

Ruckus Wireless SmartCell Gateway 200

KPI and Report Reference Guide for SmartZone 3.4.1

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Contents

About This Guide

Document Conventions	. 6
Terminology	6
Related Documentation	. 8
Online Training Resources	. 8
Documentation Feedback.	. 9

1 SCG Key Performance Indicators

Overview
KPIs under the Monitoring Tab11
Access Point Zone
Access Point
Client KPIs
SCG System KPIs
KPIs under the Administration Tab
HLR Statistics
SCTP Associations
CGF Transactions
CGF Connectivities
DHCP Server
DHCP Relay
GGSN Connections
GGSN/PGW GTP-C Sessions
RADIUS Server
RADIUS Proxy
LMA Signaling
LMA Connectivity Status
Diameter Stack Statistics
Diameter STa Statistics

2 SCG Reports

aved Reports	40
Active TTG Sessions Report	41

Client Number Report
Client Number vs. Air Time Report
Continuously Disconnected APs Report41
Failed Client Associations Report
New Client Associations Report
System Resource Utilization Report 42
Tx/Rx Bytes Report
Historical Client Statistics
Network Tunnel Statistics
Ruckus AP - Ruckus GRE
Ruckus AP - AP Soft GRE
Ruckus AP - AP IPsec
3rd Party AP - L2oGRE
3rd Party AP - Q-in-Q Layer 2
Core Network Tunnel - L2oGRE
Core Network Tunnel -L3oGRE 52
Core Network Tunnel - GTP 53
Core Network Tunnel -PMIPv654

Index

About This Guide

This *SmartCell Gateway*[™] (*SCG*) 200 KPI and Report Reference Guide provides a number of statistics, graphs, and reports that you can use to establish key performance indicators (KPIs) for the network.

This guide is written for service operators and system administrators who are responsible for managing, configuring, and troubleshooting Ruckus Wireless devices. Consequently, it assumes a basic working knowledge of local area networks, wireless networking, and wireless devices.

NOTE: This guide assumes that the SmartCell Gateway has already been installed as described in the *Getting Started Guide*.

Most user guides and release notes are available in Adobe Acrobat Reader Portable Document Format (PDF) or HTML on the Ruckus Wireless Support web site at https://support.ruckuswireless.com/contact-us.

Document Conventions

Table 1 and Table 2 list the text and notice conventions that are used throughout this guide.

Table 1. Text conventions

Convention	Description	Example
monospace	Represents information as it appears on screen	[Device name]>
monospace bold	Represents information that you enter	[Device name] > set ipaddr 10.0.0.12
default font bold	Keyboard keys, software buttons, and field names	On the Start menu, click All Programs .
italics	Screen or page names	Click Advanced Settings . The <i>Advanced Settings</i> page appears.

Table 2. Notice conventions

Notice Type	Description
NOTE	Information that describes important features or instructions
CAUTION!	Information that alerts you to potential loss of data or potential damage to an application, system, or device
WARNING!	Information that alerts you to potential personal injury

Terminology

Table 3 lists the terms used in this guide.

Term	Description
AAA	Authentication, Authorization, and Accounting
AAR	AA Request
AP	Access Point
APN	Access Point Name
ASA	Abort Session Answer
ASR	Abort Session Request

Table 3. Terms used in this guide

Term	Description
BRA	Binding Revocation Acknowledgment
BRI	Binding Revocation Indicator
CEA	Capability-Exchange Answer
CER	Capacity Exchange Request
CGF	Charging Gateway Function
COA	Change of Authorization
DEA	Diameter EAP Answer
DER	Diameter EAP Request
DHCP	Dynamic Host Configuration Protocol
DM	Dynamic Multipoint
DP	Data Plane
DPA	Disconnect Peer Answer
DPR	Disconnect Peer Request
DRT	Data Record Transfer
GGSN	Gateway GPRS Support Node
GRE	Generic Route Encapsulation
GSN	GPRS Support Node
GTP-C	GPRS Tunneling Protocol – Control Plane
HLR	Home Location Register
KPI	Key Performance Indicators
LMA	Local Mobility Anchor
NAS	Network Access Server
PBA	Proxy Binding Acknowledgment
PBU	Proxy Binding Update
PDG	Packet Data Gateway
PDP	Packet Data Protocol
PGW	Packet Data Network Gateway
PMIP	Proxy Mobile IPv6
RADIUS	Remote Authentication Dial-In User Service
RAR	Re-Auth Request

Table 3.	Terms	used	in	this	guide
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Term	Description
SCG	Smart Cell Gateway
SCG-CBlade	SCG Controller Blade
SCG-DBlade	SCG Data Blade
SG	Service Gateway
SNMP	Simple Management Network Protocol
SSID	Service Set Identifiers
STA	Session Termination Answer
STR	Session Termination Request
TCP	Transmission Control Protocol
TTG	Tunnel Termination Gateway
UE	User Equipment
UE-IP	User Equipment - IP Address
UE-MAC	User Equipment - MAC Address
VLAN	Virtual LAN
WLAN	Wireless LAN

Table 3. Terms used in this guide

Related Documentation

For a complete list of documents that accompany this release, refer to the Release Notes.

Online Training Resources

To access a variety of online Ruckus Wireless training modules, including free introductory courses to wireless networking essentials, site surveys, and Ruckus Wireless products, visit the Ruckus Wireless Training Portal at: https://training.ruckuswireless.com

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- Document title
- Document part number (on the cover page)
- Page number (if appropriate)

For example:

- SCG 200 KPI and Report Reference Guide for SmartZone 3.4.1
- Part number: 800-71360-001
- Page 88

SCG Key Performance Indicators

In this chapter:

- Overview
- KPIs under the Monitoring Tab
- KPIs under the Administration Tab

Overview

The SCG-200 provides a number of statistics, graphs, and reports that you can use to establish Key Performance Indicators (KPIs) for the network. You can use these KPIs to determine, among others, the quality of wireless service that users are getting, the overall health of the SCG system, and any issues that may impact the SCG managed devices and, consequently, the network.

NOTE: Refer to About This Guide chapter for terminologies used in this guide.

KPIs under the Monitoring Tab

The following sections describe the various key performance indicators that the SCG provides in the **Monitor** section.

- 1 Access Point Zone
- 2 Access Point
- 3 Client KPIs
- 4 SCG System KPIs

NOTE: For information on *Rogue Access Points Alarms* and *Events* refer to the *Administrator Guide for SmartZone* (PDF) or the *SmartZone Online Help*, which is accessible from the SCG web interface.

Access Point Zone

An AP zone functions as a way of grouping Ruckus Wireless APs and applying a particular set of settings (including WLANs and their settings) to these groups of Ruckus Wireless APs. By default, an AP zone named staging zone exists. Any AP that registers with the SCG that is not assigned a specific zone is automatically assigned to the staging zone. Each AP zone can include up to 2048 WLAN services. Navigate to **Monitor** > **AP Zone** to view the access point zone KPIs. Table 1 lists the key performance indicators for statistics related to the AP zones as seen in Figure

1.

NOTE: For information on configuring AP Zone, refer to the *SmartCell Gateway 200* Administrator Guide (PDF) or the *SmartCell Gateway 200 Online Help*, which is accessible from the SCG web interface.

Figure 1. KPIs for AP Zone

Monitor >> AP Zones										
Management Domain + = 🕞 Type a keyword to find a domair 🗙 🔎	AP Zone List	AP Zone List								
Administration Domain Z Clone of MESH ZONE	This page lists the A	P zones that match the defa	ult search criteria and provides basic informatio	n about them. You can use below Load	Critteria or search box to se	arch specific zones.				
Z INDUS4_ZONE	Refresh Export C	SV Search terms:	X @ include all terms ()	Include any of these terms						
Z MESH_ZONE	• Load Criteria: Do	omain = "Administration Don	sain"							
Z) RUCKUS_ZONE	Zone Name A	Management Domain	Description	AP Firmware	# of Alarms	# of APs	# of WLANs	# of Clients	AP IP Mode	Actions
Z Staging Zone	Clone of MESH	Administration Domain	MESH_ZONE	3.2.0.0.586	0/1/0/0	0(0/0/0/0/0)	0	0	IPv4	192
Z new_zone	INDU 54_ZONE	Administration Domain		3.2.0.0.586	1/2/0/0	1(1/0/0/0/0)	5	0	IPv4	18
	MESH_ZONE	Administration Domain	MESH_ZONE	3.2.0.0.586	0/2/0/0	2(2/0/0/0/0)	1	0	IPv4	/ 9 .2
	MVNO_ZONE	Administration Domain		3.2.0.0.586	0/0/0/0	0(0/0/0/0/0)	2	0	IPv4	19
	new_zone	Administration Domain		3.2.0.0.579	0/2/0/0	0(0/0/0/0/0)	6	0	IPv4	18
	RUCKUS_ZONE	Administration Domain		3.2.0.0.586	0/1/0/0	0(0/0/0/0/0)	9	0	IPy4	18
	Staging Zone	Administration Domain	Staging Zone		0/5/0/0	2(1/0/1/0/0)	0	0		9
	TEST_MESH	Administration Domain		3200586	0/3/0/0	0(0/0/0/0/0)	0	0	IPy4	192

Table 1. KPIs for AP zone

KPI	Description
Number of APs per zone	Total number of APs that belong to each AP zone.
Number of APs by mesh role	Total number of APs per mesh role. Mesh roles include Root AP, Mesh AP, and eMesh AP.
Number of APs by model and radio frequency	Total number of managed APs by AP model and radio frequencies (2.4GHz and 5GHz) that they use.
Number of WLANs	Total number of WLANs in the AP zone.
Number of Clients	Total number of clients as reported by managed APs. Managed APs are polled for client count every 15 minutes.
Number of Alarms	Total number of alarms generated on managed APs.
Number of Events	Total number of events generated on managed APs.

NOTE: For information on statistics, refer to the *Administrator Guide for SmartZone* (PDF) or the *SmartZone Online Help*, which is accessible from the SCG web interface.

Access Point

Once you have created registration rules and the AP zones, APs can be assigned automatically. APs will be able to join or register with the SCG automatically.

To view the KPIs, navigate to **Monitor** > **Access Point.** Table 2 lists the key performance indicators for statistics related to access points as seen in Figure 2.

NOTE: For information on configuring Access Points, refer to the *Administrator Guide for SmartZone* (PDF) or the *SmartZone Online Help*, which is accessible from the SCG web interface.

Monitor >> Access Points													
Management Domain 🛛 🕂 🗕 🔂	Puskue AD Liet												
Type a keyword to find a domain $\mathbf{x} \boldsymbol{\rho}$	NULKUS AF LISI												
D Administration Domain Z Clone of MESH_ZONE	View all currently managed 4Ps that belong to the selected domain or zone and back operational details about them. To filter the 4P lot, clinit, coal Citeria , and then configure the filters that you want to apply.												
Z NOUS4_ZONE	Retiresh Export CSV Search terms: X 🖲 Include all terms 🕕 Include any of these terms Table									Table Layout			
Z) VESH_ZONE	+Loud Criteria: Zone + MESH ZONE												
Z MVNO_ZONE													
Z) Moto_Zone	AP MAC Address 🔺	AP Name	Description	Location	AP Group	Serial Number	IP Address	External IP Address	Model	AP Firmware	Mesh Role	Mesh Mode	Channel
Z) RUCKUS_ZONE	84:18:3A:08:44:C0	RuckusAP		Agra		281403005190	140.0.0.9	140.0.09:49711	R700	32.0.0.586	Root AP	Auto	1 (11gh), 149 (1
Z TEST_MESH	D4:68:40:18:00:40	RuckusAP		Lucknow		911573700274	140.0.0.10	140.0.0.10.45505	R700	3.2.0.0.586	Mesh AP	Auto	1 (11gh), 44 (11
Z) new zone	()

Figure 2. KPIs for Access Points

Table 2. KPIs for access points

KPI	Description
IP address	Indicates the IP address of the wireless client.
External IP address	Indicates the IP address and port number that the SCG
	uses to communicate with the device.
Model	Indicates the model number of the Ruckus Wireless
	access point.
AP Firmware	Indicates the firmware version that is installed on the
	access point.
AP Uptime	Indicates the length of time that has elapsed since the
	access point was last powered on.
AP Zones	Lists all AP zones to which each managed access point
	belongs.

