.4.27.1	None	The GSLB Remote ServerIron Configuration Table.
snL4GslbSiteRemoteServerIronEntry fdry.1.1.4.27.1.1	None	An entry in the GSLB Remote ServerIron Configuration table.
snL4GslbSiteRemoteServerIronIP fdry.1.1.4.27.1.1.1 Syntax: IpAddress	Read only	Specifies the management IP address of the remote ServerIron in a site. This address must not be any of the configured VIPs.

Name, OID, and Syntax	Access	Description
snL4GslbSiteRemoteServerIronPreference fdry.1.1.4.27.1.1.2 Syntax: Integer	Read-write	Specifies the preference of a remote ServerIron. This metric is a numeric preference value, that is assigned to each site ServerIron. It is used to select that ServerIron if the previous metrics do not select a best site. The GSLB policy prefers the site ServerIron with the highest administrative preference. The preference allows to do the following. • Temporarily change the preference of a ServerIron site to accommodate changing network conditions. For example, if sites are offering proxy content service, the link between a site proxy server farm and the content origin may be highly congested, making that site less desirable. This factor is not visible to the ServerIrons and thus cannot be reflected in the other GSLB metrics. • Temporarily disqualify a site ServerIron from being selected, without otherwise changing the site configuration or the GSLB ServerIron configuration. For example, maintenance can be performed on the site ServerIron without making network changes. In this case, set the preference to 0. • A GSLB ServerIron can be biased, that is, it can be configured as a site ServerIron (for locally configured VIPs) to always favor itself as the best site. In this case, assign a preference of 255 to the site for the GSLB ServerIron itself, and assign a lower preference to the other site ServerIrons, or use the default (128) for those sites. The administrative preference is disabled by default, which means it is not included as one of the GSLB metrics. When this metric is enabled, the default administrative preference for sites is applied. It can be changed on an individual site basis." Valid values: 0 – 255 Default: 128

Monitor Groups

The monitor groups includes tables that control the periodic statistical sampling of data. Data is collected for real servers, virtual servers, real server ports, and virtual server ports. The data is then placed in the appropriate tables. Each entry in any of the tables is equal to one data sample. An entry identifies the sample's data source, polling period, and other information.

If the probe keeps track of the time of day when collecting data samples, it should take the first sample when the next hour begins.

The probe is encouraged to add two entries per monitored interface upon initialization. One entry should describe a short term polling period, the other, a long term polling period. Suggested intervals for the entries are 30 seconds for the short term polling period and 30 minutes for the long term period.

The monitor groups are presented in the following sections:

- "Real Server History Control Table" on page 20-37
- "Real Server History Group" on page 20-39
- "Real Server Port History Control Group" on page 20-41
- "Real Server Port History Group" on page 20-43

Real Server History Control Table

Real Server History Control Table contains objects that control the collection of data samples for real servers.

Name, OID, and Syntax	Access	Description
snL4RealServerHistoryControlTable fdry.1.1.4.28.1	None	The Real Server History Control Table
snL4RealServerHistoryControlEntry fdry.1.1.4.28.1.1	None	An entry in the Real Server History Control Table.
snL4RealServerHistoryControlIndex fdry.1.1.4.28.1.1.1 Syntax: Integer	Read only	An index that uniquely identifies an entry in this table. Each entry defines a set of samples at a particular interval for a real server on the ServerIron. Valid values: Up to 65535 entries.
snL4RealServerHistoryControlDataSource fdry.1.1.4.28.1.1.2 Syntax: Object Identifier	Read-write	This object identifies the source of the historical data that was collected for this entry. The source can be any real server on this ServerIron. It identifies a particular instance defined in the “snL4RealServerStatisticTable”. It may not be modified if the value of the “snL4RealServerHistoryControlStatus” object for this entry source is equal to valid(1).
snL4RealServerHistoryControlBucketsRequested fdry.1.1.4.28.1.1.3 Syntax: Integer	Read-write	The requested number of data samples that will be saved for this entry. The number of samples saved in the object “snL4RealServerHistoryControlBucketsGranted” should be close to the value of this object. If the value of this object is modified, then the value of the “snL4RealServerHistoryControlBucketsGranted” object will be adjusted according to the new value of this object. Valid values: 1 – 65535 Default: 50

Name, OID, and Syntax	Access	Description
snL4RealServerHistoryControlBucketsGranted fdry.1.1.4.28.1.1.4 Syntax: Integer	Read only	The number of data samples that was actually saved for this entry. If the value of the "snL4RealServerHistoryControlBucketsRequested" object is modified, then the actual number of samples saved by this object will be adjusted accordingly. If all the requested buckets are filled, a new bucket will be added to the table, and the oldest bucket for the entry will be deleted. If the value of this object changes to a value less than the current value, enough of the oldest entries will be deleted so that the number of buckets does not exceed the new value of this object. If the value of this object changes to a value greater than the current value, the number of buckets will increase but not exceed the new value of this object.
snL4RealServerHistoryControlInterval fdry.1.1.4.28.1.1.5 Syntax: Integer	Read-write	Shows the interval, in seconds, over which the data is sampled for each bucket. **NOTE:** A counter for a bucket may overflow without any indication; therefore, be sure to account for the overflow in all the counters you configure. Consider the minimum time it takes for a counter to overflow and set this object (snL4RealServerHistoryControlInterval) to a value less than the overflow interval. This is especially important for the "octets" counter in any data-source table. You cannot modify the value of this object if the value of this entry's "snL4RealServerHistoryControlStatus" object is equal to valid(1). Valid values: 1 – 3600 seconds Default: 1800 seconds
snL4RealServerHistoryControlOwner fdry.1.1.4.28.1.1.6 Syntax: Display string	Read-write	The administrator who owns or configured this entry.
snL4RealServerHistoryControlStatus fdry.1.1.4.28.1.1.7 Syntax: Integer	Read-write	The state of this entry: • valid(1) • createRequest(2) • underCreation(3) • invalid(4) – When the entry is set to this state, it will be deleted from the table.

Real Server History Group

The Real Server History Group table contains historical data samples that were collected for real servers.

Each counter in this table counts the same event as the counters used by the “snL4RealServerStatisticEntry”; however, the value of the counters in this table represents a cumulative sum of a sampling period.

Name, OID, and Syntax	Access	Description
snL4RealServerHistoryTable fdry.1.1.4.28.2	None	The Real Server History Group table.
snL4RealServerHistoryEntry fdry.1.1.4.28.2.1	None	An entry in the Real Server History Group table. An entry is a historical sample of statistics on a particular real server. This sample is associated with the “snL4RealServerHistoryControlEntry” object, which sets up the parameters for a regular collection of these samples.
snL4RealServerHistoryIndex fdry.1.1.4.28.2.1.1 Syntax: Integer	Read only	Shows the index entry as identified by the “snL4RealServerHistoryControlIndex”.
snL4RealServerHistorySampleIndex fdry.1.1.4.28.2.1.2 Syntax: Integer	Read only	An index that uniquely identifies this particular sample among all samples associated with the same entry. This index starts at 1 and increases by one as each new sample is taken. There can be up to 214,748,3647 samples.
snL4RealServerHistoryIntervalStart fdry.1.1.4.28.2.1.3 Syntax: Time ticks	Read only	The value of sysUpTime at the start of the interval used to measure data samples. If the probe keeps track of the time of day, set the data sampling to start at the beginning of the next hour. **NOTE:** Following this rule may require the probe to delay the collection of the first sample for an entry, since each sample must be of the same interval. Also, data for the sample that is currently being collected is not accessible in this table until the end of its interval.
snL4RealServerHistoryReceivePkts fdry.1.1.4.28.2.1.4 Syntax: Counter	Read only	Shows the number of packets the ServerIron has received from the real server.
snL4RealServerHistoryTransmitPkts fdry.1.1.4.28.2.1.5 Syntax: Counter	Read only	Shows the number of packets the ServerIron has sent to the real server.
snL4RealServerHistoryTotalConnections fdry.1.1.4.28.2.1.6 Syntax: Counter	Read only	Shows the total number of client connections on the real server. A connection consists of two sessions: the client-to-server session and the server-to-client session.

Name, OID, and Syntax	Access	Description
snL4RealServerHistoryCurConnections fdry.1.1.4.28.2.1.7 Syntax: Integer	Read only	Shows the number of client connections currently on the real server. A connection consists of two sessions: the client-to-server session and the server-to-client session.
snL4RealServerHistoryPeakConnections fdry.1.1.4.28.2.1.8 Syntax: Integer	Read only	Shows the highest number of client connections on the real server. A connection consists of two sessions: the client-to-server session and the server-to-client session.
snL4RealServerHistoryReassignments fdry.1.1.4.28.2.1.9 Syntax: Integer	Read only	Shows the number of times the ServerIron has reassigned the connection to another real server in the rotation because the real server that is in use has not responded to two TCP SYNs from the client.

Real Server Port History Control Group

Real Server Port History Control Table lists all the controls for collecting data samples for a real server port.

