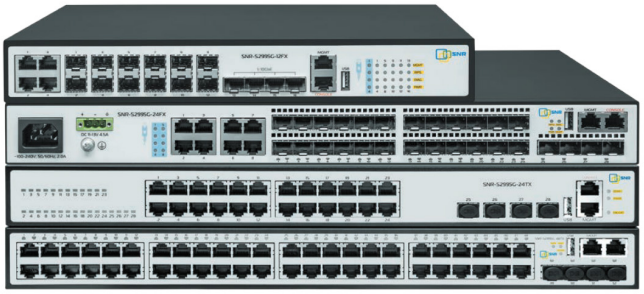
DATASHEET

SNR S2995G Series

L3 Managed Switches



The S2995G series is a new generation of L3 SNR switches. Thanks to the combination of optical and copper interfaces, 10GE uplink ports, rich L2 and L3 functionality, the SNR-S2995G series switches can be used to solve a wide range of tasks both in internet service providers networks and enterprise networks.

Main features:

- Dynamic routing OSPF, BGP, PIM
- 1/10GE SFP+ Uplink ports
- Comprehensive security features
- Powerful features for managing quality of service (QoS)

Switch Models

The S2995G series switches are equipped by 10GbE Uplink and GbE Downlink interfaces. Due to the presence of RJ45/SFP combo ports, SNR-S2995G can be used in networks with copper or optical links, depending on requirements.

Model	10/100/1000 Base-T	Combo ports 10/100/1000Base-T |100/1000Base-X SFP	100/1000 Base-X SFP	1/10G SFP+
SNR-S2995G-12FX	-	4	8	4
SNR-S2995G-24FX	-	8	16	4
SNR-S2995G-24TX	24	-	-	4
SNR-S2995G-24TX-POE	20	4	-	4
SNR-S2995G-48FX	-	-	48	4
SNR-S2995G-48TX	48	-	-	4
SNR-S2995G-48TX-POE	48	-	-	4

High performance

Due to modern chipset, all S2995G series models support full port speed switching and routing simultaneously. 10 GbE Uplink ports and 1GbE Downlink ports allow transfering traffic from clients to the network core and back without loss and increase in delays.

Model	Switching Capacity	Forwarding Rate	MAC
SNR-S2995G-12FX	104 Gbps	83 Mpps	16K
SNR-S2995G-24FX	128 Gbps	95 Mpps	16K
SNR-S2995G-24TX	128 Gbps	95 Mpps	16K
SNR-S2995G-48FX	176 Gbps	131 Mpps	16K
SNR-S2995G-48TX	176 Gbps	131 Mpps	16K

L3 features

The S2995G series switches supports IPv4/IPv6 hardware routing. Support for dynamic routing protocols (RIP, OSPF, BGP), multicast packet routing (PIM, MSDP), Policy-Based routing (PBR) and ECMP functionality allows building high performance multiservice L3 networks.

Model	Routing Table	PIM Routing Table	ARP Table	L3 Interfaces
SNR-S2995G	1K	2K	4K	1K
SNR-S2995G-48TX-POE	512	512	512	512

Stacking Support

VSF protocol allows stacking several physical S2995G series switches into a single logical device, thereby simplifying configurating and increasing network reliability. Stacking is performed through standard interfaces and does not require the purchase of additional cards.

Multicast management

The S2995G series SNR switches have all the necessary functionality for multicast control. Layer 2 supports IGMP Snooping, MVR, IGMP packet filtering. Layer 3 supports routing of multicast traffic using the PIM-SM, PIM-DM, MSDP protocols. This allows the SNR-S2995G to be used to organize high-quality and secure services using multicast traffic, such as IPTV.

Support PoE+

SNR-S2995G switches support PoE 802.3af and PoE+ 802.3at standards with intelligent power management. PoE technology reduces the cost of ownership and simplifies network maintenance by allowing to power WiFi hotspots, IP/Video phones, thin clients directly from the switch.

Model	Total ports with PoE	Total PoE capacity
S2995G-24TX-POE	24	370 Watt
S2995G-48TX-POE	48	740 Watt

Quality of Service (QoS)

The Support for 8 hardware queues per port allows to create flexible service policies for different types of traffic, thus ensuring high quality of sensitive services under high load conditions. Traffic can be classified by field values in L2-L4 headers, including CoS, DSCP, VLAN ID, IP/MAC addresses, and TCP/UDP ports.

Security

The S2995G series switches provide a wide range of security features for both service providers and enterprise networks. Hardware Access Control Lists (ACLs) can filter traffic by L2-L4 header fields without performance brake. MAC-IP-Port binding functionality helps to protect the network from IP/MAC address spoofing by clients. Support for 802.1x and MAB protocols provides authentication of devices connected to the network.