Table 2. KPIs for access points (Continue

KPI	Description
MB of Data Transmitted	Indicates the amount of data (in MB) uploaded and
	downloaded through each radio and per access point.
Number of Alarms	Indicates the number of alarms generated on the access point.
Number of Events	Indicates the number of events generated on the access point.
SCG appliance that is managing each AP	Lists each SCG node that manages each access point.
WLANs on each AP	Lists all WLANs on each access point, including information about their BSSID, radios, authentication method, and client count.
Status	Indicates whether the access point is currently connected (online) or disconnected (offline).
Associated Clients	Lists clients that are reporting to the access point.
Radio Channel Information	Lists radio channel information, including:
	Current channel
	Channelization
	Background scan configuration
	• TX power
	Number of authorized clients
	• % retries/% drops
	• % non-unicast
	Packets/bytes received
	Packets/bytes transmitted
	Noise floor
	PHY errors
	• % air time (total/busy/RX/TX)

Client KPIs

To view the KPIs, navigate to **Monitor** > **Clients.** Table 3 lists the key performance indicator for statistics related to wireless clients. See Figure 3.

NOTE: For information on configuring Clients, refer to the *Administrator Guide for SmartZone* (PDF) or the *SmartZone Online Help*, which is accessible from the SCG web interface.

Figure 3. KPIs for Clients

Monitor >> Clients									
Management Domains + - 🖸	This page lists currently or using the search box	associated clients that ma es under the domain tree.	tch the default	search criteria and pr	ovides basic informa	ition about them. Y	'ou can chang	e the search criteria	by selecting an AP
- D Administration Domain	Associated Clients	TTG Clients Statistics							
Deployment_Demo_DOMAIN P1_ZONE_01 P1_ZONE_02 P1_ZONE_03	Search Criteria: Zone = Refresh Export G	"P1_ZONE_01" SV							
P1_ZONE_04	STA MAC Address	IP Address	OS Type	Host Name	AP Name	WLAN (SSID)	VLAN	Channel	Status
P1_ZONE_05	00:00:F8:11:68:3A	10.33.104.58	Mac_OS	Sim-Desktop	SimAP-Sim-9222	rat-wsg-open-n	1	48	AUTHORIZED
P1_ZONE_07	00:00:F8:11:64:25	10.33.100.37			SimAP-Sim-9118	rat-wsg-open-n	1	6	
2 P1_ZONE_08	00:00:F8:11:60:D8	10.33.96.216			SimAP-Sim-9033	rat-wsg-open-n	1	48	
P1_20NE_09	00:00:F8:11:65:DA	10.33.101.218			SimAP-Sim-9161	rat-wsg-open-n	1	48	
3rdPartyZone1	00:00:F8:11:84:A5	10.33.132.165			SimAP-Sim-9950	rat-wsg-open-n	1	6	
	00:00:F8:11:61:0E	10.33.97.14			SimAP-Sim-9039	rat-wsg-open-n	1	6	
	00:00:F8:11:63:95	10.33.99.149			SimAP-Sim-9103	rat-wsg-open-n	1	48	

Table 3 lists the wireless client details that are shown in the table.

KPI	Description
STA MAC Address	MAC address of the wireless station. Clicking this link loads a page that displays detailed information about the wireless client.
IP Address	IP address assigned to the wireless client
OS Type	Operating system that the wireless client is using
Host Name	Host name of the wireless client
AP Name	Name assigned to the access point. Clicking this link loads a page that displays detailed information about the access point.
WLAN (SSID)	Name of the WLAN service or SSID with which the wireless client is associated.
VLAN	VLAN ID assigned to the wireless client
Channel	Radio channel used by the wireless client to access the WLAN service on the access point

Table 3. KPIs	for	Clients
---------------	-----	---------

KPI	Description						
Status	ndicates whether the wireless client is authorized or unauthorized o access the WLAN service						
User Name	Name of the user logged on to the wireless client						
Auth Method	Authentication method used by the access point						
Encryption Method	Encryption method used by the access point						
Actions	Icons for actions that you can perform, including:						
	 The click to disconnect the wireless client from the access point. 						

SCG System KPIs

The SCG system KPI status or usage can be viewed for time period (8 hours to 30 days). The SCG system includes CPU, memory, tunnel statistics and disk usage.

To view the KPIs, navigate to **Monitor > System.** Table 4 lists the key performance indicators for statistics related to the SCG system. See Figure 4.

Figure 4. KPIs for SCG System

Cluster +- 5	System Clust	er Overview: INDU	JS4												
- 📩 INDUS4	Refresh Cluster Chassis View Start Cluster Real time Monitor														
- NDUS4	Control Planes														
NDUS4-0	View existing control	View existing control planes and basic information about them. To view detailed information about a specific control plane, click the control plane name.													
INDUS4-D1	Name	MAC Address	Model	Serial Number	# of APs	Description	Firmware	Management IP	Cluster IP	Control IP	Cluster Role	Uptime			
_	INDUS4-C	50 A7 33 24 E9 F0	SC0200	20700088	4	INDUS4	3200825	172.19.10.4	184 21,160 82	184 21 160 66	Leader	5d 3h 47m			
	Data Planes														
	This table displays e	xisting data planes and provide	es basic information abou	ut them. Click th	e data plane i	name to view detaile	ed plane informa	éon.							
	Name	DP MAC Address	IP Address	Model	Serial Nu	# of Ruckus	Firmware	Managed By	Status	Uptime	Last Seen On	1			
	INDU \$4-D0	50:A7:33:24:EA:00	141.0.0.2	CN5750p	2.001150	3	3.2.0.0.796	INDUS4	Managed	5d 3h 46m	2015/10/28 15	11:25			
	INDUS4-D1	50:A7:33:24:EA:08	145.0.0.2	CN5750p	2.0G1150	0	3.2.0.0.796	INDU 54	Managed	5d 3h 45m	2015/10/28 15	11:25			
	×.														
	Outstanding Cluster Alarms														
	This table lists the outstanding alarms on this cluster that match the default search criteria. To change the search criteria, click the downwards arrow next to Load Criteria.														
	Retrist Encode	Referato EncodeCSV (CharAlarm ActionedederAlarm)													
	+ Load Criteria: So	urce = "System Cluster" && Sta	tus - "Outstanding"												
	Date and Time	 Code Alar 	rm Type	Seventy	Status	Acknowle	edged On	Activity				Actions			
	Show 10 +					ee 1	>>					Néc			
	Cluster Events														
	This table displays th	e events on this cluster that ma	atch the default search cr	iteria. To chang	e the search (criteria, click the dow	wnwards arrow n	ext to Load Criteria.							

Table 4. KPIs for the SCG system

KPI	Description
CPU status	CPU/memory/disk free usage/interface usage/ are available for 8 hours, 24 hours, 7days and 30
	days.
Datapath statistics	Datapath statistics is at the gateway and controller.

Table 4. KPIs	for th	e SCG s	system
---------------	--------	---------	--------

КРІ	Description
Disk usage (free/utilized space)	Indicates the percentage of free disk space on the SCG web interface.
Memory status	CPU/memory/disk free usage/interface usage/ are available for 8 hours, 24 hours, 7days and 30 days.
Interface usage	Indicates:
	• The Tx and Rx bytes on the control, cluster, and management interfaces for the last 15 minutes, hourly, daily or monthly.
	• The amount of packets (including Tx, Rx, Tx dropped, and Rx dropped) on the control, cluster, and management interfaces for the last 15 minutes, hourly, daily or monthly.
Port usage	Indicates:
	• The Tx and Rx bytes on the port 0 - port 5 for the last 8 hours to 30 days.
	• The amount of packets (including Tx, Rx, Tx dropped, and Rx dropped) on the port0 - port5 for the last 8 hours to 30 days.

KPIs under the Administration Tab

- 1 HLR Statistics
- 2 SCTP Associations
- 3 CGF Transactions
- 4 CGF Connectivities
- 5 DHCP Server
- 6 DHCP Relay
- 7 GGSN Connections
- 8 GGSN/PGW GTP-C Sessions
- 9 RADIUS Server
- **10** RADIUS Proxy
- 11 LMA Signaling
- 12 LMA Connectivity Status
- 13 Diameter Stack Statistics
- 14 Diameter STa Statistics

HLR Statistics

The SCG and multiple HLRs manage wireless services gateway for authentication/ authorization and for unsolicited change of authorization. To view the KPIs, navigate to **Administration** > **Diagnostic menu.**

Table 5 lists the key performance indicators based on the statistics received or sent from the HLR. See Figure 5.

NOTE: For information on configuring HLR Service, refer to the *Administrator Guide for SmartZone* (PDF) or the *SmartZone Online Help*, which is accessible from the SCG web interface.

KPIs under the Administration Tab

Figure 5. HLR statistics

Administration >> Diagnostics >>	HLR Statistics										
Diagnostic Scripts	HLR Statistics										
AP CLI Scripts	Refresh										
Application Logs & Status	MVNO Account	Control Plane	HLR	Created On	Last Modified On	Association	Rtg Fail	AuthInfoReqSim	AuthInfoRegAka	UpdGprsSim	U
Statistics o	Super	INDUS1-C	hir	2013/07/25 11:59:44	2013/07/25 16:40:23	1/0	0	0/0/0	0/0/0	0/0/0	0
	•			m							
SCTP Associations	Show 20 🖸 << 1 >> Total Records: 1										

Table 5. KPIs for HLR

KPI	Description
Association	Indicates the number of associations configured / number of
	active associations.
Rtg Fail	Indicates the reported routing failure on outbound MAP
	messages (TC_Notice).
AuthInfoReqSim	Indicates the MAP-SEND-AUTH-INFO-REQ SIM (successful /
	error response from HLR / no response from HLR).
AuthInfoReqAka	Indicates the MAP-SEND-AUTH-INFO-REQ AKA (successful
	/ error response from HLR / no response from HLR).
UpdGprsSim	Indicates the MAP-GPRS-UPDATE-LOCATION-REQ SIM
	(successful / error response from HLR / no response from
	HLR).
UpdGprsAka	Indicates the MAP-GPRS-UPDATE-LOCATION-REQ AKA
	(successful / error response from HLR / no response from
	HLR).
RstDtaSim	Indicates the MAP-RESTORE-DATA SIM (successful / error
	response from HLR / no response from HLR).
RstDtaAka	Indicates the MAP-RESTORE-DATA AKA (successful / error
	response from HLR / no response from HLR).
InsrtDtaSim	Indicates the MAP-INSERT-SUBSCRIBER-DATA SIM
	(successful / failed).
InsrtDtaAka	Indicates the MAP-INSERT-SUBSCRIBER-DATA AKA
	(successful / failed).
SalnsrtDta	Indicates the MAP-INSERT-SUBSCRIBER-DATA (received /
	unknown subscriber / decode failure or any other error).
RemoteDelSubsData	Indicates the MAP-DEL-SUBS-DATA-REQ (successful /
	failed).
RemoteCanLoc	Indicates the MAP-CANCEL-LOC-REQ (successful / failed).