Name, OID, and Syntax	Access	Description
snL4RealServerPortHistoryControlTable fdry.1.1.4.28.3	None	Real Server Port History Control Table
snL4RealServerPortHistoryControlEntry fdry.1.1.4.28.3.1	None	An entry in the Real Server Port History Control Table.
snL4RealServerPortHistoryControlIndex fdry.1.1.4.28.3.1.1 Syntax: Integer	Read only	An index that uniquely identifies an entry in this table. Each entry defines a set of samples at a particular interval for a real server port on the ServerIron. Valid values: Up to 65535 entries.
snL4RealServerPortHistoryControlDataSource fdry.1.1.4.28.3.1.2 Syntax: Object Identifier	Read-write	This object identifies the source of the historical data that was collected for this entry. The source can be any real server port on this ServerIron. It identifies a particular instance defined in the “snL4RealServerStatisticTable”. It may not be modified if the value of the “snL4VirtualServerPortHistoryControlStatus” object for this entry source is equal to valid(1).
snL4RealServerPortHistoryControlBucketsRequested fdry.1.1.4.28.3.1.3 Syntax: Integer	Read-write	The requested number of data samples that will be saved for this entry. The number of actual samples saved in the “snL4RealServerPortHistoryControlBucketsGranted” object should be close to the value of this object. If the value of this object is modified, then the value of the “snL4RealServerPortHistoryControlBucketsGranted” object will be adjusted according to the new value of this object. Valid values: 1 – 65535 Default: 50

Name, OID, and Syntax	Access	Description
snL4RealServerPortHistoryControlBucketsGranted fdry.1.1.4.28.3.1.4 Syntax: Integer	Read only	The number of data samples that was actually saved for this entry. If the value of the "snL4RealServerPortHistoryControlBucketsRequested" object is modified, then the actual number of samples saved by this object will be adjusted accordingly. If all the requested buckets are filled, a new bucket will be added to the table, and the oldest bucket for the entry will be deleted. If the value of this object changes to a value less than the current value, enough of the oldest entries will be deleted so that the number of buckets does not exceed the new value of this object. If the value of this object changes to a value greater than the current value, the number of buckets will increase but will not exceed the new value of this object.
snL4RealServerPortHistoryControlInterval fdry.1.1.4.28.3.1.5 Syntax: Integer	Read-write	Shows the interval, in seconds, over which the data is sampled for each bucket. **NOTE:** A counter for a bucket may overflow without any indication; therefore, be sure to account for the overflow in all the counters you configure. Consider the minimum time it takes for a counter to overflow and set this object (snL4RealServerPortHistoryControlInterval) to a value less than the overflow interval. This is especially important for the "octets" counter in any data-source table. You cannot modify the value of this object if the value of this entry's "snL4RealServerPortHistoryControlStatus" object is equal to valid(1). Valid values: 1 – 3600 seconds Default: 1800 seconds
snL4RealServerPortHistoryControlOwner fdry.1.1.4.28.3.1.6 Syntax: Display string	Read-write	The administrator who owns or configured this entry.
snL4RealServerPortHistoryControlStatus fdry.1.1.4.28.3.1.7 Syntax: Integer	Read-write	The state of this entry: • valid(1) • createRequest(2) • underCreation(3) • invalid(4) – This entry will be deleted from the table if it is set to this state.

Real Server Port History Group

The Real Server Port History Group contains history data samples for each port on the real server.

Name, OID, and Syntax	Access	Description
snL4RealServerPortHistoryTable fdry.1.1.4.28.4	None	The Real Server Port History Group table.
snL4RealServerPortHistoryEntry fdry.1.1.4.28.4.1	None	An entry in the Real Server Port History Group table. An entry is a historical sample of statistics on a particular real server port. This sample is associated with the "snL4RealServerPortHistoryControlEntry" object, which sets up the parameters for the regular collection of these samples.
snL4RealServerPortHistoryIndex fdry.1.1.4.28.4.1.1 Syntax: Integer	Read only	Shows the index entry as identified by the "snL4RealServerPortHistoryControlIndex".
snL4RealServerPortHistorySampleIndex fdry.1.1.4.28.4.1.2 Syntax: Integer	Read only	An index that uniquely identifies this particular sample among all samples associated with the same entry. This index starts at 1 and increases by one as each new sample is taken. There can be up to 214,748,3647 samples.
snL4RealServerPortHistoryIntervalStart fdry.1.1.4.28.4.1.3 Syntax: Time ticks	Read only	The value of sysUpTime at the start of the interval used to measure data samples. If the probe keeps track of the time of day, set the data sampling to start at the beginning of the next hour. **NOTE:** Following this rule may require the probe to delay the collection of the first sample for an entry, since each sample must be of the same interval. Also, data for the sample that is currently being collected is not accessible in this table until the end of its interval.
snL4RealServerPortHistoryReceivePkts fdry.1.1.4.28.4.1.4 Syntax: Counter	Read only	Shows the number of packets the ServerIron has received from the real server.
snL4RealServerPortHistoryTransmitPkts fdry.1.1.4.28.4.1.5 Syntax: Counter	Read only	Shows the number of packets the ServerIron sent to the real server.
snL4RealServerPortHistoryTotalConnections fdry.1.1.4.28.4.1.6 Syntax: Counter	Read only	Shows the total number of client connections on the real server. A connection consists of two sessions: the client-to-server session and the server-to-client session.

Name, OID, and Syntax	Access	Description
snL4RealServerPortHistoryCurConnections fdry.1.1.4.28.4.1.7 Syntax: Integer	Read only	Shows the number of client connections currently on the real server. A connection consists of two sessions: the client-to-server session and the server-to-client session.
snL4RealServerPortHistoryPeakConnections fdry.1.1.4.28.4.1.8 Syntax: Integer	Read only	Shows the highest number of client connections on the real server. A connection consists of two sessions: the client-to-server session and the server-to-client session.
snL4RealServerPortHistoryResponseTime fdry.1.1.4.28.4.1.9 Syntax: Integer	Read only	Shows the round trip time for a response from a real server on this port.

Virtual Server History Control Group

The Real Server History Control Table contains objects that control the collection of data samples for virtual servers.

Name, OID, and Syntax	Access	Description
snL4VirtualServerHistoryControlTable fdry.1.1.4.28.5	None	The Virtual Server History Control Group Table.
snL4VirtualServerHistoryControlEntry fdry.1.1.4.28.5.1	None	An entry in the Virtual Server History Control Table.
snL4VirtualServerHistoryControlIndex fdry.1.1.4.28.5.1.1 Syntax: Integer	Read only	An index that uniquely identifies an entry in this table. Each entry defines a set of samples at a particular interval for a virtual server on the ServerIron. This object can have up to 65535 entries.
snL4VirtualServerHistoryControlDataSource fdry.1.1.4.28.5.1.2	Read-write	This object identifies the source of the historical data that was collected for this entry. The source can be any virtual server on this ServerIron. It identifies a particular instance defined in the “snL4VirtualServerStatisticTable”. It may not be modified if the value of the “snL4VirtualServerHistoryControlStatus” object for this entry source is equal to valid(1).

Name, OID, and Syntax	Access	Description
snL4VirtualServerHistoryControlBucketsRequested fdry.1.1.4.28.5.1.3 Syntax: Integer	Read-write	Indicates the requested number of data samples that will be saved for this entry. The number of samples saved in the object "snL4VirtualServerHistoryControlBucketsGranted" should be close to the value of this object. If the value of this object is modified, then the value of the "snL4VirtualServerHistoryControlBucketsGranted" object will be adjusted according to the new value of this object. Valid values: 1 – 65535 Default: 50
snL4VirtualServerHistoryControlBucketsGranted fdry.1.1.4.28.5.1.4 Syntax: Integer	Read only	The number of data samples that was actually saved for this entry. If the value of the "snL4VirtualServerHistoryControlBucketsRequested" object is modified, then the actual number of samples saved by this object will be adjusted accordingly. If all the requested buckets are filled, a new bucket will be added to the table, and the oldest bucket for the entry will be deleted. If the value of this object changes to a value less than the current value, enough of the oldest entries will be deleted so that the number of buckets does not exceed the new value of this object. If the value of this object changes to a value greater than the current value, the number of buckets will increase but not exceed the new value of this object.
snL4VirtualServerHistoryControlInterval fdry.1.1.4.28.5.1.5 Syntax: Integer	Read-write	Shows the interval, in seconds, over which the data is sampled for each bucket. **NOTE:** A counter for a bucket may overflow without any indication; therefore, be sure to account for the overflow in all the counters you configure. Consider the minimum time it takes for a counter to overflow and set this object (snL4VirtualServerHistoryControlInterval) to a value less than the overflow interval. This is especially important for the "octets" counter in any data-source table. You cannot modify the value of this object if the value of this entry's "snL4VirtualServerHistoryControlStatus" object is equal to valid(1). Valid values: 1 – 3600 seconds Default: 1800 seconds
snL4VirtualServerHistoryControlOwner fdry.1.1.4.28.5.1.6 Syntax: Display string	Read-write	The administrator who owns or configured this entry.

Name, OID, and Syntax	Access	Description
snL4VirtualServerHistoryControlStatus fdry.1.1.4.28.5.1.7 Syntax: Integer	Read-write	The state of this entry: • valid(1) • createRequest(2) • underCreation(3) • invalid(4) – This entry will be deleted from the table if it is changed to this state.

Virtual Server History Table

The Virtual Server History Group table contains historical data samples that were collected for virtual servers.

Each counter in this table identifies the same event as the counters used by the “snL4VirtualServerStatisticEntry”; however, the value of the counters in this table represents a cumulative sum of a sampling period.