Model	Multicast Group	Queues per Port	ACL
SNR-S2995G	4K	8	1502
SNR-S2995G-48TX-POE	4K	8	512

Operational convenience

S2995G series SNR switches work under the control SNR system NOS (Networking Operating System) with the typical syntax CLI and SNMP MIB for all SNR switches. The system supports all the necessary functionality of the Enterprise/ISP level for building modern data networks and has extensive management and monitoring capabilities via CLI, Web and SNMP.

Resilience

For organizing resilient networks, support for standard protocols STP/RSTP/MSTP as well as ERPS (G.8032) including ERPS + CFM is implemented.

Link aggregation functionality using LACP or static aggregation allows combining up to 8 ports into one logical interface, increasing the bandwidth ability and resilience at the data link level.

Dimensions and power supply

Switch models S2995G-12FX, S2995G-24FX, S2995G-24TX-RPS, S2995G-48TX-RPS are equipped with an RPS connector for connecting a backup DC 12V power supply, and models SNR-S2995G-24FX-UPS and SNR-S2995G-12FX-UPS have a built-in discharge/charge controller 12V battery capacity up to 60Ah. The series also includes switches with the ability to connect a backup 48-volt power supply. The compact SNR-S2995G-12FX model expands the application capabilities of the series.

Model	Dimension	Weight (brutto)	Power Consumption	Cooling	Power Supply
SNR-S2995G-12FX	330 x 44 x 230 mm	2,86 kg	40 Watt	Active	100-240AC, 12V DC
SNR-S2995G-12FX-UPS	330 x 44 x 230 mm	2,86 kg	60 Watt	Active	100-240AC, 12V DC+ UPS
SNR-S2995G-12FX-DC	330 x 44 x 230 mm	2,86 kg	40 Watt	Active	100-240AC, 48V DC+
SNR-S2995G-24FX	440 x 44 x 240 mm	4,06 kg	60 Watt	Active	100-240AC, 12V DC
SNR-S2995G-24FX-UPS	440 x 44 x 240 mm	4,1 kg	80 Watt	Active	100-240AC, 12V DC+ UPS
SNR-S2995G-24FX-DC	440 x 44 x 240 mm	4,02 kg	60 Watt	Active	100-240AC, 48V DC+
SNR-S2995G-48FX	440 x 44 x 320 mm	5,72 kg	80 Watt	Active	100-240AC, 12V DC
SNR-S2995G-48FX-DC	440 x 44 x 320 mm	5,72 kg	80 Watt	Active	100-240AC, 48V DC+
SNR-S2995G-24TX	440 x 44 x 240 mm	3,98 kg	30 Watt	Active	100-240AC
SNR-S2995G-24TX-POE	440 x 44 x 320 mm	6 kg	400 Watt	Active	100-240AC
SNR-S2995G-24TX-RPS	440 x 44 x 240 mm	3,98 kg	30 Watt	Active	100-240AC, 12V DC
SNR-S2995G-48TX	440 x 44 x 240 mm	4,38 kg	50 Watt	Active	100-240AC
SNR-S2995G-48TX-POE	440 x 44 x 320 mm	6,64 kg	790 Watt	Active	100-240AC, 52-57V DC+
SNR-S2995G-48TX-RPS	440 x 44 x 240 mm	4,38 kg	50 Watt	Active	100-240AC, 12V DC

Technical Brief:

Switching type
- Store-and-Forward

MAC address table
- 16K entries

MAC address table features
- Limiting max number MAC addresses on a port, VLAN
- Static MAC addresses
- MAC-notification
- Disabling MAC address learning on a port, VLAN
- Blackhole MAC

Flow Control
- 802.3x Flow Control
- HOL

Jumbo frame
- 10 Kbytes

Flash memory size
- 32 + 128 Mbytes

RAM size
- Whole series - 512 Mbytes, SNR-S2995G-48TX-POE - 256 Mbytes

QinQ
- Port-Based / Selective QinQ

Ring Protection
- ERPS ITU-T G.8032
- MRPP
- Fast Link
- ULPP
- ULSM

Spanning Tree
- 802.1D STP
- 802.1W RSTP
- 802.1S MSTP (32 Instances)
- Root/BPDU Guard
- BPDU Tunnel

Loopback Detection
- Per-port
- Per-port-per-vlan
- Action shutdown/block

Port Aggregation
- LACP 802.3ad / 802.1ax
- Up to 128 groups per switch / up to 8 ports in group
- Load balance src/dst MAC, src/dst IP, dst-src-MAC/IP, dst-src-MAC-IP, ingress-port