SCTP Associations

An HLR instance can be accessed via one or more SCTP association. One SCTP association can have a connection to one or more HLRs. To view the KPIs, navigate to **Administration** > **Diagnostic menu**.

Table 6 lists the key performance indicators based on the statistics received or sent from the SCTP to the HLR. See Figure 6.

NOTE: For information on configuring SCTP, refer to the *Administrator Guide for SmartZone* (PDF) or the *SmartZone Online Help*, which is accessible from the SCG web interface.

Figure 6. SCTP association

Administration >> Diagnostics >> SCTP Associations											
Diagnostic Scripts	SCTP Ass	SCTP Associations									
AP CLI Scripts	Refresh										
Application Logs & Status	MVNO Account	Control Plane	HLR Service N	Source IP	Source Port	Destination IP	Destination Port	Association			
Statistics O	Super	INDUS2-C	HLR_11.4	10.10.11.204	9898	10.10.11.4	9898	1			
HLR Statistics	Super	INDUS2-C	HLR_11.4	10.10.11.204	9000	10.10.11.4	6000	2			
SCTP Associations	Show 20 🔯	<< 1 >>									
CGF Transactions											

Table 6. SCTP association

KPI	Description
Source IP	Indicates the SCTP sender's port number.
Source Port	Indicates the SCTP sender's source port.
Destination IP	Indicates the destination IP address for identifying the
	association, to which the packet belongs.
Destination Port	Indicates the SCTP destination port.
Association State	Indicates the state of the SCTP association. Value 1 indicates it
	as established and value 2 indicates closure.
ASP State	Indicates the ASP state. Value 1 indicates active mode, value 2 indicates inactive mode and value 3 indicates a downlink
ASP State	Indicates the ASP state. Value 1 indicates active mode, value 2 indicates inactive mode and value 3 indicates a downlink.

CGF Transactions

The SCG plays the CTF role of collecting the chargeable event information for TTG sessions (that is, sessions toward GGSN/PGW). The CGF (Charging Data Functions) service receives the CDR generated at the SCG, based on configurations. To view the KPIs, navigate to **Administration** > **Diagnostic menu**.

Table 7 lists the key performance indicators for CGF transaction statistics based on the request and response messages that the CDR transfers. See Figure 7.

NOTE: For information on configuring CGF Service, refer to the *Administrator Guide for SmartZone* (PDF) or the *SmartZone Online Help*, which is accessible from the SCG web interface.

Figure 7. CGF transactions

	Dashboard	Monitor	Configuration	Report	Identity	Device	Administration	
Administration >> Diagnostics >> 0	CGF Transactions							
Common .	CGF Transac	tions						
Diagnostic/Patch Scripts								
AP CLI Script	Refresh	Annual Press, 000 Annual	445-0 400-T	460	000-1-0 00700-			
Application Logs & Status	MVNO Account	Contol Plane COP Service	COP IP CORS transier	CORS as DU CORS to Ref.	CORSTO Can DRT Reg Se	IT DRIMEQ REVO C	Last Modified On	
Statistics .	Show 20 v			«[1]»				No data
HLR Statistics								
SCTP Associations								
CGF Transactions								

Table 7. KPIs for CGF Transaction

KPI	Description
CDRs Transfer	Indicates the number of CDRs transferred to the CGF server (successful / failed).
CDRs as Duplicate	Indicates the number of CDRs sent as possible duplicate (successful / failed).
CDRs to Release	Indicates the number of CDRs that the SCG wants the CGF server to release (successful / failed).
CDRs to Cancel	Indicates the number of CDRs that the SCG wants the CGF server to cancel (successful / failed).
DRT Req Rcvd	Indicates the number of data record transfer responses received (successful / failed).
DRT Req Sent	Indicates the number of data record transfer requests sent.

CGF Connectivities

CGF Connectivities is related to management messages. It checks the connectivity of the node and sends the echo and node alive requests. To view the KPIs, navigate to **Administration** > **Diagnostic menu.**

Table 8 lists the key performance indicators related to the connectivity between the SCG and CGF for management messages. See Figure 8.

NOTE: For information on configuring CGF Connectivities, refer to the *Administrator Guide for SmartZone* (PDF) or the *SmartZone Online Help*, which is accessible from the SCG web interface.

Figure 8. CGF connectivity

Administration >> Diagnostics >> CG	# Connectivities											
Cominion •	CGF Connec	GF Connectivities										
Diagnostic/Patch Scripts												
AP CLI Script	Refresh											
Application Logs & Status	Control Plane	COF Server IP	Status	RedRoRcvd	NumRedRsp	Echo Reg Sent	Echo Rsp Rcvd	Echo Reg Rovd	Echo Rsp Sent	PathFailure	Created On	Last Modified On
Statistics •	Show 20 V						« 1] »					No data
HLR Statistics												
SCTP Associations												
CGF Transactions												
CGF Connectivities												

Table 8. KPIs for CGF connectivity

KPI	Description
RedRqRcvd	Indicates the number of redirection requests received by the SCG from CGF.
NumRedRspSnt	Indicates the number of redirection responses sent by the SCG to CGF.
Echo Req Sent	Indicates the number of echo requests initiated by the SCG towards CGF.
Echo Rsp Rcvd	Indicates the number of echo responses received by the SCG from CGF.
Echo Req Rcvd	Indicates the number of echo requests initiated by CGF towards the SCG.
Echo Rsp Sent	Indicates the number of echo responses received by CGF from the SCG.
Path Failure	Indicates the number of times the CGF server was unreachable.

DHCP Server

The SCG comes with a built-in DHCP server, which can be enabled for assigning IP addresses to devices that are connected to it. The SCG's DHCP server will only assign addresses to devices that are on its own subnet and are a part of the same VLAN (if VLANs are assigned). To view the KPIs, navigate to **Administration** > **Diagnostic menu.**

Table 9 lists the key performance indicators related to the Dynamic Host Configuration Protocol (DHCP) server functions. See Figure 9.

NOTE: For information on configuring DHCP Service, refer to the *Administrator Guide for SmartZone* (PDF) or the *SmartZone Online Help*, which is accessible from the SCG web interface.

Figure 9. DHCP server

Administration >> Diagnostics >> DH	ICP Server											
Common •	DHCP Serve	HCP Server										
Sagnostic/Patch Scripts												
AP CLI Script	Refresh	00000000	0501507	000000 0000	10// 0	110/0-1	Descent	Debugged	0001010.0		0	Logitz de la
Application Logs & Status	NDUS4-C	272/1540	2940 D	183	ACK Sent	NAUK Sent	2600	Keconcec 15900	DECLINE Re	INFORM Rec	2015/09/28 13:56:43	2015/10/28 15:14:37
Statistics 🔺									•			
HLR Statistics	Show 20 V						< 1 >>					1 total records
SCTP Associations												
CGF Transactions												
CGF Connectivities												
DHCP Server												
DHCP Relay												

Table 9. KPIs for DHCP server

KPI	Description
DISCOVER	Indicates the number of DHCP discover messages processed by the DHCP server.
REQUEST	Indicates the number of DHCP request messages sent by the DHCP server.
OFFER Sent	Indicates the number of DHCP offer messages processed by the DHCP server. This excludes duplicate messages.
ACK Sent	Indicates the number of DHCP acknowledgment messages sent by the DHCP server.
NACK Sent	Indicates the number of DHCP not acknowledged (NACK) messages sent by the DHCP server.
Renewed	Indicates the number of DHCP request messages for renewing the lease period handled.
Rebonded	Indicates the number of DHCP request messages for rebonding.

KPI	Description
DECLINE	Indicates the number of DHCP decline messages received.
Received	
INFORM Received	Indicates the number of DHCP inform messages received.

DHCP Relay

DHCP relay is when the DHCP server acts as relay at the SCG. To view the KPIs, navigate to **Administration** > **Diagnostic menu.**

Table 10 lists the key performance indicators related to the DHCP relay. See Figure 10.

NOTE: For information on configuring DHCP Service, refer to the *Administrator Guide for SmartZone* (PDF) or the *SmartZone Online Help*, which is accessible from the SCG web interface.

Figure 10. DHCP relay

Administration >> Diagnostics >> DH	ICP Relay							
Common 🔺	DHCP Rela							
Diagnostic/Patch Scripts	Dirici ricia	,						
AP CLI Script	Refresh							
Application Logo & Ctatus	Data Plane	DHCP Serve	DISCOVER	OFFER	REQUEST	ACK	DHCP Optio	DHCP Packets Dropped
Application Logs & Status	INDUS4-D0	10.254.1.1	7	7	9	7	16	0
Statistics	INDUS4-D1	10.254.1.1	11	7	10	7	18	0
HLR Statistics	INDUS4-D0	105.0.0.254	14	0	5	0	0	0
SCTP Associations	INDUS4-D1	105.0.0.254	35	0	0	0	0	0
CGF Transactions	Show 20 V						<< 1 >>	
CGF Connectivities								
DHCP Server								
DHCP Relay								

Table 10. KPIs for DHCP relay

KPI	Description
DISCOVER	Indicates the number of DHCP discover messages forwarded to the DHCP server.
OFFER	Indicates the number of DHCP offer messages received from the DHCP server.

Table 10.	KPIs for DHC	P relay
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KPI	Description
REQUEST	Indicates the number of DHCP request messages forwarded to the DHCP server.
ACK	Indicates the number of DHCP acknowledgment messages received from the DHCP server.
DHCP Opt82	Indicates the number of DHCP reply messages received, which include Option 82 in the header. (replies include offer and acknowledgment messages.)
DHCP Packets Dropped	Indicates the number of DHCP packets that are dropped.

GGSN Connections

The SCG has 3GPP defined Tunnel Terminating Gateway (TTG) functionality, which enables it to act as a gateway between the UE (southbound) and the telecom core (northbound). This is to tunnel the traffic between the UE (User Equipment such as mobile phone) and the SCG gateway, which terminates the tunnel and transfers the data over to the GGSN (Gateway GPRS Serving Node).

To view the KPIs, navigate to **Administration** > **Diagnostic menu.** Table 11 lists the key performance indicators for path management message statistics of GGSN connections. See Figure 11.

NOTE: For information on configuring GGSN Service, refer to the *Administrator Guide for SmartZone* (PDF) or the *SmartZone Online Help*, which is accessible from the SCG web interface.