Name, OID, and Syntax	Access	Description
snL4VirtualServerHistoryTable fdry.1.1.4.28.6	None	The Virtual Server History Table.
snL4VirtualServerHistoryEntry fdry.1.1.4.28.6.1	None	An entry in the Virtual Server History Group table. An entry is a historical sample of statistics on a particular virtual server. This sample is associated with the “snL4VirtualServerHistoryControlEntry” object, which sets up the parameters for a regular collection of these samples.
snL4VirtualServerHistoryIndex fdry.1.1.4.28.6.1.1 Syntax: Integer	Read only	Shows the index entry as identified by the “snL4VirtualServerHistoryControlIndex”.
snL4VirtualServerHistorySampleIndex fdry.1.1.4.28.6.1.2 Syntax: Integer	Read only	An index that uniquely identifies this particular sample among all samples associated with the same entry. This index starts at 1 and increases by one as each new sample is taken. There can be up to 214,748,3647 samples.
snL4VirtualServerHistoryIntervalStart fdry.1.1.4.28.6.1.3 Syntax: Time ticks	Read only	The value of sysUpTime at the start of the interval used to measure data samples. If the probe keeps track of the time of day, set the data sampling to start at the beginning of the next hour. **NOTE:** Following this rule may require the probe to delay the collection of the first sample for an entry, since each sample must be of the same interval. Also, data for the sample that is currently being collected is not accessible in this table until the end of its interval.
snL4VirtualServerHistoryReceivePkts fdry.1.1.4.28.6.1.4 Syntax: Counter	Read only	Shows the number of packets the ServerIron has received from the virtual server.

Name, OID, and Syntax	Access	Description
snL4VirtualServerHistoryTransmitPkts fdry.1.1.4.28.6.1.5 Syntax: Counter	Read only	Shows the number of packets the ServerIron sent to the virtual server.
snL4VirtualServerHistoryTotalConnections fdry.1.1.4.28.6.1.6 Syntax: Counter	Read only	Shows the total number of client connections on the virtual server. A connection consists of two sessions: the client-to-server session and the server-to-client session.
snL4VirtualServerHistoryCurConnections fdry.1.1.4.28.6.1.7 Syntax: Integer	Read only	Shows the number of client connections currently on the virtual server. A connection consists of two sessions: the client-to-server session and the server-to-client session.
snL4VirtualServerHistoryPeakConnections fdry.1.1.4.28.6.1.8 Syntax: Integer	Read only	Shows the highest number of client connections on the virtual server. A connection consists of two sessions: the client-to-server session and the server-to-client session.

Virtual Server Port History Control Table

The Virtual Server Port History Control Table lists all the controls for collecting data samples for a virtual server port.

Name, OID, and Syntax	Access	Description
snL4VirtualServerPortHistoryControlTable fdry.1.1.4.28.7	None	The Virtual Server Port History Control Table
snL4VirtualServerPortHistoryControlEntry fdry.1.1.4.28.7.1	None	An entry in the Virtual Server Port History Control Table.
snL4VirtualServerPortHistoryControlIndex fdry.1.1.4.28.7.1.1 Syntax: Integer	Read only	An index that uniquely identifies an entry in this table. Each entry defines a set of samples at a particular interval for a virtual server port on the ServerIron. This object can have up to 65535 entries.
snL4VirtualServerPortHistoryControlDataSource fdry.1.1.4.28.7.1.2 Syntax: Object Identifier	Read-write	This object identifies the source of the historical data that was collected for this entry. The source can be any virtual server port on this ServerIron. It identifies a particular instance defined in the “snL4VirtualServerStatisticTable”. It may not be modified if the value of the “snL4VirtualServerPortHistoryControlStatus” object for this entry source is equal to valid(1).

Name, OID, and Syntax	Access	Description
snL4VirtualServerPortHistoryControlBucketsRequested fdry.1.1.4.28.7.1.3 Syntax: Integer	Read-write	The requested number of data samples that will be saved for this entry. The number of actual samples saved in the "snL4VirtualServerPortHistoryControlBucketsGranted" object should be close to the value of this object. If the value of this object is modified, then the value of the "snL4VirtualServerPortHistoryControlBucketsGranted" object will be adjusted according to the new value of this object. Valid values: 1 – 65535 Default: 50
snL4VirtualServerPortHistoryControlBucketsGranted fdry.1.1.4.28.7.1.4 Syntax: Integer	Read only	The number of data samples that was actually saved for this entry. If the value of the "snL4VirtualServerPortHistoryControlBucketsRequested" object is modified, then the actual number of samples saved by this object will be adjusted accordingly. If all the requested buckets are filled, a new bucket will be added to the table, and the oldest bucket for the entry will be deleted. If the value of this object changes to a value less than the current value, enough of the oldest entries will be deleted so that the number of buckets does not exceed the new value of this object. If the value of this object changes to a value greater than the current value, the number of buckets will increase but will not exceed the new value of this object.
snL4VirtualServerPortHistoryControlInterval fdry.1.1.4.28.7.1.5 Syntax: Integer	Read-write	Shows the interval, in seconds, over which the data is sampled for each bucket. **NOTE:** A counter for a bucket may overflow without any indication; therefore, be sure to account for the overflow in all the counters you configure. Consider the minimum time it takes for a counter to overflow and set this object (snL4VirtualServerPortHistoryControlInterval) to a value less than the overflow interval. This is especially important for the "octets" counter in any data-source table. You cannot modify the value of this object if the value of this entry's "snL4VirtualServerPortHistoryControlStatus" object is equal to valid(1). Valid values: 1 – 3600 seconds Default: 1800 seconds
snL4VirtualServerPortHistoryControlOwner fdry.1.1.4.28.7.1.6 Syntax: Display string	Read-write	The administrator who owns or configured this entry.

Name, OID, and Syntax	Access	Description
snL4VirtualServerPortHistoryControlStatus fdry.1.1.4.28.7.1.7 Syntax: Integer	Read-write	The state of this entry: • valid(1) • createRequest(2) • underCreation(3) • invalid(4) – This entry will be deleted from the table if its state changes to this state.

Virtual Server Port History Table

The Virtual Server Port History Group contains history data samples for each port on the virtual server.

Name, OID, and Syntax	Access	Description
snL4VirtualServerPortHistoryTable fdry.1.1.4.28.8	None	The Virtual Server Port History Table.
snL4VirtualServerPortHistoryEntry fdry.1.1.4.28.8.1	None	An entry in the Virtual Server Port History Group table. An entry is a historical sample of statistics on a particular virtual server port. This sample is associated with the "snL4VirtualServerPortHistoryControlEntry" object, which sets up the parameters for a regular collection of these samples.
snL4VirtualServerPortHistoryIndex fdry.1.1.4.28.8.1.1 Syntax: Integer	Read only	Shows the index entry as identified by the "snL4VirtualServerPortHistoryControlIndex".
snL4VirtualServerPortHistorySampleIndex fdry.1.1.4.28.8.1.2 Syntax: Integer	Read only	An index that uniquely identifies this particular sample among all samples associated with the same entry. This index starts at 1 and increases by one as each new sample is taken. There can be up to 214,748,3647 samples.
snL4VirtualServerPortHistoryIntervalStart fdry.1.1.4.28.8.1.3 Syntax: Time ticks	Read only	The value of sysUpTime at the start of the interval used to measure data samples. If the probe keeps track of the time of day, set the data sampling to start at the beginning of the next hour. **NOTE:** Following this rule may require the probe to delay the collection of the first sample for an entry, since each sample must be of the same interval. Also, data for the sample that is currently being collected is not accessible in this table until the end of its interval.
snL4VirtualServerPortHistoryReceivePkts fdry.1.1.4.28.8.1.4 Syntax: Counter	Read only	Shows the number of packets the ServerIron has received from the virtual server port.

Name, OID, and Syntax	Access	Description
snL4VirtualServerPortHistoryTransmitPkts fdry.1.1.4.28.8.1.5 Syntax: Counter	Read only	Shows the number of packets the ServerIron sent to the virtual server.
snL4VirtualServerPortHistoryTotalConnections fdry.1.1.4.28.8.1.6 Syntax: Counter	Read only	Shows the total number of client connections on the virtual server. A connection consists of two sessions: the client-to-server session and the server-to-client session.
snL4VirtualServerPortHistoryCurConnections fdry.1.1.4.28.8.1.7 Syntax: Integer	Read only	Shows the number of client connections currently on the virtual server. A connection consists of two sessions: the client-to-server session and the server-to-client session.
snL4VirtualServerPortHistoryPeakConnections fdry.1.1.4.28.8.1.8 Syntax: Integer	Read only	Shows the highest number of client connections on the virtual server. A connection consists of two sessions: the client-to-server session and the server-to-client session.

Chapter 21
Traps and Objects to Enable Traps

The following sections comprise this chapter:

- "Objects to Enable Standard Traps" on page 21-1 presents the objects from the standard MIBs that enable SNMP traps.
- "Objects for Foundry Traps" on page 21-2 contains object to enable the SNMP traps that are proprietary to Foundry devices.
- "Standard Traps" on page 21-10 lists the standard SNMP traps that are supported in the MIB.
- "Foundry Traps" on page 21-12 details the SNMP traps in the Foundry MIB that are proprietary to Foundry devices.

Objects to Enable Standard Traps

The following objects from RFC 1213 are the standard objects supported in the Foundry MIB. They are used to set SNMP traps.

Name, OID, and Syntax	Access	Description
snmpInTraps 1.3.6.1.2.1.11.19	Read only	Shows the total number of SNMP trap PDUs that have been accepted and processed by the SNMP protocol.
snmpOutTraps 1.3.6.1.2.1.11.29	Read only	Shows the total number of SNMP trap PDUs that have been generated by the SNMP protocol.
snmpEnableAuthenTraps 1.3.6.1.2.1.11.30	Read-write	Indicates if the SNMP agent process is permitted to generate authentication failure traps. The value of this object overrides any configuration information. This objects provides a way to disable all authentication failure traps. **NOTE:** It is strongly recommended that this object be stored in the non-volatile memory so that it remains constant between re-initializations of the network management system.

Objects for Foundry Traps

The following sections present the objects used to enable the traps that are proprietary to Foundry devices:

Trap Information

The following objects provide general information on traps.