Traffic Mirroring
- SPAN, RSPAN, ERSPAN
- 7 groups
- One-to-one / Many-to-one
- Flow-based (ACL)
- Remote VLAN
- Reflector Port

VLAN
- IEEE 802.1Q , 4094 VLAN
- Port-based VLAN
- Private VLAN
- Protocol VLAN
- Voice/MAC VLAN
- Multicast VLAN
- Super VLAN
- VLAN Trunking
- VLAN Translation
- GVRP

Multicast
- 4096 IGMP groups
- IGMP v1/v2/v3 Snooping
- IGMP Fast Leave
- IGMP Snooping Immediately Leave
- IGMP Snooping Querier
- Multicast VLAN Registration
- Multicast Src/Dst Control
- Limiting the maximum number of subscriptions
- Illegal source detection
- Multicast policy
- Multicast Filter
- IGMP Snooping RADIUS Authentication
- MLD v1/v2 Snooping, MLD Snooping Immediately Leave
- MLD Snooping Querier

Security

- SSH v1/v2
- SSL v1/v2/v3
- MAC binding
- MAC filter
- Limiting the number of MAC addresses on a port
- Limiting Broadcast/Multicast/ Unicast packets on a port by Kbps
- Access Management (IP-MAC-Port Binding)
- Port Security
- Port Isolation
- ARP Guard
- ARP Binding
- ARP Limit
- Anti-ARP-Scan
- Dynamic ARP inspection (DAI)
- RA Snooping
- ND Snooping
- SAVI
- CPU protection
- IEEE 802.3az (Energy Efficient Ethernet),
- CE, RoHS
- CB, cUL, LVD

ECMP

- Up to 8 equal routes

Redundancy Protocols

- VRRP

Multicast Routing

- IGMP proxy
- DVMRP
- PIM-DM / PIM-SM / PIM-SSM: whole series - 2048 SNR-S2995G-48TX-POE - 226
- Anycast RP
- MSDP

Routing

- Routing table: whole series - 1024, SNR-S2995G-48TX-POE - 425 routes
- Static routing
- Policy-Based routing (PBR)
- RIPv1/v2
- OSPFv2/v3
- BGPv4+

Signaling Protocols

- BFD

Tunneling

- GRE

Routing IPv6

- Static
- IPv6 PBR
- RIPng
- OSPFv3
- BGPv4+

IPv6

- ICMPv6; ND

IPv6 Tunneling

- GRE
- 6to4
- ISATAP

QoS

- 8 queues per port
- Strict Priority, WDRR, Strict+WDRR
- Bandwidth Control
- Flow Redirect
- Traffic classification per port, ACL (L2-L4), VLAN ID, CoS, ToS, DSCP, IPv6 Flow Label
- Per port / VLAN policing
- Remarking DSCP, CoS/802.1p, Precedence, ToS

DHCP

- IPv4/IPv6 DHCP Client/Relay
- Option 82, Option 37/38
- IPv4/IPv6 DHCP Snooping/ Server
- DHCP User Control
- Binding table on flash

Stacking

- Stacking via SFP+
- Stack link bandwidth up to 40Gbps
- Up to 8 switches in the stack

Management and monitoring

- RADIUS, TACACS+
- 802.1x (host/port based access control, Dynamic VLAN, Guest VLAN, Auto VLAN)
- MAC Authentication Bypass
- Up to 15 levels of user privileges
- Passing privilege levels via RADIUS/TACACS+
- Xmodem/TFTP/FTP, CLI, Telnet, Console
- Web/SSL, SSH (IPv4/IPv6)
- SNMPv1/v2c/v3, SNMP Traps, Public & Private MIB interface
- RMON 1,2,3,9
- Bootp/DHCP Client
- Autoprovisioning
- SNTP/NTP (IPv4/IPv6)
- PPPoE Intermediate agent
- Debug commands
- Password recovery
- Password encryption
- Backup and restore settings
- Ping, Traceroute
- Syslog (IPv4/IPv6)
- Dual IMG, Multiple Configuration Files
- Port/CPU Mirror, RSPAN, ERSPAN
- OAM, Dying GASP, VCT, DDM
- Multiple IP Interface
- ULDP (like Cisco UDLD), LLDP/LLDP MED
- Management of indication
- Virtual Cabel Test (VCT)