Figure 11. GGSN connections

Administration >> Diagnostics >> GG	SN Connections								
Common 🔺	GGSN Conne	ections							
Diagnostic/Patch Scripts									
AP CLI Script	Refresh								
Application Lang & Clobus	Control Plane	GGSN IP	Echo Reg Sent	Echo Rsp Rcvd	Echo Reg Rovd	Echo Rsp Sent	PathFailure	Created On	Last Modified On
Application Logs & Status	INDUS4-C	104.0.0.3	2	2	N/A	N/A	N/A	2015/10/09 11:17:07	2015/10/09 18:59:49
Statistics	INDUS4-C	144.0.0.2	33	33	N/A	N/A	4	2015/09/30 18:30:20	2015/10/05 13:03:03
HLR Statistics	INDUS4-C	134.0.0.2	169	138	N/A	N/A	1	2015/09/30 14:56:01	2015/10/28 15:15:06
SCTP Associations	Show 20 ¥					<<	1 >>		
CGF Transactions									
CGF Connectivities									
DHCP Server									
DHCP Relay									
GGSN Connections									

	Table 11.	KPIs for	GGSN	connections
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KPI	Description
Echo Req Sent	Indicates the number of echo requests initiated by the SCG towards GGSN.
Echo Rsp Rcvd	Indicates the number of echo responses received by the SCG from GGSN.
Echo Req Rcvd	Indicates the number of echo requests initiated by GGSN towards the SCG.
Echo Rsp Sent	Indicates the number of echo responses received by GGSN from the SCG.
Path Failure	Indicates the number of times GGSN was unreachable.

GGSN/PGW GTP-C Sessions

To view the KPIs, navigate to **Administration** > **Diagnostic menu.** Table 12 lists the key performance indicators for tunnel management messages of GGSN/PGW GTP-C sessions. See Figure 12.

NOTE: For information on configuring GGSN Service, refer to the *Administrator Guide for SmartZone* (PDF) or the *SmartZone Online Help*, which is accessible from the SCG web interface.

Figure 12. GGSN/PGW GTP-C session

Aministration >> Diagnostics >> GG	SN/PGW GTP-C Sessi	ions											
Common 🔺	GGSN/PGW	GTP-C Set	ssions										
Diagnostic/Patch Scripts													
AP CLI Script	Refresh												
Application Logs & Status	MVNO Account	Control Plane	GOSN IP	Created On	Last Modified On	PDP Context	GOSN Init Up	Controller Init	Controller Init	Controller Init.	GOSN Init De	Controller Init	0
Statistics	Super	INDUS4-C	134002	2015/09/30 14:55:58	2015/10/28 15:15:16	0/112/0	00	00	00	00	00	00	2/
HLR Statistics	Super	INDUS4-C	144.0.0.2	2015/09/30 18:30:19	2015/10/05 13:03:03	0/10/0	00	0.0	00	0/0	0/0	0/0	3/
SCTP Associations	(
CGF Transactions	Show 20 💌					<pre><< 1 >></pre>						3 total records	
CGF Connectivities													
DHCP Server													
DHCP Relay													
GGSN Connections													
GGSN/PGW GTP-C Sessions													

Table 12. KPIs for GGSN/PGW GTP	-C	connection
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KPI	Description
PDP Context	Indicates the Policy Decision Point (PDP) which can either be active successful or failed
GGSN Init Update	Indicates the PDP update received (successful / failed).
SCG Init Update (Roaming)	Indicates the PDP update initiated (successful / failed).
SCG Init Update	Indicates the number of SCG initiated update - CoA from AAA
(CoA from AAA)	(successful / failed).
SCG Init Update	Indicates the number of SCG initiated update - Event from HLR
(Events from HLR)	(successful / failed).
GGSN Init Delete	Indicates the number of successful GGSN initiated delete
	session (successful / failed).
SCG Init Delete	Indicates the number of SCG initiated delete due to critical error
(Error)	(successful / failed).

KPI	Description
DM Init Delete	Indicates the number of the SCG initiated de
	Multipoint (DM) from $\Delta\Delta\Delta$ (successful / faile

Table 12. KPIs for GGSN/PGW GTP-C connection

DM Init Delete	Indicates the number of the SCG initiated delete due to Dynamic Multipoint (DM) from AAA (successful / failed).
SCG Init Delete (Event from HLR)	Indicates the number of SCG initiated delete due to event from HLR (successful / failed).
SCG Init Delete (Timeout)	Indicates the number of SCG initiated delete due to timeout at the SCG (successful / failed).
AP Init Delete	Indicates the number of AP initiated delete due to timeout at Access Point (AP) (successful / failed).
DP Init Delete	Indicates the number of data plane initiated delete due to timeout at Data Plane (DP) (successful / failed).
Client Init Delete	Indicates the number of client initiated delete (successful / failed).
Admin Init Delete	Indicates the number of admin initiated delete (successful / failed).

RADIUS Server

A RADIUS service defines the external RADIUS server configuration. RADIUS services authenticates profiles to specify external RADIUS services used based on the realm value.

To view the KPIs, navigate to **Administration** > **Diagnostic menu.** Table 13 lists the key performance indicators for the statistics related to the RADIUS server. See Figure 13.

NOTE: For information on configuring RADIUS Service, refer to the *Administrator Guide for SmartZone* (PDF) or the *SmartZone Online Help*, which is accessible from the SCG web interface.

Figure 13. RADIUS server

Administration >> Diagnostics >> RAI	DIUS Server												
Common 🔺	RADIUS Ser	ver											
Diagnostic/Patch Scripts	1010100000												
AP CLI Script	Refresh												
Application Logs & Status	MVNO Account	Control Plane	AAA IP	Created On	Last Modified On	NAS Type	Auth Type	Auth (Perm)	Auth (Psd)	Auth (Fast Au	Auth (Failed)	ACCESS	A
Statistics .	Super	INDUS4-C	184,21,160,82	2015/09/28 15:07:20	2015/10/28 15:15:39	Ruckus AP		00	00	00	004	90/0//4/7	0
HLR Statistics	Super	INDUS4-C	184,21,160,82	2015/10/20 16:25:36	2015/10/23 11:14:10	3rd Party AP	EAP-SIM	00	00	0.0	000	0000	01
SCTP Associations	ruckus	INDUS4-C	184,21,160,82	2015/10/27 12:32:42	2015/10/28 15:15:39	Ruckus AP		00	00	00	0/0/0	0/0/0/0	C/
CGF Transactions	(•
CGF Connectivities	Show 20 ¥					<< 1 >>						4 total recon	ds
DHCP Server													
DHCP Relay													
GGSN Connections													
GGSN/PGW GTP-C Sessions													
RADIUS Server													

Table 13. KPIs for RADIUS server

KPI	Description
NAS Type	Indicates the NAS type.
Auth Type	Indicates the authentication type.
Auth (Perm)	Indicates the number of authentications done using Permanent ID (successful / failed).
Auth (Psd)	Indicates the number of authentications done using Pseudonym ID (successful / failed).
Auth (Fast Auth)	Indicates the number of authentications done using fast re- auth ID (successful / failed).
Auth (Failed)	Indicates the number of authentication requests for (unknown pseudonym ID / unknown fast re-auth ID) the number of incomplete authentications processed.
ACCESS	Indicates the number of RADIUS access from NAS (requests received / accepts sent / challenge sent / rejects sent).
Accounting Session	Indicates the number of accounting sessions established (successful / failed).
Accounting Request	Indicates the number of RADIUS accounting requests received / number of RADIUS accounting accepts sent.
AP Accounting	Indicates the number of AP accounting sessions established (successful / failed).
AP Accounting Request/ Response	Indicates the number of AP accounting (request / response).
AP Accounting ON Request	Indicates the number of AP accounting ON (request / response).

Table 13. KPIs for RADIUS server

KPI	Description
AP Accounting OFF	Indicates the number of AP accounting OFF (request /
Request	response).

RADIUS Proxy

To view the KPIs, navigate to **Administration** > **Diagnostic menu.** Table 14 lists the key performance indicators related to the RADIUS proxy. See Figure 14.

NOTE: For information on configuring RADIUS Proxy, refer to the *Administrator Guide for SmartZone* (PDF) or the *SmartZone Online Help*, which is accessible from the SCG web interface.

Figure 14. RADIUS proxy

Administration by Dissessing by D	A DELE Dunni	-									_		-
Common A	DADILIC D												_
Diagnostic/Patch Scripts	RADIUS Pro	oxy											
AP CLI Script	Refresh												
Application Logs & Status	MVNO Account	Control Plane	AAAIP	Created On	Last Modified On	NAS Type	Auth	Accounting	ACCESS Re	ACCESS Ch	ACCESS Acc	ACCESS Rej	A
Statistics A	Super	INDUS4-C	104.0.0.3	2015/09/30 14:27:51	2015/10/20 11:08:45	Ruckus AP	161/2/0	100	1807/1807	1535/1535	161/161	2/2	21
HLR Statistics	Super	INDUS4-C	134.0.0.2	2015/10/28 15:20:40	2015/10/28 15:16:14	Ruckus AP	289/95/0	207/0	1011/1011	557/557	289/289	95.95	72
SCTP Associations	Super	INDUS4-C	24.24.122.241	2015/10/27 14:22:11	2015/10/28 15:16:14	Ruckus AP	20/0/0	0.0	20/20	0.0	20/20	0.0	30
CGF Transactions	Super	INDUS4-C	172.19.13.200	2015/10/08 18:28:32	2015/10/09 18:59:50	Ruckus AP	3/0/0	0.0	38/38	32/32	3/3	0.0	0/
CGF Connectivities	Super	INDUS4-C	172.19.10.200	2015/10/08 18:24:55	2015/10/09 18:59:50	Ruckus AP	000	00	3/3	0.0	0.0	0.0	0/
DHCD Server	Super	INDUS4-C	172.19.13.100	2015/10/20 12:12:14	2015/10/23 11:14:10	Ruckus AP	7/0/0	00	559/559	552/552	7/7	0.0	0/
DiffCD Delay	Super	INDUS4-C	134.0.0.5	2015/10/27 16:23:48	2015/10/28 15:16:14	Ruckus AP	0.0/0	0.0	12/12	0.0	0.0	0.0	0/
COPN Connections	Super	INDUS4-C	107.14.2.120	2015/10/20 17:33:20	2015/10/28 15:16:14	Ruckus AP	2/14/0	00	49/64	20/20	10	14/14	61
CODUCCIN CTD C Paralana	Super	INDUS4-C	182.168.10.40	2015/10/23 14:50:29	2015/10/28 15:16:14	Ruckus AP	000	0.0	6.6	0.0	1/0	5.0	01
DADIUS Present	(•
RADIUS Server	Show 20 ¥					< 1 >>						11 total records	
RADIUS Proxy													

KPI	Description
NAS Type	Indicates the NAS type.
Auth	Indicates the number of authentications (successful /
	failed / incomplete).
Accounting	Indicates the number of accounting sessions
	established (successful / failed).
ACCESS Request	Indicates the number of RADIUS access requests
	received from NAS or the number of RADIUS access
	requests sent to AAA server.
ACCESS Challenge	Indicates the number of RADIUS access challenges
	received from AAA server or the number of RADIUS
	access challenge sent to NAS.
ACCESS Accept	Indicates the number of RADIUS access accepts
	received from AAA server or the number of RADIUS
	access accepts sent to NAS.
ACCESS Reject	Indicates the number of RADIUS access rejects
	received from AAA server or the number of RADIUS
	access rejects sent to the NAS.
Account Request	Indicates the number of RADIUS accounting requests
	received from NAS or the humber of RADIUS
Accounting December	Indicates the number of DADILIS approximating reaponess
Accounting Response	received from AAA server or the number of RADIUS
	accounting responses sent to NAS
$C_{OA}(AAA)$	Indicates the number of BADILIS CoA requests received
00/10/00	from AAA server or the number of BADIUS CoA
	responses sent to AAA server (successful) or the
	number of RADIUS CoA responses sent to AAA server
	(failed).
DM (AAA)	Indicates the number of RADIUS DM requests received
	from AAA server or the number of RADIUS DM
	responses sent to AAA server (successful) or the
	number of RADIUS DM responses sent to AAA server
	(failed).

