Configuring Bulkstats

SYSTEM ADMINISTRATOR GUIDE

Contents

1 Overview

This document describes the bulkstats function, including data collected by bulkstats, application of bulkstats to an entity, the necessary prerequisites for configuring bulkstats collection, and describes how to configure bulkstats policies and schema profiles.

This document applies to both the Ericsson SmartEdge® and SM family routers. However, the software that applies to the SM family of systems is a subset of the SmartEdge OS; some of the functionality described in this document may not apply to SM family routers.

For information specific to the SM family chassis, including line cards, refer to the SM family chassis documentation.

For specific information about the differences between the SmartEdge and SM family routers, refer to the Technical Product Description *SM Family of Systems* (part number 5/221 02-CRA 119 1170/1) in the **Product Overview** folder of this Customer Product Information library.

1.1 Function of Bulkstats

The bulkstats feature gathers large amounts of data from the SmartEdge router and periodically sends updates to a management station. The bulkstats feature frees both the SmartEdge router and the management station from the Simple Network Management Protocol (SNMP) polling processes and minimizes the amount of memory used by the SmartEdge router for statistics collection.

The collection of data is governed by a named bulkstats policy. Bulkstats policies are context-specific and multiple bulkstats policies can exist for each context. A bulkstats policy defines the collection information, such as the transfer interval, the server to which the data files are sent, and the sampling interval.

1.2 Data Collected by Bulkstats

The bulkstats schema profile defines the type and format of data that is collected and acts as a template which, when applied to the system or to a context, subscriber, port, channel, permanent virtual circuit (PVC), or media gateway, results in the collection of the data specified by the schema profile. There are two types of schema profiles: global (for collecting system-wide data) and specific (for collecting data for a specific type of entity). A bulkstats schema profile consists of a name, a display format, and a list of statistics.

Because the type of data that can be collected varies for each type of entity, there are different types of schema profiles, specific to the entity being

monitored: contexts, ports, subscribers, channels, Asynchronous Transfer Mode (ATM), Frame Relay and 802.1Q PVCs, IGMP subscriber statistics, media gateways (MGs) and link groups.

Bulkstats schema profiles employ a format string that uses special-character sequences to identify the data type for the statistics variables in the format strings; see *Format String Special Character Descriptions*. Format strings are replaced with SmartEdge router variables, such as system uptime, date, time of day, port and slot number information, and more. Supported SmartEdge router variables vary according to the type of schema profile. These variables are defined in the description of the `bulkstats schema profile` command.

Note: MG and IGMP bulkstats schema profiles do not support format strings.

1.3 Application of Bulkstats to an Entity

When a bulkstats schema profile is applied to an entity, such as a port, a bulkstats policy is also applied together with the context in which the bulkstats policy is configured. Data is collected and transferred to a management station as follows:

1. The SmartEdge router samples and stores system, network, and traffic statistics at specified sampling intervals. Information can be collected at the system, port, channel, and circuit levels. Bulkstats data is stored as continuous counter values.

2. At specified transfer intervals, bulkstats data is transferred to a network management station acting as a file server. The file transfer mechanism can be File Transfer Protocol (FTP), Secure Shell FTP (SSH FTP), or Secure Copy Protocol (SCP). The file data comprises lines of ASCII text.

3. When the file is successfully transmitted, the information is deleted from the SmartEdge router memory.

If statistics are not collected, the bulkstats buffer can reach its capacity. The behavior in this event varies with the feature. For example, with IGMP statistics, the buffer wraps around and new entries replace the oldest entries in the buffer.

1.4 Prerequisites

Before you enable bulkstats collection for a policy, you must:

- Create one or more schema profiles using the `bulkstats schema profile` command in global configuration mode.

- Apply one or more schema profiles using the `schema` command in bulkstats configuration mode (for system-wide statistics) or the `bulkstats schema` command in ATM OC, ATM profile, context, dot1q profile, Frame Relay profile, IGMP service profile, port, subscriber, or STM-1 configuration mode. For MG schema profiles, apply the `bulkstats schema` command

in global MG or Media Gateway Cntroller (MGC) configuration mode, depending on the MG entity from which you want to collect MG statistics.

You must also configure the following elements for an existing bulkstats policy:

1. Specify the primary bulkstats file server and file transfer mechanism using the **receiver** command in bulkstats configuration mode.

2. Specify the directory on the local SmartEdge router in which collected data is stored using the **localdir** command in bulkstats configuration mode.

3. Specify the name and location of the collection files using the **remotefile** command in bulkstats configuration mode.

For IGMP bulkstats, you must also enable statistics generation by using the **bulkstats** command in IGMP service profile configuration mode.

You can enable collection for a bulkstats policy anytime after you have performed these tasks. You do not have to disable collection before you apply the policy to an entity, such as a port, channel, or circuit.