Name, OID, and Syntax	Access	Description
snAgTrpRcvrCurEntry fdry.1.1.2.1.16 Syntax: Integer	Read only	Shows the total number of entries that are currently in the Trap Receiver Table. There can be up to 255 entries.
snAgGblTrapMessage fdry.1.1.2.1.44 Syntax: Display string	Read only	Shows a generic trap message.

Trap Receiver Table

This table allows you to configure trap receivers.

Name, OID, and Syntax	Access	Description
snAgTrpRcvrTable fdry.1.1.2.3.1	None	The Trap Receiver Table
snAgTrpRcvrEntry fdry.1.1.2.3.1.1	None	A row in the Trap Receiver Table. The column "snAgTrpRcvrStatus" is used to create and delete rows in the table. Creation requires a SET PDU with objects snAgTrpRcvrIndex, snAgTrpRcvrIpAddr, snAgTrpRcvrComm and snAgTrpRcvrStatus.
snAgTrpRcvrIndex fdry.1.1.2.3.1.1.1 Syntax: Integer	Read only	Shows the index in the Trap Receiver Table. Valid values: 1 – 10
snAgTrpRcvrIpAddr fdry.1.1.2.3.1.1.2 Syntax: IpAddress	Read-write	Indicates the IP address of the SNMP manager that will receive the trap.

Name, OID, and Syntax	Access	Description
snAgTrpRcvrComm fdry.1.1.2.3.1.1.3 Syntax: Octet string	Read-write	Indicates the community string to use to access the trap receiver. This object can have up to 32 octets.
snAgTrpRcvrStatus fdry.1.1.2.3.1.1.4 Syntax: Integer	Read-write	Controls the management of the table rows. The values that can be written are: • ignore(5) – Do not send traps to this entry at this time • delete(3) – Delete the row. (See note below regarding deleting a trap receiver.) • create(4) – Create a new row If the row exists, then a SET with a value of create(5) returns error "badValue". Deleted are deleted immediately. The following values can be returned on reads: • other(1) – Some other case • valid(2) – Row exists and is valid • ignore(5) – Do not send traps to this entry at this time

NOTE: To delete a trap receiver, the agent needs the following varbinds in the setRequest PDU: snAgTrpRcvrIpAddr, snAgTrpRcvrComm, and snAgTrpRcvrStatus. The snAgTrpRcvrStatus object must be set to delete(3).

General Chassis and Agent Traps

The following objects enable or disable traps related to the device's power supply, fan, and interface links.

Name, OID, and Syntax	Access	Description
snChasEnablePwrSupplyTrap fdry.1.1.1.1.12 Syntax: Integer	Read-write	Indicates if the SNMP agent process has been enabled to generate power supply failure traps: • disabled(0) • enabled(1)
snChasEnableFanTrap fdry.1.1.1.1.16 Syntax: Integer	Read-write	For chassis devices only. Indicates if the SNMP agent process has been enabled to generate fan failure traps: • disabled(0) • enabled(1) Default: disabled(0)
snAgGblEnableColdStartTrap fdry.1.1.2.1.21 Syntax: Integer	Read-write	Indicates if the SNMP agent process has been enabled to generate cold start traps: • disabled(0) • enabled(1) Default: enabled(1)
snAgGblEnableLinkUpTrap fdry.1.1.2.1.22 Syntax: Integer	Read-write	Indicates if the SNMP agent process has been enabled to generate link up traps: • disabled(0) • enabled(1) Default: enabled(1)
snAgGblEnableLinkDownTrap fdry.1.1.2.1.23 Syntax: Integer	Read-write	Indicates if the SNMP agent process has been enabled to generate link down traps: • disabled(0) • enabled(1) Default: enabled(1)
snAgGblEnableModuleInsertedTrap fdry.1.1.2.1.42 Syntax: Integer	Read-write	Indicates if the SNMP agent process has been enabled to generate traps for hardware modules that have been inserted in the chassis: • disabled(0) • enabled(1) Default: enabled(1)

Name, OID, and Syntax	Access	Description
snAgGblEnableModuleRemovedTrap fdry.1.1.2.1.43 Syntax: Integer	Read-write	Indicates if the SNMP agent process has been enabled to generate traps for hardware modules that have been removed from the chassis: • disabled(0) • enabled(1) Default: enabled(1)
snChasEnableTempWarnTrap fdry.1.1.1.1.21 Syntax: Integer	Read-write	Indicates if the SNMP agent process has been enabled to generate temperature warning traps: • disabled(0) • enabled(1) Default: disabled(0)
snAgentEnableMgmtModRedunStateChangeTrap fdry.1.1.2.10.1.4 Syntax: Integer	Read-write	Indicates if the SNMP agent process has been enabled to generate management module redundancy state change traps: • disabled(0) • enabled(1) Default: enabled(1)
snAgTrapHoldTime fdry.1.1.2.1.58 Syntax: Integer	Read-write	The number of seconds that traps will be held during device initialization. Traps are buffered while the device initialized; they are sent once the device is back online.

Enable VRRP Traps

Name, OID, and Syntax	Access	Description
snVrrpIfStateChangeTrap fdry.1.2.12.1.2 Syntax: Integer	Read-write	Indicates if the SNMP agent process has been enabled to generate VRRP interface state change traps: • disabled(0) • enabled(1) Default: enabled(0)

Enable FSRP Traps

Name, OID, and Syntax	Access	Description
snFsrpIfStateChangeTrap fdry.1.2.7.1.2 Syntax: Integer	Read-write	Indicates if the SNMP agent process has been enabled to generate FSRP interface state change traps: • disabled(0) • enabled(1) Default: enabled(1)

Enable OSPF Trap Objects

The following are support objects for the OSPF traps.

Name, OID, and Syntax	Access	Description
snOspfSetTrap fdry.1.2.4.15.1 Syntax: Octet string	Read-write	Indicates if specific OSPF traps are enabled. This object contains four octets, serving as a bit map for the trap events defined by the OSPF traps. A value of 1 in the bit field indicates that the trap is enabled. The right-most bit (least significant) represents Trap 0.
snOspfConfigErrorType fdry.1.2.4.15.2 Syntax: Integer	Read only	Indicates the potential types of configuration conflicts used by the ospfConfigError and ospfConfigVirtError traps. • badVersion(1) • areaMismatch(2) • unknownNbmaNbr(3) – Router is eligible • unknownVirtualNbr(4) • authTypeMismatch(5) • authFailure(6) • netMaskMismatch(7) • helloIntervalMismatch(8) • deadIntervalMismatch(9) • optionMismatch(10)}
snOspfPacketType fdry.1.2.4.15.3 Syntax: Integer	Read only	Indicates the OSPF packet type in the trap. • hello(1) • dbDescript(2) • lsReq(3) • lsUpdate(4) • lsAck(5)}

Name, OID, and Syntax	Access	Description
snOspfPacketSrc fdry.1.2.4.15.4 Syntax: IpAddress	Read only	Show the IP address of an inbound packet that cannot be identified by a neighbor instance.
snOspfTrapsGenerationMode fdry.1.2.4.15.5 Syntax: Integer	Read-write	Indicates if this router has been enabled to generate OSPF traps. • disabled(0) – OSPF traps cannot be generated by this router, even if the object “snOspfSetTrap” is set to generate traps. • enabled(1) – OSPF traps can be generated by the router. This object provides global control on the generation of traps.

Enable Switch Group Traps

Name, OID, and Syntax	Access	Description
snSwEnableBridgeNewRootTrap fdry.1.1.3.1.25 Syntax: Integer	Read-write	Indicates If the SNMP agent process is enabled to generate bridge new root traps. • disabled(0) • enabled(1) Default: enabled(1)
snSwEnableBridgeTopoChangeTrap fdry.1.1.3.1.26 Syntax: Integer	Read-write	Indicates if the SNMP agent process has been enabled to generate bridge topology change traps: • disabled(0) • enabled(1) Default: enabled(1)
snSwEnableLockedAddrViolationTrap fdry.1.1.3.1.27 Syntax: Integer	Read-write	Indicates if the SNMP agent process has been enabled to generate locked address violation traps: • disabled(0) • enabled(1) Default: enabled(1)
snSwEnableBridgeNewRootTrap fdry.1.1.3.1.25 Syntax: Integer	Read-write	Indicates whether the SNMP agent process is permitted to generate bridge new root traps • disabled(0) • enabled(1) Default: enabled(1)

Name, OID, and Syntax	Access	Description
snSwEnableBridgeTopoChangeTrap fdry.1.1.3.1.26 Syntax: Integer	Read-write	Indicates whether the SNMP agent process is permitted to generate bridge topology change traps. • disabled(0) • enabled(1) Default: enabled(1)
snSwEnableLockedAddrViolationTrap fdry.1.1.3.1.27 Syntax: Integer	Read-write	Indicates whether the SNMP agent process is permitted to generate locked address violation traps. • disabled(0) • enabled(1) Default: enabled(1)

Objects to Enable Layer 4 Traps

The following objects enable or disable traps for Layer 4 functionalities.