Table 14. KPIs for RADIUS proxy

KPI	Description
DM (NAS)	Indicates the number of RADIUS DM requests sent to NAS or the number of RADIUS DM responses received from NAS (successful) or the number of RADIUS DM responses received from NAS (failed).
AP Accounting	Indicates the number of AP accounting sessions established (successful / failed).
AP Accounting Request/ Response	Indicates the number of AP accounting (request / response).
AP Accounting ON Request	Indicates the number of AP accounting ON (request / response).
AP Accounting OFF Request	Indicates the number of AP accounting OFF (request / response).
Dropped Authentication Requests due to Rate limiting (Dropped Authentication Requests / Dropped Accounting Requests)	Indicates the actual number of dropped requests when the total number of requests received from NAS is greater than MOR value against each RADIUS service / server.
CoA (NAS)	Indicates the number of CoA requests proxied to NAS (3rd party AP).
CoA Autz Only	Indicates the number of RADIUS authorize only requests.

Table 14.	KPIs for RADIUS	proxy
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LMA Signaling

To view the KPIs, navigate to **Administration** > **Diagnostic menu.** Table 15 lists the key performance indicators related to the LMA Signaling. See Figure 15.

NOTE: For information on configuring LMA Signaling refer to the *Administrator Guide for SmartZone* (PDF) or the *SmartZone Online Help*, which is accessible from the SCG web interface.

Figure 15. LMA signaling

Administration >> Diagnostics >> LM	A Signaling										
Common +	LMA Signa	aling									
Diagnostic/Patch Scripts	Line orgine										
AP CLI Script	Refresh										
Application Logs & Status	MVNO Name	LMAIP	DP Name	PBU Packets	PBU Lifetime	PBA Packets	PBA Lifetime	BRI Packets	BRA Packets	Total Control	0
Statistics .	Super	134.0.0.3	INDUS4-D1	1.4K	0	1.4K	1	0	0	2.9K	20
HLR Statistics											
SCTP Associations	Show 20 •						44 1 35				
CGF Transactions											
CGF Connectivities											
DHCP Server											
DHCP Relay											
GGSN Connections											
GGSN/PGW GTP-C Sessions											
RADIUS Server											
RADIUS Proxy											
LMA Signaling											

Table 15. KPIs for LMA signalling

KPI	Description
DP Name	Indicates the MAC address of the data blade.
PBU Packets	Indicates the number of control PBU packets.
PBU Lifetime 0 Packets	Indicates the number of control PBU lifetime 0 packets.
PBA Packets	Indicates the number of control PBA packets.
PBA Lifetime 0 Packets	Indicates the number of control PBA lifetime 0 packets.
BRI Packets	Indicates the number of control BRI packets.
BRA Packets	Indicates the number of control BRA packets.
Total Control Packets	Indicates the total number of control packets.

LMA Connectivity Status

To view the KPIs, navigate to **Administration** > **Diagnostic menu.** Table 16 lists the key performance indicators related to the LMA connectivity status. See Figure 16.

NOTE: For information on configuring LMA connectivity status refers to the *Administrator Guide for SmartZone* (PDF) or the *SmartZone Online Help*, which is accessible from the SCG web interface.

Figure 16. LMA connectivity status

Administration >> Diagnostics >> LN	IA Connectivity									
common A	I MA Con	nectivity								
Diagnostic/Patch Scripts	Line our	neoutiny								
AP CLI Script	Refresh									
Application Logs & Status	DP Name	Primary EMA IP	Secondary L	ACEVE LMA IP	Primary LMA	Secondary L	# of Fallovers	# of Fallovers	Last Fallover Time	Created On
Statistics A	INDU54-00	134.0.0.3		134.0.0.3	5d an 45m	05	0	0	Pero.	2015/10/23 11:31:06
Lil D Statistics	IND054-01	134.0.0.3		134.0.0.3	50 an 45m	05	0	0	Pero.	2015/10/23 11:31:05
SCTP Associations	Show 20	*					~~ 1 >>			
CGF Transactions										
CGF Connectivities										
DHCP Server										
DHCP Relay										
GGSN Connections										
GGSN/PGW GTP-C Sessions										
RADIUS Server										
RADIUS Proxy										
LMA Signating										
LMA Connectivity										

Table 16.	KPIs for LMA	connectivity status
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KPI	Description
DP Name	Indicates the MAC address of the data blade.
Primary LMA IP	Indicates the IP address of the primary LMA.
Secondary LMA IP	Indicates the IP address of the secondary LMA.
Active LMA IP	Indicates the IP address of the current active LMA.
Primary LMA Duration	Indicates the duration in seconds that the primary LMA
	was active.
Secondary LMA Duration	Indicates the duration in seconds that the secondary
	LMA was active.
# of Failover (Primary >	Indicates the number of times a failover occurs from the
Secondary>	primary to secondary LMA.
# of Failover (Secondary >	Indicates the number of times a failover occurs from the
Primary>	secondary to primary LMA.
Last Failover Time	Indicates the time in seconds of the last LMA failover.

Diameter Stack Statistics

To view the KPIs, navigate to **Administration** > **Diagnostic menu.** Table 17 lists the key performance indicators related to the Diameter Stack Statistics. See Figure 17.

NOTE: For information on configuring Diameter Services refers to the *Administrator Guide for SmartZone* (PDF) or the *SmartZone Online Help*, which is accessible from the SCG web interface.

Figure 17. Diameter stack statistics

Administration >> Diagnostics >> Dia	meler Stack Statis	is .										
Common 🔺	Diameter Stat	k Statistics										
Diagnostic/Patch Scripts	Refresh											
AD (Y) I Carled	MVNO Account	Control Plane	Service Name	Peer Name	Created On	Last Modified On	Disconnect I	CER Sent	CEA Received	CER Received	CEA Sent	DPR S
Nº UL SUIDI	Super	NDUS11-C	Diameter_Service	RUCKUS-ST	2015/04/08 18:06:27	2015/04/08 18:07:43	0	0	00	0	00	0
Application Logs & Status	(-									
Satistics 🔺	Show 20 V			RUCI	(US-STA-AAA	« 1 »						110
HLR Statistics												

Table 17. KPIs for Diameter stack statistics

KPI	Description
MVNO Account	MVNO account created with management privileges
Control Plane	Name of the control plane
Service Name	Diameter service name
Peer Name	Diameter peer name, to which the connection is established
Created On	Date of record creation
Last Modified On	Date when the record was last modified
Disconnect Indication	Number of disconnection indications
CER Sent	Number of Capacity Exchange Request (CERs) sent by the stack to the remote diameter peer
CEA Received	Number of Capability-Exchange-Answer (CEA) responses received by the stack from the remote diameter peer

KPI	Description
CER Received	Number of CERs received by the stack from the remote diameter peer
CEA Sent	Number of CEA responses sent by the stack to the remote diameter peer
DPR Sent	Number of Disconnect Peer Request (DPR) sent by the stack to the remote diameter peer
DPA Received	Number of Disconnect Peer Answer (DPA) received by the stack from the remote diameter peer
DPR Received	Number of disconnect peer requests received by the stack from the remote diameter peer
DPA Sent	Number of disconnect peer answers sent by the stack to the remote diameter peer
DWR Sent	Number of Device WatchDog Request (DWR) sent by the stack to the remote diameter peer
DWA Received	Number of Device WatchDog Answer (DWA) received by the stack from the remote diameter peer
DWR Received	Number of device watchdog requests received by the stack from the remote diameter peer
DWA Sent	Number of device watchdog answers) sent by the stack to the remote diameter peer

Table 17. KPIs for Diameter stack statistics

Diameter STa Statistics

To view the KPIs, navigate to **Administration** > **Diagnostic menu.** Table 18 lists the key performance indicators related to the Diameter STa Statistics. See Figure 18.

NOTE: For information on configuring Diameter Services refers to the *Administrator Guide for SmartZone* (PDF) or the *SmartZone Online Help*, which is accessible from the SCG web interface.

Figure 18. Diameter STa statistics

Administration >> Diagnostics >> Dia	meter STA Statistics											
Common +	Diameter STA S	tatistics										
Diagnostic/Patch Scripts	Refresh											
AP CLI Script	MVNO Account	Control Plane	STA Service	PeerIP	Application ID	Created On	Last Modified On	Sessions Cre	DER Sent	DEA Received	STR Sent	STA Received
Application Logs & Status	Show 20 V						«[1]»					No dati
Statistics •												
HLR Statistics												
SCTP Associations												

 Table 18.
 KPIs for Diameter STa statistics

KPI	Description
MVNO Account	MVNO account created with management privileges
Control Plane	Name of the control plane
STA Service Name	Diameter service name
Peer IP	Diameter IP address, to which the connection is established.
Application ID	Application identifier of the STa interface
Created On	Date of record creation
Last Modified On	Date when the record was last modified
Session created	Number of sessions created
DER Sent	Number of Diameter EAP Request (DER) sent from the SCG to 3GPP AAA Radius server
DEA Received	Number of Diameter EAP Answer (DEA) received from the 3GPP AAA Radius server

Table 18.	KPIs for Diameter STa statistics	

KPI	Description
STR Sent	Number of Session Termination Request (STR) sent from the SCG to 3GPP AAA Radius server
STA Received	Number of Session Termination Answer (STA) received from the 3GPP AAA Radius server
ASR Received	Number of Abort Session Request (ASR) with session termination indication received from the 3GPP AAA Radius server
ASA Sent	Number of Abort Session Answer (ASA) sent with result code (success or failure)
RAR Received	Number of Re-Auth Request (RAR) with session update indication received from the 3GPP AAA Radius server
AAR Sent	Number of AA-Request (AAR) sent from the SCG to the 3GPP AAA Radius server
AAA Received	Number of AAA received from 3GPP AAA Radius server
DER ReAuth Sent	Number of Diameter EAP Request (DER) re- authorization sent from the SCG to the 3GPP AAA Radius server
DEA ReAuth Received	Number of Diameter EAP Answer (DEA) re-authorization received from 3GPP AAA Radius server
Tx Timeout	Number of Tx timeouts
Msgs Dropped	Number of messages from 3GPP AAA that were dropped or had a decode failure

SCG Reports

2

In this chapter:

- Saved Reports
- Historical Client Statistics
- Network Tunnel Statistics

Saved Reports

Saved reports list the reports that have been created and saved (Figure 19). To view the list of saved reports navigate to **Report > Saved Reports.** Click a report name to view the details or to modify the report settings.

Figure 19. Saved reports

	Dashboard	Monitor	Configuration		leport	Identity	Administration	
Report >> Saved Rep	orts >> Saved Report List							
This page lists all saved re	ports. Click a report name to view	the report details or to make	e changes to the re	port settings.				
Refresh Create N	low Delete Selected							
Title	Description	Reg	port Template	Time Filter	Resource Filter	Schedule	Status	Actions
Hourly Report-1		Acti	ve TTG Sessions	Hourly (last 8Hours)	Plane : ScaleSA-C	Hourly @ 00	Finished	Q. 💼 🗇
Clients		New	v Client Associati	15 Minutes (last 1Hours)	Domain : Administration D	omain Hourly @ 00	Finished	Q. 🔒 🗊
Tx-Rx	Tx-Rx Bytes	Tx/F	Rx Bytes	15 Minutes (last 24Hours) Domain : Administration D	omain Daily @ 00:00	Finished	Q 💼 🗊
Dallyreport-1	Dailyreport	Sys	tem Resource Uti	5 Minutes (last 24Hours)	Plane : ScaleSA-C	Daily @ 00:00	Finished	Q. 💼 🗊

All the SCG reports can be displayed in different time intervals (15 minutes, hourly, daily, or monthly) for the specified time filter (in hours) and exported in commaseparated value (CSV) format and portable document format (PDF).