ACL

- Whole series - 1502, SNR-S2995G-48TX-POE - 512 ACL
- Per port / VLAN
- Filtering based on: switch port, VLAN ID, 802.1p priority, MAC address, EtherType, IPv4 / IPv6 address, IPv6 traffic class, IPv6 flow label, ToS, DSCP, protocol type, TCP / UDP port number, CPU Interface Filtering
- Time Range ACL
- Userdefined ACL
- ACL statistics

IPv6

- ICMPv6
- NDP
- SNMP over IPv6
- HTTP over IPv6
- IPv6 ping/traceroute
- IPv6 Telnet IPv6 Syslog
- RFC1981 Path MTU Discovery
- RFC2460 IPv6
- RFC2461 4861 Neighbor Discovery
- RFC2462,4862 IPv6 Stateless Address Auto-configuration
- RFC2464 IPv6 Neighbor over Ethernet and definition
- RFC3515, 4291 IP Version 6 Addressing Architecture
- RFC2893, 4213 IPv4/IPv6 Dual-stack
- IPv6 Ready Logo Phase 2

Logging

- RAM logging
- Flash logging
- Logging to Syslog server
- Configuring the logging level
- Logging executed command

USB Support

- USB 2.0 - port

Cooling

- Active
- Fan speed control: 3 speeds (for TX models)

Humidity

- 5%-95%, no condensation

Operating temperature

- 0C ~ 50C

Storage temperature

- -40C ~ 70C

Surge protection

- Up to 4 kV

MBTF

- >800000 hours

Ordering information

Model	Description
SNR-S2995G-12FX	L3 Managed Switch. 4 combo ports 10/100/1000Base-T|100/1000Base-X SFP, 8 ports 100/1000Base-X SFP, 4 ports 1/10GE SFP+. Power 100-240AC, 12V DC RPS.
SNR-S2995G-12FX-UPS	L3 Managed Switch. 4 combo ports 10/100/1000Base-T|100/1000Base-X SFP, 8 ports 100/1000Base-X SFP, 4 ports 1/10GE SFP+. Power 100-240AC, 12V battery connector.
SNR-S2995G-12FX-DC	L3 Managed Switch. 4 combo ports 10/100/1000Base-T|100/1000Base-X SFP, 8 ports 100/1000Base-X SFP, 4 ports 1/10GE SFP+. Power 100-240AC, 48V DC RPS.
SNR-S2995G-24FX	L3 Managed Switch. 8 combo ports 10/100/1000Base-T|100/1000Base-X SFP, 16 ports 100/1000Base-X SFP, 4 ports 1/10GE SFP+. Power 100-240AC, 12V DC RPS.
SNR-S2995G-24FX-DC	L3 Managed Switch. 8 combo ports 10/100/1000Base-T|100/1000Base-X SFP, 16 ports 100/1000Base-X SFP, 4 ports 1/10GE SFP+. Power 100-240AC, 48V DC RPS.
SNR-S2995G-24FX-UPS	L3 Managed Switch. 8 combo ports 10/100/1000Base-T|100/1000Base-X SFP, 16 ports 100/1000Base-X SFP, 4 ports 1/10GE SFP+. Power 100-240AC, 12V battery connector
SNR-S2995G-48FX	L3 Managed Switch. 48 ports 100/1000Base-X SFP, 4 ports 1/10GE SFP+. Power 100-240AC, 12V DC RPS.
SNR-S2995G-48FX-DC	L3 Managed Switch. 48 ports 100/1000Base-X SFP, 4 ports 1/10GE SFP+. Power 100-240AC, 48V DC RPS.
SNR-S2995G-24TX	L3 Managed Switch. 24 ports 100/1000Base-T RJ-45, 4 ports 1/10GE SFP+. Power 100-240AC.
SNR-S2995G-24TX-POE	L3 Managed PoE Switch. 24 ports 100/1000BaseT RJ-45, 4 ports 1/10GE SFP+. Power 100-240AC.
SNR-S2995G-24TX-RPS	L3 Managed Switch. 24 ports 100/1000Base-T RJ-45, 4 ports 1/10GE SFP+. Power 100-240AC, 12V DC RPS.
SNR-S2995G-48TX	L3 Managed Switch. 48 ports 100/1000Base-T RJ-45, 4 ports 1/10GE SFP+. Power 100-240AC.
SNR-S2995G-48TX-POE	L3 Managed PoE Switch. 48 ports 100/1000Base-T RJ-45, 4 ports 1/10GE SFP+. Power 100-240AC. 52-57V DC RPS.
SNR-S2995G-48TX-RPS	L3 Managed Switch. 48 ports 100/1000Base-T RJ-45, 4 ports 1/10GE SFP+. Power 100-240AC, 12V DC RPS.

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