Name, OID, and Syntax	Access	Description
snL4EnableMaxSessionLimitReachedTrap fdry.1.1.4.1.30 Syntax: Integer	Read-write	Indicates if this device has been enabled to generate traps if the maximum number of connections has been reached: • disabled(0) • enabled(1)
snL4EnableTcpSynLimitReachedTrap fdry.1.1.4.1.31 Syntax: Integer	Read-write	Indicates if this device has been enabled to generate traps if the maximum number of TCP SYN has been reached: • disabled(0) • enabled(1)
snL4EnableRealServerUpTrap fdry.1.1.4.1.32 Syntax: Integer	Read-write	Indicates if this device has been enabled to generate traps when the real server is up: • disabled(0) • enabled(1)
snL4EnableRealServerDownTrap fdry.1.1.4.1.33 Syntax: Integer	Read-write	Indicates if this device has been enabled to generate traps when the real server is down: • disabled(0) • enabled(1)
snL4EnableRealServerPortUpTrap fdry.1.1.4.1.34 Syntax: Integer	Read-write	Indicates if this device has been enabled to generate traps when the real server TCP port is up: • disabled(0) • enabled(1)

Name, OID, and Syntax	Access	Description
snL4EnableRealServerPortDownTrap fdry.1.1.4.1.35 Syntax: Integer	Read-write	Indicates if this device has been enabled to generate traps when the real server TCP port is down: • disabled(0) • enabled(1)
snL4EnableRealServerMaxConnLimitReachedTrap fdry.1.1.4.1.36 Syntax: Integer	Read-write	Indicates if this device has been enabled to generate traps when the real server reaches its maximum number of connections: • disabled(0) • enabled(1)
snL4EnableBecomeStandbyTrap fdry.1.1.4.1.37 Syntax: Integer	Read-write	Indicates if this device has been enabled to generate traps when the Server Load Balancing switch changes its state from active to standby: • disabled(0) • enabled(1)
snL4EnableBecomeActiveTrap fdry.1.1.4.1.38 Syntax: Integer	Read-write	Indicates if this device has been enabled to generate traps when the Server Load Balancing switch changes its state from standby to active: • disabled(0) • enabled(1)
snL4EnableGslbHealthCheckIpUpTrap fdry.1.1.4.1.43 Syntax: Integer	Read-write	Indicates if this device has been enabled to generate traps when an application port in a domain on the site IP address passes its Layer 4 TCP or UDP health check, resulting in a status change to UP: • disabled(0) • enabled(1)
snL4EnableGslbHealthCheckIpDownTrap fdry.1.1.4.1.44 Syntax: Integer	Read-write	Indicates if this device has been enabled to generate traps whenever the GSLB determines that the IP address belonging to a domain name for which the ServerIron is providing GSLB is DOWN: • disabled(0) • enabled(1)
snL4EnableGslbHealthCheckIpPortUpTrap fdry.1.1.4.1.45 Syntax: Integer	Read-write	Indicates if this device has been enabled to generate traps when an application port in a domain on the site IP address passes its Layer 4 TCP or UDP health check, resulting in a status change to UP: • disabled(0) • enabled(1)

Name, OID, and Syntax	Access	Description
snL4EnableGslbHealthCheckIpPortDownTrap fdry.1.1.4.1.46 Syntax: Integer	Read-write	Indicates if this device has been enabled to generate traps when an application port in a domain on the site IP address fails its Layer 4 TCP or UDP health check, resulting in a status change to DOWN: • disabled(0) • enabled(1)
snL4EnableGslbRemoteGslbSiDownTrap fdry.1.1.4.1.47 Syntax: Integer	Read-write	Indicates if this device has been enabled to generate traps when the connection from this site to the remote GSLB ServerIron is DOWN: • disabled(0) • enabled(1)
snL4EnableGslbRemoteGslbSiUpTrap fdry.1.1.4.1.48 Syntax: Integer	Read-write	Indicates if this device has been enabled to generate traps when the connection from this site to the remote GSLB ServerIron is UP: • disabled(0) • enabled(1)
snL4EnableGslbRemoteSiDownTrap fdry.1.1.4.1.49 Syntax: Integer	Read-write	Indicates if this device has been enabled to generate traps when the GSLB connection from this GSLB to the remote ServerIron is DOWN: • disabled(0) • enabled(1)
snL4EnableGslbRemoteSiUpTrap fdry.1.1.4.1.50 Syntax: Integer	Read-write	Indicates if this device has been enabled to generate traps when the GSLB connection from this GSLB to remote the ServerIron is UP: • disabled(0) • enabled(1)

Standard Traps

Standard traps that are supported in the Foundry devices are presented in the following sections:

- “System Status Traps” on page 21-10
- “Traps for Spanning Tree Protocol” on page 21-11
- “Traps for Alarms” on page 21-12

System Status Traps

Foundry supports the following traps from RFC 1215:

Trap Name and Number	Varbind	Description
coldStart(0)	(None)	Indicates that the sending protocol entity is reinitializing itself: the agent's configuration or the protocol entity implementation may be altered.

Trap Name and Number	Varbind	Description
warmStart(1)	(None)	Indicates that the sending protocol entity is reinitializing itself; however, the agent configuration nor the protocol entity implementation is not altered.
linkDown(2)	ifIndex(1) ifDescr(2)	Indicates that the sending protocol entity recognizes a failure in one of the communication links represented in the agent's configuration.
linkUp(3)	ifIndex(1) ifDescr(2)	Indicates that the sending protocol entity recognizes that one of the communication links represented in the agent's configuration has come UP.

NOTE: Regarding linkUp and linkDown traps:

- Release 07.1.x. supports a maximum of 32 ports per module; therefore the ifIndex for this release ranges from 1 – 32 for Slot 1, 33 – 64 for Slot 2 and so on.
- Release 07.2.x supports a maximum of 64 ports per module; therefore, the ifIndex for the release ranges from 1 – 64 for Slot 1, 65 – 128 for Slot2 and so on.

Thus for Slot 2/Port 1, the value of the ifIndex of the port in Release 07.1.x is 33; whereas, in Release 07.2.x, it is 65.

authenticationFailure(40)	(none)	Indicates that the sending protocol entity is the addressee of a protocol message that is not properly authenticated. While implementations of the SNMP must be capable of generating this trap, they must also be capable of suppressing the emission of such traps via an implementation-specific mechanism.

Traps for Spanning Tree Protocol

Foundry supports for the following traps for Spanning Tree Protocol from RFC 1493.

:

Trap Name and Number	Description
newRoot	Indicates that the sending agent has become the new root of the Spanning Tree. The trap is sent by a bridge soon after its election as the new root, for example, upon expiration of the Topology Change Timer immediately subsequent to its election.
topologyChange	Is sent by a bridge when any of its configured ports transitions from the Learning state to the Forwarding state, or from the Forwarding state to the Blocking state. The trap is not sent if a newRoot trap is sent for the same transition.

Traps for Alarms

Foundry supports the following traps for alarms from RFC 1757:

Name, OID, and Syntax	Description
alarmRisingThreshold	A threshold for the sampled statistic. This object generates an event when the current sampled value is greater than or equal to this threshold, and the value at the last sampling interval was less than this threshold. This object also generates an event if the first sample after this entry becomes valid is greater than or equal to this threshold and the associated alarmStartupAlarm is equal to risingAlarm(1) or risingOrFallingAlarm(3). After a rising event is generated, another such event will not be generated until the sampled value falls below this threshold and reaches the alarmFallingThreshold.
alarmFallingThreshold	A threshold for the sampled statistic. This object generates an event when the current sampled value is less than or equal to this threshold, and the value at the last sampling interval was greater than this threshold. This object also generates an event if the first sample after this entry becomes valid is less than or equal to this threshold and the associated alarmStartupAlarm is equal to fallingAlarm(2) or risingOrFallingAlarm(3). After a falling event is generated, another such event will not be generated until the sampled value rises above this threshold and reaches the alarmRisingThreshold.

Foundry Traps

This section presents the objects to enable traps in Foundry devices and the traps generated for the feature. The information can be found in the following sections:

- “General Traps” on page 21-13
- “FSRP Trap” on page 21-16
- “VRRP Trap” on page 21-16
- “OSPF Traps” on page 21-17
- “Layer 4 Traps” on page 21-22
- “ICMP Traps” on page 21-25
- “TCP Trap” on page 21-26
- “MPLS Traps” on page 21-26
- “BGP Traps” on page 21-27

NOTE: The Traps in the Foundry MIBs include the following lines in their description:

```
--#TYPE "Foundry Trap: Power Supply Failure"
--#SUMMARY "Power supply fails, error status %d."
--#ARGUMENTS { 0 }
--#SEVERITY MINOR
--#STATE OPERATIONAL
```


These lines are used by the HP OpenView network management system.

General Traps

The table below lists the general traps generated by Foundry devices.