NOTE: For information on creating reports, refer to the *Administrator Guide for SmartZone* (PDF) or the *SmartZone Online Help*, which is accessible from the SCG web interface.

The following is the list of reports that can be generated.

- Active TTG Sessions Report
- Client Number Report
- Client Number vs. Air Time Report
- Continuously Disconnected APs Report
- Failed Client Associations Report
- New Client Associations Report
- System Resource Utilization Report
- Tx/Rx Bytes Report

Active TTG Sessions Report

The Active TTG sessions report shows a historical view of the number of active TTG sessions established in the SCG. The active TTG session report can be shown in different time intervals for a specified duration. The report can be generated based on specific control planes or GGSN IP addresses.

Client Number Report

Generate the client number report to view the minimum and maximum number of clients connected to SCG for a given period of time. You can generate this report based on a specific management domain, AP zone, AP, SSID, or radio type.

Client Number vs. Air Time Report

Generate the client number vs. air time report to the average number of clients connected to the SCG and the corresponding airtime utilization (Tx, Rx, busy). You can use this report to display discrepancies in the number of clients, actual throughput, user experience and to troubleshoot these issues.

You can generate this report based on a specific management domain, AP zone, AP or radio type.

Continuously Disconnected APs Report

The continuously disconnected APs report lists access points that were disconnected within a specified time period (hours). You can generate this report based on a specific management domain or AP zone.

Failed Client Associations Report

Generate the Failed Client Associations report to view a list of clients that failed to join the SCG managed access points. You can use this report, for example, to pinpoint APs that may have settings that are preventing clients from associating with it successfully. You can generate this report based on a management domain, AP zone, AP, SSID, or radio type.

New Client Associations Report

Generate the new client associations report to view a list of clients that have associated with the SCG managed access points. You can generate this report management domain, AP zone, AP, SSID, or radio type.

System Resource Utilization Report

Generate the system resource utilization report to view the system's CPU and memory usage. You can generate this report based on a single plane or multiple planes.

Tx/Rx Bytes Report

Generate the Tx/Rx Bytes report to view the number of bytes that have been sent and received through SCG. You can generate this report based on a specific management domain, AP zone, AP, SSID, or radio type.

Historical Client Statistics

Historical client report is based on the UE session statistics. This report is displayed under **Report > Historical Client Statistics.** See Figure 20.

Table 19 contains the report for UE sessions. This is a cumulative value per session and one entry is created per session. Data is reported every 60 seconds and is not bin data. The user interface displays the table and its corresponding graph chart. The two representations are synchronized and controlled by the search criteria. For performance reasons, the SCG may pre-calculate the total counters per DP or per GGSN IP for each bin.

Figure 20. Historical client statistics

Report >> Historical Clin	Int Statistics												
Historical Client	Session Statisti	cs											
View historical client ses Time Period:	sions (terminated client set	isions) and their basic star	istics. You can	download these	statistics to a CSV f	lie.							
Zone Name:	4 hours (4 hours ~ 3 da • INTERA 20NE	(ys)											
Client MAC:		-											
Client IP:													
MVNO Name:	All	*											
Load Data Refresh	Export C SV												
Start	End	Client MAC	Client IP	Core Type	MVNO Name	AP MAC	SSID	Bytes from Client	Bytes to Client	Packets from Client	Packets to Client	Dropped Packets from Client	
2015/10/28 13:18:14	2015/10/28 13:18:57	F0:25:87:98:88:E0	138.0.0.8	TTG	Super	D4:68:4D:	INDUS3AP1	4.7KB	1.7KB	33	12	0	1
2015/10/28 13:16:05	2015/10/28 13:18:05	F0:25:87:98:88:E0	138.0.0.7	TTG	Super	D4:68:4D:	INDUS3AP1	0	0	0	0	0	
2015/10/28 13:15:13	2015/10/28 13:15:22	F0:25:B7:9B:8B:E0	146.0.0.5	Bridge	Super	D4:68:4D	INDUS3AP4	55.0KB	366.1KB	384	429	N/A	
2015/10/28 13:12:25	2015/10/28 13:15:14	F0:25:87:98:88:E0	146.0.0.5	Bridge	Super	D4:68:4D:	INDUS3AP4	314.1KB	6.5MB	3.5K	5.6K	N/A	
2015/10/28 13:09:35	2015/10/28 13:09:38	F0:25:87:98:88:E0	146.0.0.5	Bridge	Super	D4:68:4D	INDUS3AP4	969	1.8KB	10	9	N/A	
2015/10/28 13:08:36	2015/10/28 13:08:39	F0:25:87:98:88:E0	146.0.0.5	Bridge	Super	D4:68:4D	INDUS3AP4	917	1.7KB	9	8	NIA	
2015/10/28 13:08:16	2015/10/28 13:08:24	F0:25:87:98:88:E0	146.0.0.5	Bridge	Super	D4:68:4D:	INDUS3AP4	2.9KB	8.3KB	28	20	N/A)
2015/10/28 13:07:42	2015/10/28 13:08:16	F0:25:B7:9B:8B:E0	146.0.0.5	Bridge	Super	D4:68:4D:	INDUS3AP4	38.1KB	72.3KB	290	221	N/A	
2015/10/28 13:07:36	2015/10/28 13:07:42	F0:25:87:98:88:E0	146.0.0.5	Bridge	Super	D4:68:4D	INDUS3AP4	2.5KB	2.8KB	13	13	N/A	
2015/10/28 13:07:24	2015/10/28 13:07:28	F0:25:87:98:88:E0	146.0.0.5	Bridge	Super	D4:68:4D	INDUS3AP4	371	374	2	2	N/A.	
2015/10/28 13:06:12	2015/10/28 13:06:38	F0:25:B7:9B:8B:E0	146.0.0.5	Bridge	Super	D4:68:4D	INDUS3AP4	3.8KB	9.9KB	40	27	N/A	
2015/10/28 13:04:08	2015/10/28 13:06:13	F0:25:87:98:88:E0	146.0.0.5	Bridge	Super	D4:68:4D	INDUS3AP4	74.6KB	362.3KB	678	565	N/A	
2015/10/28 13:03:07	2015/10/28 13:04:09	F0:25:B7:9B:8B:E0	146.0.0.5	Bridge	Super	D4:68:4D	INDUS3AP4	48.8KB	85.7KB	378	276	N/A	
2015/10/28 13:02:10	2015/10/28 13:02:12	F0:25:87:98:88:E0	146.0.0.5	Bridge	Super	D4:68:4D	INDUS3AP4	917	1.8KB	9	9	N/A	
2015/10/28 13:01:12	2015/10/28 13:01:37	F0:25:B7:9B:8B:E0	146.0.0.5	Bridge	Super	D4:68:4D	INDUS3AP4	4.0KB	9.3KB	35	26	N/A	
2015/10/28 13:00:19	2015/10/28 13:01:13	F0:25:87:98:88:E0	146.0.0.5	Bridge	Super	D4:68:4D	INDUS3AP4	90.3KB	433.8KB	718	636	N/A	

Table 19. Historical data attributes

Attribute	Туре	Description
start	Long	Indicates the session creation time.
end	Long	Indicates the session end time.
Client Mac	String	Indicates the Mac address of the client.
Client IP Address	String	Indicates the IP address of the client.
Core Type	String	Indicates the core network tunnel type.
MVNO Name	String	Indicates the MVNO account.
AP MAC	String	Mac address for the AP.
SSID	Long	Indicates the service set identifier.
Bytes from Client	Long	Indicates the number of bytes received from the client.
Bytes to Client	Long	Indicates the number of bytes sent to the client.
Packets from Client	Long	Indicates the number of packets received from the client.
Packets to Client	Long	Indicates the number of packets sent to the client.
Dropped packets from Client	Long	Indicates the number of packets dropped from client.
Dropped packets to Client	Long	Indicates the number of packets dropped to client.

Network Tunnel Statistics

Tunnel statistics or report is displayed under **Report > Network Tunnel Statistics.** This includes:

- Ruckus AP Ruckus GRE
- Ruckus AP AP Soft GRE
- Ruckus AP AP IPsec
- 3rd Party AP L2oGRE
- 3rd Party AP Q-in-Q Layer 2
- Core Network Tunnel L2oGRE
- Core Network Tunnel -L3oGRE
- Core Network Tunnel GTP
- Core Network Tunnel -PMIPv6

Ruckus AP - Ruckus GRE

Table 20 contains the report based on the statistics for access Ruckus GRE. Each entry contains the 15 minutes cumulative data.

The SCG web interface (Network Tunnel Statistics > Access Network Tunnel > Ruckus AP > Ruckus GRE) displays the table and its corresponding graph chart as seen in Figure 21. The two representations are synchronized and controlled by the search criteria. For performance reasons, the SCG may pre-calculate the total counters per DP or per AP for each bin.

Figure 21. Ruckus GRE report



Table 20. Ruckus GRE report attributes

Attribute	Туре	Description
Time	Long	Bin ID, which is stamped at a 15 minute interval. For example, 10:00, 10:15.
TXBytes	Long	Indicates the number of bytes sent.
RXBytes	Long	Indicates the number of bytes received.
TXPkts	Long	Indicates the number of packets sent.
RXPkts	Long	Indicates the number of packets received.
Dropped Packets	Long	Indicates the number of packets dropped.

Ruckus AP - AP Soft GRE

Table 21 contains the report based on the statistics for access point Soft GRE. Each entry contains the 15 minutes cumulative data.

The SCG web interface (Network Tunnel Statistics > Access Network Tunnel > Ruckus AP > AP Soft GRE) displays the table and its corresponding graph chart as seen in Figure 22. The two representations are synchronized and controlled by the search criteria. For performance reasons, the SCG may pre-calculate the total counters per DP or per AP for each bin.