2 Configuration and Operations Tasks

To configure bulkstats collection, perform the tasks described in the following sections.

2.1 Creating or Modifying a Bulkstats Schema Profile

To create or modify a bulkstats schema profile, perform the task described in Table 1.

Table 1   Create or Modify a Bulkstats Schema Profile

Task	Root Command	Notes
Create or modify a bulkstats schema profile.	*bulkstats schema profile*	Enter this command in global configuration mode.

2.2 Creating or Modifying a Bulkstats Policy

To create or modify a bulkstats policy, perform the tasks described in Table 2.

Table 2   Create or Modify Bulkstats Policy

#	Task	Root Command	Notes
1.	Create a bulkstats policy, or select one for modification, and access bulkstats configuration mode.	*bulkstats policy*	Enter this command in context configuration mode.
2.	Specify operational attributes; enter all commands in bulkstats configuration mode, unless otherwise noted.		
	Specify where the bulkstats data is stored for this policy on the SmartEdge router.	*localdir*	
	Set a limit on the space that is used to store bulkstats collection files.	*limit*	The default value is 1024 KB (1 MB). The range is up to 102400 KB (100 MB).
	Specify the servers where remote bulkstats files are stored.	*receiver*	Enter this command twice to specify both a primary and a secondary bulkstats file server.
	Specify the format of the filename and the location of the bulkstats collection files that are stored on remote servers.	*remotefile*	
	Specify header lines that are inserted at the beginning of each bulkstats collection file for this policy.	*header format*	
	Enable the writing of the definitions of the configured bulkstats schema profiles to the beginning of each bulkstats data collection file.	*schema-dump*	
	Specify the interval between the collection of bulk statistics samples.	*sample-interval*	The polling interval is between 1 and 525, 000 minutes (1 year); the default value is 15 minutes.

Table 2   Create or Modify Bulkstats Policy

#	Task	Root Command	Notes
	Specify the interval after which bulkstats data is uploaded to the bulkstats file server for this policy.	*transfer-interval*	The transfer interval is between 1 and 525, 000 minutes (1 year); the default value is 60 minutes.
3.	Enable the collection of bulkstats for all the entities to which this bulkstats policy will be applied.	*collection*	

2.3   Applying a Specific Bulkstats Schema Profile

To apply a specific bulkstats schema profile, perform one of the tasks described in Table 3, depending on the type of schema profile.

Table 3   Apply a Specific Bulkstats Schema Profile

Task	Root Command	Notes
Apply a global bulkstats schema profile for system-level data collection.	*schema*	Enter this command in bulkstats configuration mode.
Apply an existing schema profile and bulkstats policy in the specified context to the context, port, link group, MG, channel, or channel group; to a profile for an ATM PVC, Frame Relay PVC, or an 802.1Q PVC; or to a default subscriber profile.	*bulkstats schema* For MG or Border Gateway Function (BGF), see: *bulkstats schema*	Enter this command in the configuration mode for the entity. For MG or BGF, enter this command in either global MG or MGC-Group configuration mode, depending on the MG entity from which you want to collect statistics.

Caution!

Risk of system performance degradation. Although you can apply multiple bulkstats schema profiles that collect different types and formats of data, you should minimize the number of bulkstats schema profile applications to preserve system performance. To reduce the performance impact, create one bulkstats schema profile that records several subsets of data. Separate each subset within the format string by entering the **\n** character sequence, which creates a new starting line in the output file. You can then apply this single bulkstats schema profile.

Caution!

Risk of system performance degradation. Applying multiple bulkstats policies can reduce system performance. To reduce the risk, minimize the number of policies applied to a port, channel, channel group, or profile.

2.4 Displaying Bulkstats Configuration

Table 4 shows the tasks for bulk statistics (bulkstats) operations. Enter the **show** commands in any mode; enter all other commands in exec mode.

Table 4   Bulkstats Operations Tasks

Task	Root Command
Immediately transfer bulkstats data for a specific bulkstats policy to one of the configured receivers, rather than waiting for the next transfer interval.	*bulkstats force transfer*
Display the bulk statistics (bulkstats) configuration information and data transfer statistics, or the contents of the current collection file that have not yet been successfully transferred to the receiver, for the specified bulkstats policy.	*show bulkstats*

3 Configuration Examples

This section provides various bulkstat configuration examples.