Trap Name and Number	Varbinds	Severity	Description and Trap Message
snTrapChasPwrSupply (1)	snChasPwrSupplyStatus	Minor	The power supply failed or is not operating normally. The value is a packed bit string; the power supply statuses are encoded into four bits (a nibble). The following shows the meaning of each bit: (bit 0 is the least significant bit). **Bit position** — **Meaning** 4 to 31 — Reserved 3 — Power Supply 2 DC (0=bad, 1=good). 2 — Power Supply 1 DC (0=bad, 1=good). 1 — Power Supply 2 present status (0=present, 1=not-present). 0 — Power Supply 1 present status (0=present, 1=not-present). **Sample Trap Message:** `Power supply fails, error status <snChasPwrSupplyStatus>`
snTrapLockedAddressViolation(2)	snSwViolatorPortNumber snSwViolatorMacAddress	Minor	The number of source MAC addresses received from a port is greater than the maximum number of addresses configured for that port. **Sample Trap Message:** `Lock address violation on Port <snSwViolatorPortNumber> with MAC Address <snSwViolatorMacAddress>`
snTrapLockedAddressViolation2(32)	snAgGblTrapMessage	Minor	The number of source MAC addresses received from a port is greater than the maximum number of addresses configured for that port. **Sample Trap Message:** `Locked address violation at interface Ethernet <port>, address <mac>`

Trap Name and Number	Varbinds	Severity	Description and Trap Message
snTrapModuleInserted (28)	snAgentBrdIndex	Informational	A module was inserted into the chassis while the system is running. **Sample Trap Message:** `Module <snAgentBrdIndex> was inserted to the chassis during system running`
snTrapModuleRemoved(29)	snAgentBrdIndex	Informational	A module was removed from the chassis while the system is running. **Sample Trap Message:** `Module <snAgentBrdIndex> was removed from the chassis during system running`
snTrapChasPwrSupplyF ailed(30)	snChasPwrSupplyI ndex snChasPwrSupplyD escription	Minor	A power supply in the device failed. **Sample Trap Message:** `Power supply <snChasPwrSupplyIndex> <snChasPwrSupplyDescription>)fa iled`
snTrapChasFanFailed (31)	snChasFanIndex snChasFanDescript ion	Minor	A fan in the device failed. **Sample Trap Message:** `Fan <snChasFanIndex> (<snChasFanDescription>) failed`
snTrapMgmtModuleRed unStateChange(35)	snAgGblTrapMessa ge	Warning	The management module changed its redundancy state. **Sample Trap Message:** `Management module at slot <slot-num> state changed from <old-state> to <new-state>`
snTrapTemperatureWarn ing(36)	snAgGblTrapMessa ge	Critical	The actual temperature reading is above the warning temperature threshold. **Sample Trap Message:** `Temperature <actual-temp> C degrees, warning level <warning-temp> C degrees, shutdown level <shutdown-temp> C degrees`
snTrapAccessListDeny (37)	snAgGblTrapMessa ge	Warning	A packet was denied by an access list. **Sample Trap Message (for RIP):** `rip filter list <id> in rip denied <IP>, <n> event(s)`

Trap Name and Number	Varbinds	Severity	Description and Trap Message
snTrapMacFilterDeny (38)	snAgGblTrapMessage	Warning	A packet was denied by a MAC address filter. **Sample Trap Message** `mac filter group denied packets on port <n> src macaddr <mac>, <n> packets`
snTrapDuplicateIp(56)		Major	A duplicate IP address was detected. **Sample Trap Message:** `Duplicate IP address detect.`
snTrapNoBmFreeQueue (61)		Warning	There are no free queues available in the buffer manager. **Sample Trap Message:** `Slot <slot-num> {M1|M2|M3|M4|M5|MiniG} Free Queue decreases less than the desirable values 3 consecutive times.`
snTrapSmcDmaDrop (62)		Informational	An SMC DMA packet has been dropped. **Sample Trap Message:** `Slot <slot-num> SMC <dma-id> DMA Drop Counter is <drop-count>.`
snTrapSmcBpDrop(63)		Informational	An SMC BackPlane packet has been dropped. **Sample Trap Message:** `Slot <slot-num> BP <dma-id> DMA Drop Counter is <drop-count>.`
snTrapBmWriteSeqDrop (64)		Informational	A BM write-sequence packet has been dropped. **Sample Trap Message:** `Slot <slot-num> Write Sequence Drop <drop-count> within 30 seconds.`
snTrapRunningConfigChanged(73)	snAgGblTrapMessage	Informational	The running configuration has been changed. **Sample Trap Message:** `Running-config was changed by user1 from telnet client 192.168.2.129.`

Trap Name and Number	Varbinds	Severity	Description and Trap Message
snTrapStartupConfigChanged(74)	snAgGblTrapMessage	Informational	The start-up configuration has been changed. **Sample Trap Message:** `Startup-config was changed from console.`
snTrapUserLogin(75)	snAgGblTrapMessage	Informational	A user logged in to a device. **Sample Trap Message:** `user1 login to USER EXEC mode.`
snTrapUserLogout(76)	snAgGblTrapMessage	Informational	A user logged out of a device. **Sample Trap Message:** `user1 logout from USER EXEC mode.`

VRRP Trap

Trap Name and Number	Varbinds	Severity	Description and Trap Message
snTrapVrrpIfStateChange(34)	snAgGblTrapMessage	Warning	A VRRP routing device changed state from master to backup or vice-versa. **Sample Trap Message:** `VRRP intf state changed, intf <port>, vrid <id>, state <new-state>.`

FSRP Trap

Trap Name and Number	Varbinds	Severity	Description and Trap Message
snTrapFsrpIfStateChange(33)	snAgGblTrapMessage	Informational	An FSRP routing device changed state from active to standby or vice-versa. **Sample Trap Message:** `SRP_FSRP intf state changed, intf <port>, addr <ip>, state <new-state>.`

OSPF Traps

Trap Name and Number	Varbinds	Severity	Description and Trap Message
snTrapOspfIfStateChange(3)	snOspfRouterId (The originator of the trap) snOspfIfStatusIpAddress snOspfIfStatusState (The new state)	Informational	There has been a change in the state of a non-virtual OSPF interface. This trap should be generated when the interface state regresses (e.g., goes from Dr to Down) or progresses to a terminal state (i.e., Point-to-Point, DR Other, Dr, or Backup). **Sample Trap Message:** `OSPF router id <snOspfRouterId>, interface <snOspfIfStatusIpAddress> state changed to <snOspfIfStatusState>.`
snTrapOspfVirtIfStateChange(4)	snOspfRouterId (The originator of the trap) snOspfVirtIfStatusAreaID snOspfVirtIfStatusNeighbor snOspfVirtIfStatusState (The new state)	Informational	There has been a change in the state of an OSPF virtual interface. This trap should be generated when the interface state regresses (e.g., goes from Point-to-Point to Down) or progresses to a terminal state (i.e., Point-to-Point). **Sample Trap Message:** `OSPF router id <snOspfRouterId>, virtual interface area id <snOspfVirtIfStatusAreaID> neighbor <snOspfVirtIfStatusNeighbor> state changed to <snOspfVirtIfStatusState>.`
snOspfNbrStateChange(5)	snOspfRouterId (The originator of the trap) snOspfNbrIpAddr snOspfNbrRtrId snOspfNbrState (The new state)	Informational	There has been a change in the state of a non-virtual OSPF neighbor. This trap should be generated when the neighbor state regresses (e.g., goes from Attempt or Full to 1-Way or Down) or progresses to a terminal state (e.g., 2-Way or Full). When an neighbor transitions from or to Full on non-broadcast multi-access and broadcast networks, the trap should be generated by the designated router. A designated router transitioning to Down will be noted by ospfIfStateChange. **Sample Trap Message:** `OSPF router id <snOspfRouterId> neighbor area <snOspfNbrIpAddr>,neighbor router id <snOspfNbrRtrId> state changed to <snOspfNbrState>.`

Trap Name and Number	Varbinds	Severity	Description and Trap Message
snOspfVirtNbrStateChange(6)	snOspfRouterId (The originator of the trap) snOspfVirtNbrArea snOspfVirtNbrRtrId snOspfVirtNbrState (The new state)	Informational	There has been a change in the state of an OSPF virtual neighbor. This trap should be generated when the neighbor state regresses (e.g., goes from Attempt or Full to 1-Way or Down) or progresses to a terminal state (e.g., Full). **Sample Trap Message:** `OSPF router id <snOspfRouterId> virtual neighbor area <snOspfVirtNbrArea>, virtual neighbor router id <snOspfVirtNbrRtrId> state changed to <snOspfVirtNbrState>.`
snOspfIfConfigError(7)	snOspfRouterId (The originator of the trap) snOspfIfStatusIpAddress snOspfPacketSrc (The source IP address) snOspfConfigErrorType (Type of error) snOspfPacketType	Major	A packet has been received on a non-virtual interface from a router whose configuration parameters conflict with this router's confi guration parameters. **NOTE:** The event optionMismatch should cause a trap only if it prevents an adjacency from forming. **Trap Message:** `Configuration error type <snOspfConfigErrorType> with packet type <snOspfPacketType> has been received on interface <snOspfIfStatusIpAddress>, router id <snOspfRouterId> from <snOspfPacketSrc>.`
snOspfVirtIfConfigError (8)	snOspfRouterId (The originator of the trap) snOspfVirtIfStatusAreaID snOspfVirtIfStatusNeighbor snOspfConfigErrorType (Type of error) snOspfPacketType	Major	A packet has been received on a virtual interface from a router whose configuration parameters conflict with this router's configuration parameters. **NOTE:** The event optionMismatch should cause a trap only if it prevents an adjacency from forming. **Trap Message:** `Configuration error type <snOspfConfigErrorType> with packet type <snOspfPacketType> has been received on virtual interface area id <snOspfVirtIfStatusAreaID>, router id <snOspfRouterId> from neighbor <snOspfVirtIfStatusNeighbor>.`

Trap Name and Number	Varbinds	Severity	Description and Trap Message
snOspfIfAuthFailure(9)	snOspfRouterId (The originator of the trap) snOspfIfStatusIpAddress snOspfPacketSrc (The source IP address) snOspfConfigErrorType (authTypeMismatch or authFailure snOspfPacketType	Minor	A packet has been received on a non-virtual interface from a router whose authentication key or authentication type conflicts with this router's authentication key or authentication type. **Trap Message:** `OSPF authentication failed. Router ID <snOspfRouterId>, Interface <snOspfIfStatusIpAddress>, packet src <snOspfPacketSrc>, error type <snOspfConfigErrorType> and packet type <snOspfPacketType>.`
snOspfVirtIfAuthFailure (10)	snOspfRouterId (The originator of the trap) snOspfVirtIfStatusAreaID snOspfVirtIfStatusNeighbor snOspfConfigErrorType (authTypeMismatch or authFailure) snOspfPacketType	Minor	A packet has been received on a virtual interface from a router whose authentication key or authentication type conflicts with this router's authentication key or authentication type. **Trap Message:** `OSPF authentication failed. Router ID <snOspfRouterId>, virtual interface <snOspfVirtIfStatusAreaID>, Neigbor <snOspfVirtIfStatusNeighbor>, Error type <snOspfConfigErrorType> and packet type <snOspfPacketType>.`
snOspfIfRxBadPacket (11)	snOspfRouterId (The originator of the trap) snOspfIfStatusIpAddress snOspfPacketSrc (The source IP address) snOspfPacketType	Warning	An OSPF packet has been received on a non-virtual interface that cannot be parsed. **Trap Message:** `OSPF Router Id <snOspfRouterId>, interface <snOspfIfStatusIpAddress> receive bad packet (type <snOspfPacketType>) from <snOspfPacketSrc>.`