Figure 22. AP Soft GRE report

eport 🐃 Neb 💦 K Tunnel Statis	tics >> Access Network Tunne	AP SoftGRE							
ccess Network Tunnel	Zone Name:	MESH_ZONE		•					
Ruckus AP	Gateway Address:								
Ruckus GRE	AP MAC or IP Address:								
	Load Data Export C S								
40 10:00						AF	SoftGRE Bytes		
AP IPsec						Time Period:	8 hours.Zone Name:M	ESH_ZONE	
3rd Party AP	•								
Core Network Tunnel	• 8								
	1 1 1 1 1 1 1 1								
	07:30 08:0	0 08:30	09:00	09:30	10:00 10	:30 11:00	11:30 12	:00 12:30	13:00 13:30 14:00 14:30
						AP	SoftCRE Packet		
	1					Time Period	8 hours.Zone Name M	ESH_ZONE	
	÷.								
	Pack								
		2.17	2.7	1.1	1.1.1.1	2.3.2.2			2 2 1 2 2 3 2 4 2 3 C
	07:30 08:00	08:30	09:00	09:30	0:00 10:30	11:00 11	1:30 12:00	12:30	13:00 13:30 14:00 14:30 15
	Time	TX Bytes	RX Bytes	TX Packets	RX Packets	RX Dropped P	TX Dropped P	TX Error Pac	RX Error Packets
	10/28 07:30	NIA	NIA	N/A	NIA	NIA	N/A	N/A	N/A
	10/28 07:45	NIA	N/A	N/A	NIA	N/A	N/A	N/A	N/A
	10/28 07:45 10/28 08:00	N/A N/A	N/A N/A	N/A N/A	N/A N/A	N/A N/A	N/A N/A	N/A N/A	N/A N/A
	10/28 07:45 10/28 08:00 10/28 08:15	N/A N/A N/A	N/A N/A N/A	N/A N/A N/A	N/A N/A N/A	N/A N/A N/A	N/A N/A N/A	N/A N/A N/A	N/A N/A N/A

Table 21. AP Soft GRE report attributes

Attribute	Туре	Description
Time	Long	Bin ID, which is stamped at a 15 minute interval. For example, 10:00, 10:15.
TXBytes	Long	Indicates the number of bytes sent.
RXBytes	Long	Indicates the number of bytes received.
TXPkts	Long	Indicates the number of packets sent.
RXPkts	Long	Indicates the number of packets received.
RX Dropped Packets	Long	Indicates the number of packets dropped.
TX Dropped Packets	Long	Indicates the number of packets dropped.
TX Error Packets	Long	Indicates the number of packets with a header error.
RX Error Packets	Long	Indicates the number of packets with a header error.

Ruckus AP - AP IPsec

Table 22 contains the report based on the statistics for access point IPsec. Each entry contains the 15 minutes cumulative data.

The SCG web interface (**Network Tunnel Statistics > Access Network Tunnel > AP IPsec**) displays the table and its corresponding graph chart as seen in Figure 23. The two representations are synchronized and controlled by the search criteria. For performance reasons, the SCG may pre-calculate the total counters per DP or per AP for each bin.

Report - Hereford Former St		ACCESS NEWORK TURRET.	AIT SURVERE								
Access Network Tunnel	•	Zone Name:	MESH_ZONE		*						
Ruckus AP	•	Gateway Address:	-								
Ruckus GRE		Lond Data Expert CSV									
AP SONGRE		Contraction (Contraction)									
AP IPsec							Time Period	AP SoftGRE Bytes	ESH_ZONE		
3rd Party AP											
Core Network Tunnel	•	Bytes									
		07:30 08:00	08:30	09:00	09:30	10:00 10:	30 11:00	11:30 12	:00 12:30	13:00 13:30 14:	00 14:30
		Packets					Al Time Period	P SoftGRE Packet 18 hours.Zone Name M	s Esh,zone		
	•	1	08:30	09:00	09:30 1	0:00 10:30	AJ Time Pariod	P SoftGRE Packet: I bours.Zone Name Mi 11:30 12:00	s ESH_ZONE 12:30 1	, , , , , , , , , , , , , , , , , , ,	14:30 15:
	•	99 99 97 97 97 97 97 97 97 97 97 97 97 9	08:30 TX Bytes	09:00 RX Bytes	09-30 I TX Packets	0.00 10.30 RX Packets	Al Time Period 11:00 1 RX Dropped P	P SoftGRE Packett I 8 hours Zone Name M 11:30 12:00 TX Dropped P	s ISH, 20NE 12:30 1 TX Emor Pac	1.50 13.50 14.00 RX Emor Packets	i i i 14:30 15:
	ł	07:30 08:00 Time 10/28 07:30	08:30 TX Bytes N/A	09:00 RX Bytes N/A	09:30 1 TX Packets N/A	0.00 10.30 RX Packets N/A	Al Time Period 11:00 1 RX Dropped P N/A	P SoftGRE Packet IE hours.Zone Name M 11:30 12:00 TX Dropped P N/A	s ESH, ZONE 12:30 1 TX Error Pac N/A	1.00 13.30 14.00 RX Error Packets N/A	14:30 15:
		07:30 08:00 Time 1028 07:30 1028 07:45	08:30 TX Bytes N/A N/A	09:00 RX Bytes N/A N/A	09:30 1 TX Packets N/A N/A	0.00 10:30 RX Packets N/A N/A	Al Time Period 11:00 1 RX Dropped P N/A N/A	P SoftGRE Packet: E hours.Zone Name MI 11:30 12:00 TX Dropped P N/A N/A	s ESH, ZONE 12:30 1 TX Error Pac N/A N/A	1.00 13.30 14.00 RX Entr Packets NA NA	14:30 15:
		10/28 07.30 10/28 07.30 10/28 07.45 10/28 00	08:30 TX Bytes N/A N/A N/A	09:00 RX Bytes N/A N/A N/A	09:30 1 TX Packets N/A N/A N/A	NIA NIA NIA	Al Time Period 11:00 1 RX Dropped P N/A N/A	P SoftGRE Packet: Is hours.Zone Name MI 1:30 12:00 TX Dropped P N/A N/A	8 ISH, ZONE 12:30 1 TX Error Pac N/A N/A	1300 1330 14.00 IRX Entr Packets NA NA NA	14:30 15:
		1023 07.30 1023 07.30 1023 07.45 1023 08.15	08:30 TX Bytes N/A N/A N/A N/A	09:00 RX Bytes N/A N/A N/A N/A	09:30 I TX Packets N/A N/A N/A N/A	RX Packets NIA NIA NIA NIA	A) Time Period 11:00 1 RX Dropped P N/A N/A N/A	P SoftGRE Packet: II -130 12:00 TX Dropped P N/A N/A N/A	s IIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIII	NA NA NA NA	14:30 15:

Figure 23. AP IPsec

Table 22. AP IPsec repor	t attributes
--------------------------	--------------

Attribute	Туре	Description
Time	Long	Bin ID, which is stamped at a 15 minute interval. For example, 10:00, 10:15.
TXBytes	Long	Indicates the number of bytes sent.
RXBytes	Long	Indicates the number of bytes received.
TXPkts	Long	Indicates the number of packets sent.
RXPkts	Long	Indicates the number of packets received.
TX Dropped Packets	Long	Indicates the number of packets dropped.

Table 22. AP IPsec report attributes

Attribute	Туре	Description
RX Dropped Packets	Long	Indicates the number of packets dropped.

3rd Party AP - L2oGRE

Table 23 contains the report based on the statistics for access side tunnels L2oGRE and L3oGRE. Each entry contains the 15 minutes cumulative data.

The SCG web interface (**Network Tunnel Statistics > 3rd Party AP> L2oGRE**) displays the table and its corresponding graph chart as seen in Figure 24. The two representations are synchronized and controlled by the search criteria. For performance reasons, the SCG may pre-calculate the total counters per DP or per AP for each bin.



Figure 24. L2oGRE Report

Table 23. L2oGRE report attributes

Attribute	Туре	Description
Time	Long	Bin ID, which is stamped at a 15 minute interval. For example, 10:00, 10:15.
TXBytes	Long	Indicates the number of bytes sent.
RXBytes	Long	Indicates the number of bytes received.
TXPkts	Long	Indicates the number of packets sent.

Table 23. L2oGRE report attributes

Attribute	Туре	Description			
RXPkts	Long	Indicates the number of packets received.			
Dropped Packets	Long	Indicates the number of packets dropped.			

3rd Party AP - Q-in-Q Layer 2

Table 24 contains the report based on the statistics for access side tunnels Q-in-Q. Each entry contains the 15 minutes cumulative data.

The SCG web interface (**Network Tunnel Statistics > 3rd Party AP > Q-in-Q Layer 2)** displays the table and its corresponding graph chart as seen in Figure 25. The two representations are synchronized and controlled by the search criteria. For performance reasons, the SCG may pre-calculate the total counters per DP or per Q-in-Q tag pair for each bin.

Figure 25. Q-in-Q layer 2 report

Report >> Network Tunnel Statistic	cs >>	Access Network Tunnel	Q-in Q Layer					
Access Network Tunnel	•							-
Ruckus AP	•						Q-in-Q Layer 2 Bytes Time Period 8 hours.Data Plane INDUS4-D1.Zone Name Moto_Zone	
3rd Party AP	•							
L2oGRE	L	Jes						
Q-in-Q Layer 2		6						 TX Byte EX Byte
Core Network Tunnel	•	08:00 08:30	09:00	09:30	10:00	10:30	11:00 11:30 12:00 12:30 13:00 13:30 14:00 14:30 15:00 15:30	
	l						Q-siz-Q Layer 2 Packets Time Puriod 8 hours.Data Filese (NOUSH-01.2cre Name Moto,Zone	
		55 55 6 08:30	09:00	09:30	10:00	10:30	11:00 11:30 12:00 12:30 13:30 13:30 14:30 14:30 15:00 15:30	 TX Packets RX Packets Dropped Packet
	L	Time	TX Bytes	RX Bytes	TX Packets	RX Packets	Dropped Packets	
		10/28 08:00	NA	NA	NIA	NA	NIA	
		10/28 08:15	NIA	NIA	NIA	NIA	NIA	
		10/28 08:30	NIA	NA	NIA	NIA	N/A	

Attribute	Туре	Description			
Time	Long	Bin ID, which is stamped at a 15 minute interval. For example, 10:00, 10:15.			
TXBytes	Long	Indicates the number of bytes sent.			
RXBytes	Long	Indicates the number of bytes received.			
TXPkts	Long	Indicates the number of packets sent.			
RXPkts	Long	Indicates the number of packets received.			
Dropped Packets	Long	Indicates the number of packets dropped.			

Table 24. Q-in-Q report attributes

Core Network Tunnel - L2oGRE

Table 25 contains the report based on the statistics for core side gateway of L2oGRE. Each entry contains the 15 minutes cumulative data.

The user interface (**Network Tunnel Statistics > Core Network Tunnel > L2oGRE**) displays the table and its corresponding graph chart as seen in Figure 26. The two representations are synchronized and controlled by the search criteria. For performance reasons, the SCG may pre-calculate the total counters per DP or per Gateway IP for each bin.

Figure 26. L2oGRE report

Report >> Network Tunnel Statistics	>> Core Network Tunnel:	: L20GRE					
Access Network Tunnel •							
Core Network Tunnel					Time P	L2oGRE Bytes eriod 8 hours,Data Mane INDUS4-D1,MVNO Name ruckus	
L3oGRE	ap.						
GTP	6						 TX Dytes BX Dytes
PMIPv6	08:15 08	1:45 09:15	09:45	10:15 10:45	11:15	11:45 12:15 12:45 13:15 13:45 14:15 14:45 15:15 15:45	
						12nCRE Parkets	
					Time P	eriod 8 hours.Data Plane INDUS4-D1.MVNO Name ruckus	
	8						
	+ Pad						• TX Packets
	0815 08	45 0915	09.45	0:15 10:45	11-15	20.01 20.01 20.01 20.01 20.01 20.01 20.01 20.01	 RX Packets Dropped Packets
	00.15			10.13			
	Time	TX Bytes	RX Bytes	TX Packets	RX Packets	Dropped Packets	
	10/28 08:15	NIA	NIA	NIA	N/A	N/A	
	10/28 08:30	NIA	NIA	NIA	NIA	NA	
	10/28 08:45	NIA	NIA	NIA	N/A	NA	
	10/28 09:00	NIA	NIA	NIA	NIA	N/A	
	10/28 09:15	NA	N/A	NA	N/A	NA	
	10/28 09:30	NIA	NIA	NA	N/A	NA	
	10/28 09:45	N/A	NIA	N/A	N/A	NA	
	10/28 10:00	NIA	NIA	NA	N/A	NA	
	10/28 10:15	NIA	NIA	NIA	N/A	N/A	

Table 25. L2oGRE report attributes

Attribute	Туре	Description
Time	Long	Bin ID, which is stamped at a 15 minute interval. For example, 10:00, 10:15.
TXBytes	Long	Indicates the number of bytes sent.
RXBytes	Long	Indicates the number of bytes received.
TXPkts	Long	Indicates the number of packets sent.
RXPkts	Long	Indicates the number of packets received.
Dropped Packets	Long	Indicates the number of packets dropped.