3.1 Examples: Create or Modify a Bulkstats Policy

The following example specifies the IP address of the primary file server that receives the uploaded bulkstats data files for the **bulk** policy:

```
[local]Redback(config)#context local
[local]Redback(config-ctx)#bulkstats policy bulk
[local]Redback(config-bulkstats)#receiver 198.168.145.99 primary mechanism
 ftp login snmp password snmp
```

The following example specifies the local directory on the SmartEdge router for the **bulk** policy, the amount of local file space allocated to bulk statistics storage in KB, and the filename format on the remote host. The filename format ensures that the filenames for two different policies will always be different, even if their transfer dates and time coincide:

```
[local]Redback(config-bulkstats)#localdir /flash/bulkstat
[local]Redback(config-bulkstats)#limit 2048
[local]Redback(config-bulkstats)#remotefile format "Bulkstats/%s_%s_%s_%s"
 context, policy date timeofday
```

The following example defines the header lines in each bulkstats file for the **bulk** policy:

```
[local]Redback(config-bulkstats)#header format "Collection file from host %s,
 Context: %s, Policy: %s" hostname context policy
[local]Redback(config-bulkstats)#header format "Data collected on %s" date
```

The following example enables the sampling and collection of bulkstats data for the **bulk** policy:

```
[local]Redback(config)#context local
[local]Redback(config-ctx)#bulkstats policy bulk
[local]Redback(config-bulkstats)#collection
```

3.2 Example: Specify the Primary File Server for a Bulkstats Policy

The following example specifies the IP address of the primary file server that receives the uploaded bulkstats data files for the **bulk** policy:

```
[local]Redback(config)#context local
[local]Redback(config-ctx)#bulkstats policy bulk
[local]Redback(config-bulkstats)#receiver 198.168.145.99 primary mechanism
 ftp login snmp password snmp
```

The following example specifies the local directory on the SmartEdge router for the **bulk** policy, the amount of local file space allocated to bulk statistics storage in KB, and the filename format on the remote host. The filename format ensures that the filenames for two different policies will always be different, even if their transfer dates and time coincide:

```
[local]Redback(config-bulkstats)#localdir /flash/bulkstat
[local]Redback(config-bulkstats)#limit 2048
[local]Redback(config-bulkstats)#remotefile format "Bulkstats/%s_%s_%s_%s"
 context, policy date timeofday
```

The following example enables the sampling and collection of bulkstats data for the **bulk** policy:

```
[local]Redback(config)#context local
[local]Redback(config-ctx)#bulkstats policy bulk
[local]Redback(config-bulkstats)#collection
```

3.3　　Example: Create and Apply a Bulkstats Global Schema Profile

The data collected by bulkstats policies are defined by schemas. Use the **bulkstats schema profile** command to create schemas.

The following example creates the gbl-bulk global schema profile and applies it to the sys-bulk bulkstats policy:

```
[local]Redback(config)#bulkstats schema profile global gbl-bulk format
"uptime: %u, date:%s, time:%s" sysuptime date timeofday

[local]Redback(config)#context local
[local]Redback(ctx-config)#bulkstats policy sys-bulk
[local]Redback(bulkstats-config)#schema gbl-bulk
```

3.4　　Example: Apply a Bulkstats ATM Schema Profile

The following example creates an ATM schema profile that collects circuit statistics for each ATM PVC to which the ATM profile **ubr-bulk** is applied. The last line of the example shows how the **bulkstats schema** command applies the newly defined schema atm-ubr, to the bulkstats policy bulk:

```
[local]Redback(config)#bulkstats schema profile atm atm-ubr format "uptime:
 %u, slot: %u, port: %u, vpi: %u, vci: %u, inoctets: %u outoctets: %u"
sysuptime slot port vpi vci inoctets outoctets
```

```
[local]Redback(config)#atm profile ubr-bulk
[local]Redback(config-atm-profile)#shaping ubr
[local]Redback(config-atm-profile)#bulkstats schema atm-ubr policy bulk local
```

The following example configures an ATM PVC that references the ATM profile **ubr-bulk** on an ATM OC port:

```
[local]Redback(config)#port atm 4/1

[local]Redback(config-atm-oc)#atm pvc 16 233 profile ubr-bulk encapsulation
route1483

[local]Redback(config-atm-pvc)#
```

The result of this schema is a line in the bulkstats collection file as follows:

```
[local]Redback(config-bulkstats)#
receiver 10.192.10.1 primary mechanism  ftp login user1 password password1
[local]Redback(config-bulkstats)#
receiver 10.192.10.2 secondary mechanism  ftp login user1 password password1
[local]Redback(config-bulkstats)#schema GLOBAL_SCHEMA
[local]Redback(config-bulkstats)#collection
[local]Redback(config)#port ethernet 2/1
[local]Redback(config-port)#bulkstats schema PORT_SCHEMA policy  15MIN_COLLECTION local
```

The following shows output of one sample in the file *./tmp/bulkstats/se800lab1_ 20080506_165931*:

```
GLOBAL_SCHEMA: time: 1210117951, freemem: 211372, cpu5min: 0.00%, load5min:
1.51, pppoe-sub-count: 1

PORT_SCHEMA: 1210117951, 12, 8, 66573057, 252156889, 675980, 894831, 3895582,
4554
```