Trap Name and Number	Varbinds	Severity	Description and Trap Message
snOspfVirtIfRxBadPacket(12)	snOspfRouterId (The originator of the trap) snOspfVirtIfStatusAreaID snOspfVirtIfStatusNeighbor snOspfPacketType	Warning	An OSPF packet has been received on a virtual interface that cannot be parsed. **Trap Message:** `OSPF router id <snOspfRouterId>, virtual interface <snOspfVirtIfStatusAreaID> received bad packet (type <snOspfPacketType>) from neighbor <snOspfVirtIfStatusNeighbor>.`
snOspfTxRetransmit(13)	snOspfRouterId (The originator of the trap) snOspfIfStatusIpAddress snOspfNbrRtrId (Destination) snOspfPacketType snOspfLsdbType snOspfLsdbLsId snOspfLsdbRouterId	Warning	An OSPF packet has been retransmitted on a non- virtual interface. All packets that may be re- transmitted are associated with an LSDB entry. The LS type, LS ID, and Router ID are used to identify the LSDB entry. **Trap Message:** `OSPF router id <snOspfRouterId> interface <snOspfIfStatusIpAddress> retransmitted packet type <snOspfPacketType>,LSDB type <snOspfLsdbType>, LSDB LS ID <snOspfLsdbLsId> and LSDB router id <snOspfLsdbRouterId> to Neighbor router id <snOspfNbrRtrId>.`
ospfVirtIfTxRetransmit(14)	snOspfRouterId (The originator of the trap) snOspfVirtIfStatusAreaID snOspfVirtIfStatusNeighbor snOspfPacketType snOspfLsdbType snOspfLsdbLsId snOspfLsdbRouterId	Warning	An OSPF packet has been retransmitted on a virtual interface. All packets that may be retransmitted are associated with an LSDB entry. The LS type, LS ID, and Router ID are used to identify the LSDB entry. **Trap Message:** `OSPF router id <snOspfRouterId>, virtual interface area id snOspfVirtIfStatusAreaID> retransmitted packet type <snOspfPacketType>,LSDB type <snOspfLsdbType>, LSDB LS ID <snOspfLsdbLsId> and LSDB router id <snOspfLsdbRouterId> to Neighbor <snOspfVirtIfStatusNeighbor>.`

Trap Name and Number	Varbinds	Severity	Description and Trap Message
snOspfOriginateLsa(15)	snOspfRouterId (The originator of the trap) snOspfLsdbAreaId (0.0.0.0 for AS Externals) snOspfLsdbType snOspfLsdbLsId snOspfLsdbRouterId	Informational	This router originated a new LSA. This trap should not be invoked for simple refreshes of LSAs (which happens every 30 minutes), but instead will only be invoked when an LSA is (re-originated due to a topology change. Additionally, this trap does not include LSAs that are being flushed because they have reached MaxAge **Trap Message:** `New LSA (area id <snOspfLsdbAreaId>, type <snOspfLsdbType>, LS Id <snOspfLsdbLsId> and router id <snOspfLsdbRouterId>) has been originated by router id <snOspfRouterId>.`
snOspfMaxAgeLsa(16)	snOspfRouterId (The originator of the trap) snOspfLsdbAreaId (0.0.0.0 for AS Externals) snOspfLsdbType snOspfLsdbLsId snOspfLsdbRouterId	Warning	One of the LSA in the router's link-state database has aged to MaxAge. **Trap Message:** `The LSA (area id <snOspfLsdbAreaId>, type <snOspfLsdbType>, LS Id <snOspfLsdbLsId> and router id <snOspfLsdbRouterId>) in router id <snOspfRouterId> link-state database has aged to maximum age.`
snOspfLsdbOverflow (17)	snOspfRouterId (The originator of the trap) snOspfExtLsdbLimit	Warning	The number of LSAs in the router's link-state database has exceeded the ospfExtLsdbLimit. **Trap Message:** `The number of LSAs in the OSPF router id <snOspfRouterId> link-state database has exceeded <snOspfExtLsdbLimit>.`
snOspfLsdbApproachingOverflow(18)	snOspfRouterId (The originator of the trap) snOspfExtLsdbLimit	Informational	The number of LSAs in the router's link-state database has exceeded ninety percent of the ospfExtLsdbLimit. **Trap Message:** `The number of LSAs in the OSPF router id <snOspfRouterId> link-state database has exceeded ninety percent of <snOspfExtLsdbLimit>.`

Layer 4 Traps

The following table presents the traps that can be generated for Layer 4 functionalities.

Trap Name and Number	Varbinds	Severity	Description and Trap Message
snTrapL4MaxSessionLimitReached(19)	snL4MaxSessionLimit	Warning	The maximum number of connections has been reached. **Trap Message:** `SLB maximum number of connections <snL4MaxSessionLimit> has been reached.`
snTrapL4TcpSynLimitReached(20)	snL4TcpSynLimit	Warning	The TCP SYN limits have been reached. **Trap Message:** `SLB TCP Syn limits <snL4TcpSynLimit> have been reached.`
snTrapL4RealServerUp(21)	snL4TrapRealServerIP snL4TrapRealServerName	Informational	The load balancing real server is up. **Trap Message:** `SLB real server <snL4TrapRealServerIP> <snL4TrapRealServerName> is up.`
snTrapL4RealServerDown(22)	snL4TrapRealServerIP snL4TrapRealServerName	Informational	The load balancing real server is down. **Trap Message:** `SLB real server <snL4TrapRealServerIP> <snL4TrapRealServerName> is down.`
snTrapL4RealServerPortUp(23)	snL4TrapRealServerIP snL4TrapRealServerName snL4TrapRealServerPort	Informational	The load balancing real server TCP port is up. **Trap Message:** `SLB real server port <snL4TrapRealServerIP> <snL4TrapRealServerName> <snL4TrapRealServerPort> is up`
snTrapL4RealServerPortDown(24)	snL4TrapRealServerIP snL4TrapRealServerName snL4TrapRealServerPort	Informational	The load balancing real server TCP port is down. **Trap Message:** `SLB real server port <snL4TrapRealServerIP> <snL4TrapRealServerName> <snL4TrapRealServerPort> is.`

Trap Name and Number	Varbinds	Severity	Description and Trap Message
snTrapL4RealServerMaxConnectionLimitReached(25)	snL4TrapRealServerIP snL4TrapRealServerName snL4TrapRealServerCurConnections	Warning	The real server reached its maximum number of connections. **Trap Message:** `SLB real server <snL4TrapRealServerIP> <snL4TrapRealServerName> maximum connection <snL4TrapRealServerCurConnections> has been reached.`
snTrapL4RealServerResponseTimeLowerLimit(67)	snAgGblTrapMessage	Warning	The real server average response time exceeded the lower threshold. **Trap Message:** `Port <port-num> on server <server-name>: <IP>: Avg response time <num> has exceeded lower threshold`
snTrapL4RealServerResponseTimeUpperLimit(68)	snAgGblTrapMessage	Warning	The real server average response time exceeded the upper threshold. **Trap Message:** `Port <port-num> on server <server-name>: <IP>: Avg response time <num> has exceeded upper threshold; Bringing down the port...`
snTrapL4BecomeStandby(26)		Warning	The Server Load Balancing switch changed its state from active to standby. **Trap Message:** `SLB changes state from active to standby.`
snTrapL4BecomeActive(27)		Warning	The Server Load Balancing switch changed its state from standby to active. **Trap Message:** `SLB changes state from standby to active.`
snTrapL4GslbRemoteUp(39)	snAgGblTrapMessage	Warning	The connection to the remote ServerIron is up. **Trap Message:** `L4 gslb connection to site <name> SI <agent IP> <SI name> is up`

Trap Name and Number	Varbinds	Severity	Description and Trap Message
snTrapL4GslbRemoteDown(40)	snAgGblTrapMessage	Warning	The connection to the remote ServerIron is down. **Trap Message:** `L4 gslb connection to site <name> SI <agent IP> <SI name> is down`
snTrapL4GslbRemoteControllerUp(41)	snAgGblTrapMessage	Warning	The connection to the GSLB ServerIron is up. **Trap Message:** `L4 gslb connection to gslb SI <IP> is up`
snTrapL4GslbRemoteControllerDown(42	snAgGblTrapMessage	Warning	The connection to the GSLB ServerIron is down. **Trap Message:** `L4 gslb connection to gslb SI <IP> is down`
snTrapL4GslbHealthCheckIpUp(43)	snAgGblTrapMessage	Warning	The GSLB health check for an address changed from the down to the active state. **Trap Message:** `L4 gslb health-check <IP> of <subname>.<zonename> status changed to up`
snTrapL4GslbHealthCheckIpDown(44)	snAgGblTrapMessage	Warning	The GSLB health check for an address changed from the active to the down state. **Trap Message:** `L4 gslb health-check <IP> of <subname>.<zonename> status changed to down`
snTrapL4GslbHealthCheckIpPortUp(45)	snAgGblTrapMessage	Warning	A port for a health check address is up. **Trap Message:** `L4 gslb health-check <IP> of <subname>.<zonename> port <server-port> is up`
snTrapL4GslbHealthCheckIpPortDown(46)	snAgGblTrapMessage	Warning	A port for a health check address is down. **Trap Message:** `L4 gslb health-check <IP> of <subname>.<zonename> port <server-port> is down`