Core Network Tunnel -L3oGRE

Table 26 contains the report based on the statistics for core side gateway ofL3oGRE. Each entry contains the 15 minutes cumulative data.

The user interface (**Network Tunnel Statistics > Core Network Tunnel > L3oGRE**) displays the table and its corresponding graph chart as seen in Figure 27. The two representations are synchronized and controlled by the search criteria. For performance reasons, the SCG may pre-calculate the total counters per DP or per Gateway IP for each bin.

Report ** Network Further Subsucs	Core Network Linns	RE LOOGRE					
Access Network Tunn							
Core Network Tunnel					Time P	L3GG/RE Bytes niod:8 hours.Data Plane INDUS4-D0.MVNIO Name Super	
L20GRE							
L3oGRE	fes						
GTP	1. E.						TX Bytes
PMIPv6	08:30	09:00 09:30	10:00 10:	11:00	11:30	12:00 12:30 13:00 13:30 14:00 14:30 15:00 15:30 16:00	-
	L						
						L3oCRF Parkets	
					Time P	eriod:8 hours,Oata Plane INDUS4-D0,MVND Name Super	
	2						
	and the second						The Avenue of Av
	1						RX Packets
	08:30 0	9:00 09:30	10:00 10:30	11:00	11:30	12:00 12:30 13:00 13:30 14:00 14:30 15:00 15:30 16:00	Dropped Packets
	Time	TX Bytes	RX Bytes	TX Packets	RX Packets	Dropped Packets	
	10/28 08:30	N/A	NIA	NA	NA	NA	
	10/28 08:45	NIA	NIA	NA	N/A	NIA	
	10/28 09:00	N/A	NIA	NA	N/A	NA	
	10/28 09:15	NIA	NIA	NA	N/A	N/A	
	10/28 09:30	NIA	NIA	N/A	N/A	NIA	
	10/28 09:45	NIA	NIA	NA	N/A	NIA	
	10/28 10:00	NIA	NIA	NA	N/A	NIA	
	10/28 10:15	NIA	NIA	NA	N/A	NIA	
	10/28 10:30	N/A	NIA	NA	N/A	N/A	

E report

Table 26.	L3oGRE report attributes
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Attribute	Туре	Description
Time	Long	Bin ID, which is stamped at a 15 minute interval. For example, 10:00, 10:15.
TXBytes	Long	Indicates the number of bytes sent.
RXBytes	Long	Indicates the number of bytes received.
TXPkts	Long	Indicates the number of packets sent.
RXPkts	Long	Indicates the number of packets received.
Dropped Packets	Long	Indicates the number of packets dropped.

Core Network Tunnel - GTP

Table 27 contains the statistics for core side gateway of GGSN GTP-U. Each record contains the accumulated data for a 15 minute period. The table entry contains TX/ RX statistics from all packets received from a GGSN in the last 15 minutes. The attribute, MVNO-ID is provided by the SCG-CBlade.

The user interface (**Network Tunnel Statistics > Core Network Tunnel > GTP**) displays the table and its corresponding graph chart as seen in Figure 28. The two representations are synchronized and controlled by the search criteria. For performance reasons, the SCG may pre-calculate the total counters per DP or per GGSN IP for each bin.



Figure 28. GTP report

Table 27.	GTP report attribu	ites
-----------	--------------------	------

Attribute	Туре	Description
Time	Long	Bin ID, which is stamped at a 15 minute interval. For example, 10:00, 10:15.
TXBytes	Long	Indicates the number of bytes sent.
RXBytes	Long	Indicates the number of bytes received.

Attribute	Туре	Description
TXPkts	Long	Indicates the number of packets sent.
RXPkts	Long	Indicates the number of packets received.
TX Dropped Packets	Long	Indicates the number of packets dropped that are to be sent to GGSN.
RX Dropped Packets	Long	Indicates the number of packets dropped by GGSN.
Bad GTPU	Long	Number of packets received from GGSN with bad GTP header.
RXTeidInvalid	Long	Number of packets received from GGSN with bad TEID.
TXteidInvalid	Long	Number of packets for GGSN with bad/unknown TEID.
EchoRX	Long	Number of GTPU echo request received from GGSN.
LastEchoRxTime	Long	Timestamp of the last GTPU echo request/reply received from GGSN.

Table 27. GTP report attributes

Core Network Tunnel -PMIPv6

Table 28 contains the report based on the statistics for core side gateway of PIMPv6. Each entry contains the 15 minutes cumulative data.

The user interface (**Network Tunnel Statistics > Core Network Tunnel > PMIPv6**) displays the table and its corresponding graph chart as seen in Figure 29. The two representations are synchronized and controlled by the search criteria. For performance reasons, the SCG may pre-calculate the total counters per DP or per Gateway IP for each bin.

Figure 29. PMIPv6 report



Table 28.	PMIPv6	report	attributes
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Attribute	Туре	Description
Time	Long	Bin ID, which is stamped at a 15 minute interval. For example, 10:00, 10:15.
TXBytes	Long	Indicates the number of bytes sent to LMA.
RXBytes	Long	Indicates the number of bytes received from LMA.
Dropped Bytes	Long	Indicates the number of bytes dropped from LMA.
TXPkts	Long	Indicates the number of packets sent to LMA.
RXPkts	Long	Indicates the number of packets received from LMA.
Dropped Packets	Long	Indicates the number of packets dropped from LMA.

Index

Symbols

of Failover (Primary > Secondary> 34 # of Failover (Secondary > Primary> 34

Α

aCCESS 29 access 44 aCCESS accept 31 aCCESS challenge 31 access point 13, 45 access point zone 11 aCCESS reject 31 aCCESS request 31 access side tunnels L2oGRE 48 access side tunnels Q-in-Q 49 account request 31 accounting 31 accounting request 29 accounting response 31 accounting session 29 aCK 25 aCK sent 23 active LMA IP 34 admin init delete 28 aP accounting 29, 32 aP accounting off request 30, 32 aP accounting on request 29, 32 aP accounting request/response 29, 32 aP firmware 13 aP init delete 28 aP MAC 43 aP uptime 13 aP zones 13 aSP state 20 associated clients 14 association 19 association state 20 auth 31 auth (failed) 29 auth (fast auth) 29 auth (perm) 29 auth (psd) 29 auth type 29

authinforeqAKA 19 authinforeqSIM 19

В

bad GTPU 54 bRA Packets 33 bRI Packets 33 bytes from Client 43 bytes to Client 43

С

cDRs as duplicate 21 cDRs to cancel 21 cDRs to release 21 cDRs transfer 21 cGF connectivities 22 cGF transactions 21 chargeable event information 21 client init delete 28 client IP Address 43 client KPIs 15 client Mac 43 client number report 41 client number vs. air time report 41 coA (AAA) 31 coA (NAS) 32 coA Autz Only 32 continuously disconnected APs report 41 core side gateway L2oGRE L3oGRE 50, 52, 54 core side gateway of GGSN 53 core Type 43 cPU status 16 cumulative value 42

D

datapath statistics 16 dECLINE received 24 destination IP 20 destination port 20 dHCP opt82 25 dHCP packets dropped 25 dHCP relay 24 dHCP server 23 dISCOVER 23, 24 disk usage 17 dM (AAA) 31 dM (NAS) 32 dM init delete 28 dP init delete 28 dP Name 33. 34 dropped authentication 32 dropped Bytes 55 dropped Packets 45, 49, 50, 51, 52, 55 dropped packets from Clie 43 dropped packets to Client 43 dRT reg rcvd 21 dRT reg sent 21

Е

echo req rcvd 22, 26 echo req sent 22, 26 echo rsp rcvd 22, 26 echo rsp sent 22, 26 echoRX 54 end 43 external IP address 13

F

failed client associations report 41

G

gateway GPRS serving node 25 GGSN 25 gGSN connection KPIs 25 gGSN init delete 27 gGSN init update 27 gGSN/PGW GTP-C sessions KPIs 27

Н

hLR statistics 18

I

iNFORM received 24 insrtdtaAKA 19 insrtdtaSIM 19 interface usage 17 iP address 13

Κ

key performance indicators 11 kPIs under the monitoring 11

L

L2oGRE and L3oGRE Statistics - Access Side 48 L2oGRE and L3oGRE Statistics - Core Side 50 I3oGRE 52 Iast Failover Time 34 IastEchoRxTime 54 Ima connectivity status 34 IMA Signaling 33

Μ

management messages 22 mB of data transmitted 14 memory status 17 model 13 mVNO Name 43

Ν

nACK sent 23 NAS Type 29, 31 network tunnel statistics 44 new client associations report 41 northbound 25 num red rsp sn 22 number of Alarms 12 number of alarms 14 number of APs by mesh role 12 number of APs by model and radio frequency 12 number of APs per zone 12 number of Clients 12 number of Events 12 number of events 14 number of WLANs 12

0

oFFER 24 oFFER sent 23

Ρ

packets from Client 43 packets to Client 43 path failure 22, 26 pBA Lifetime 0 Packets 33 pBU Lifetime 0 Packets 33 pBU Packets 33 pDP context 27 pIMPv6. 54 port usage 17 primary LMA Duration 34 primary LMA IP 34

R

radio channel information 14 rADIUS proxy KPIs 30 rADIUS server KPIs 28 realm value 28 rebonded 23 red rg rcvd 22 registration rules 13 remotecanloc 19 remotedelsubsdata 19 renewed 23 rEQUEST 23, 25 rstdtaAKA 19 rstdtaSIM 19 rta fail 19 rX Dropped Packets 46, 48, 54 rX Error Packets 46 rXBytes 45, 46, 47, 48, 50, 51, 52, 53, 55 rXPkts 45, 46, 47, 49, 50, 51, 52, 54, 55 rXTeidInvalid 54

S

sainsrtdta 19 sCG appliance 14 sCG init delete (error) 27 sCG init delete (event from HLR) 28 sCG init delete (timeout) 28 sCG init update (CoA from AAA) 27 sCG init update (events from HLR) 27 sCG init update (roaming) 27 sCG system KPIs 16 secondary LMA Duration 34 secondary LMA IP 34 source IP 20 source port 20 southbound 25 sSID 43 staging zone 11 start 43 status 14 subnet 23 system resource utilization report 42

Т

telecom core 25 time 45, 46, 47, 48, 50, 51, 52, 53, 55 total Control Packets 33 total counters 42 tunnel management messages 27 tunnel terminating gateway 25 tX Dropped Packets 46, 47, 54 tX Error Packets 46 tXBytes 45, 46, 47, 48, 50, 51, 52, 53, 55 tXPkts 45, 46, 47, 48, 50, 51, 52, 54, 55 tXteidInvalid 54

U

updGPRSAKA 19 updGPRSSIM 19

W

wLANs on each AP 14

Ζ

zone functions 11



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