Trap Name and Number	Varbinds	Severity	Description and Trap Message
snTrapL4FirewallBecomeStandby(47)		Major	The Server Load Balancing switch firewall changed its state from active to standby. **Trap Message:** `firewall group #<group> become standby`
snTrapL4FirewallBecomeActive(48)		Major	The Server Load Balancing switch firewall changed its state from standby to active. **Trap Message:** `firewall group #<group> become active`
snTrapL4FirewallPathUp(49)		Minor	The Server Load Balancing switch firewall path is up. **Trap Message:** `firewall path up target <IP> nexthop <IP> path <num> port <num>`
snTrapL4FirewallPathDown(50)		Minor	The Server Load Balancing switch firewall path is down. **Trap Message:** `Firewall path down target <IP> nexthop <IP> path <num> port <num>`
snTrapL4ContentVerification(55)		Informational	The HTTP match list pattern has been found. **Trap Message:** `HTTP match-list pattern is found.`

ICMP Traps

Trap Name and Number	Varbinds	Severity	Description and Trap Message
snTrapIcmpLocalExceedBurst(51)	snAgGblTrapMessage	Warning	Incoming ICMP exceeded the maximum local burst packets. **Trap Message:** `Local ICMP exceeds <num> burst packets, stopping for <num> seconds!!`

Trap Name and Number	Varbinds	Severity	Description and Trap Message
snTrapIcmpTransitExceedBurst(52)	snAgGblTrapMessage	Warning	Transit ICMP exceeded the maximum transit burst. **Trap Message:** `Transit ICMP in interface <port-num> exceeds <num> burst packets, stopping for <num> seconds!!`

TCP Trap

Trap Name and Number	Varbinds	Severity	Description and Trap Message
snTrapTcpLocalExceedBurst(53)	snAgGblTrapMessage	Warning	Incoming TCP SYN exceeded the maximum local burst packets. **Trap Message:** `Local TCP exceeds <num> burst packets, stopping for <num> seconds!!`
snTrapTcpTransitExceedBurst(54)	snAgGblTrapMessage	Warning	Transit TCP exceeded the maximum transit burst packets. **Trap Message:** `Transit TCP in interface <port-num> exceeds <num> burst packets, stopping for <num> seconds!!`

MPLS Traps

Trap Name and Number	Varbinds	Severity	Description and Trap Message
snTrapMplsProblem(57)		Major	MPLS problem detected. **Trap Message:** `MPLS Problem detect.`
snTrapMplsException(58)		Major	MPLS exception detected. **Trap Message:** `MPLS Exception detect.`
snTrapMplsAudit(59)		Informational	MPLS audit trap. **Trap Message:** `MPLS Audit Trap.`

Trap Name and Number	Varbinds	Severity	Description and Trap Message
snTrapMplsDeveloper (60)		Informational	MPLS developer trap. **Trap Message:** `MPLS Developer Trap.`

BGP Traps

Trap Name and Number	Varbinds	Severity	Description and Trap Message
snTrapBgpPeerUp(64)	snAgGblTrapMessage	Informational	The BGP peer is up. **Trap Message:** `BGP Peer <IP> UP(ESTABLISHED)`
snTrapBgpPeerDown (65)	snAgGblTrapMessage	Informational	The BGP peer is down. **Trap Message:** `BGP Peer <IP> DOWN (<reason-string>)\n`

Port Security Traps

The Port Security feature enables Foundry device to learn a limited number of “secure” MAC addresses on an interface. The interface will forward only those packets with source MAC addresses that match these secure addresses. If the interface receives MAC addresses that are included in its secure MAC list, the Foundry device generates the following traps:

NOTE: This trap applies to ports that have the Port Security feature enabled. Port security is available beginning with IronWare software release 07.5.04A.

Trap Name and Number	Varbinds	Severity	Description and Trap Message
snTrapPortSecurityViolation (77)	snAgGblTrapMessage	Minor	Packets from unknown MAC address are dropped. **Sample Trap Message:** `Foundry Trap: Port Security Violation`
snTrapPortSecurityShutdown (78)	snAgGblTrapMessage	Minor	The port is disabled for the amount of time configured using the **violation shutdown <minutes>** port security CLI command. **Sample Trap Message:** `Foundry Trap: Port Security Violation Cause Shutdown`

Appendix A
Using SNMP to Upgrade Software

This chapter presents some of the common procedures for using SNMP MIB objects to manage Foundry devices.

You can use a third-party SNMP management application such as HP OpenView to upgrade software on a Foundry device.

NOTE: In software releases earlier than 07.5.00, the SNMP agent does not check for type validity with the SNMP version. In software release 07.5.00 and above, the SNMP agent does not send a reply for a varbind, if the type of the varbind is not a known type for that version of SNMP. For example, MIB objects of type Counter64 cannot be retrieved using a v1 packet, as Counter64 is a v2c and v3 type.

NOTE: Make sure you use the correct procedure for your device and processor type. For example, do not use the Management Processor procedure to upgrade the Switching Processors on a module.

NOTE: The syntax shown in this section assumes that you have installed HP OpenView in the "/usr" directory.

NOTE: Foundry recommends that you make a backup copy of the startup-config file before you upgrade the software. If you need to run an older release, you will need to use the backup copy of the startup-config file.

This appendix presents the following procedures:

Upgrading a Stackable Device or a Chassis Module's Management Processor

Use this procedure to upgrade the following:

- A Stackable device
- A management II, III, or IV module
- The management processor on the Velocity Management Module (VM1)

To upgrade flash code on the Management Processor:

1. Configure a read-write community string on the Foundry device, if one is not already configured. To configure a read-write community string, enter the following command from the global CONFIG level of the CLI:

snmp-server community <string> **ro | rw**

where <string> is the community string and can be up to 32 characters long.

2. On the Foundry device, enter the following command from the global CONFIG level of the CLI:

   no snmp-server pw-check

   This command disables password checking for SNMP set requests. If password checking is enabled (the default) and a third-party SNMP management application does not add a password to the password field when it sends SNMP set requests to a Foundry device, the Foundry device rejects the request.

3. From the command prompt in the UNIX shell, enter the following command:

   /usr/OV/bin/snmpset -c <rw-community-string> <fdry-ip-addr> **1.3.6.1.4.1.1991.1.1.2.1.5.0 ipaddress** <tftp-ip-addr> **1.3.6.1.4.1.1991.1.1.2.1.6.0 octetstringascii** <file-name> **1.3.6.1.4.1.1991.1.1.2.1.7.0 integer** <command-integer>

   where:

   <rw-community-string> is a read-write community string configured on the Foundry device.

   <fdry-ip-addr> is the Foundry device's IP address.

   <tftp-ip-addr> is the TFTP server's IP address.

   <file-name> is the image file name.

   <command-integer> is one of the following:

   - **20** – Download the flash code into the device's primary flash area.
   - **22** – Download the flash code into the device's secondary flash area.

Upgrading Switching Processors on a Chassis Device

Use this procedure to upgrade the Switching Processors on the following types of modules:

- Velocity Management Module (VM1)
- OC-3, OC-12, and OC-48 non-Network Processor Architecture (NPA) POS modules
- OC-48 NPA POS modules
- ATM modules

To upgrade flash code on the Switching Processors:

1. Configure a read-write community string on the Foundry device, if one is not already configured. To configure a read-write community string, enter the following command from the global CONFIG level of the CLI:

   snmp-server community <string> **ro | rw**

   where <string> is the community string and can be up to 32 characters long.

2. On the Foundry device, enter the following command from the global CONFIG level of the CLI:

   no snmp-server pw-check

   This command disables password checking for SNMP set requests. This command disables password checking for SNMP set requests. If password checking is enabled (the default) and a third-party SNMP management application does not add a password to the password field when it sends SNMP set requests to a Foundry device, the Foundry device rejects the request.

3. From the command prompt in the UNIX shell, enter the following command:

   /usr/OV/bin/snmpset -c <rw-community-string> <fdry-ip-addr> **1.3.6.1.4.1.1991.1.1.2.1.5.0 ipaddress** <tftp-ip-addr> **1.3.6.1.4.1.1991.1.1.2.1.6.0 octetstringascii** <file-name> **1.3.6.1.4.1.1991.1.1.2.1.56.0 integer** <module-type>

1.3.6.1.4.1.1991.1.1.2.1.57.0 integer <slotnum>
1.3.6.1.4.1.1991.1.1.2.1.7.0 integer <command-integer>

where:

<rw-community-string> is a read-write community string configured on the Foundry device.

<fdry-ip-addr> is the Foundry device's IP address.

<tftp-ip-addr> is the TFTP server's IP address.

<file-name> is the image file name.

<module-type> is one of the following:

- **2** – VM1 module.
- **3** – OC-3, OC-12, and OC-48 non-Network Processor Architecture (NPA) POS modules.
- **4** – OC-48 NPA POS modules.
- **5** – ATM module.

<slotnum> is the slot that contains the module you are upgrading. To upgrade all modules of the type you specified, enter 0 (zero):

<command-integer> is one of the following:

- **24** – Download the flash code into the device's primary flash area.
- **25** – Download the flash code into the device's secondary flash area.

Index by Object Name

Use this index to search for a MIB object by name.

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