



SVI-DSC

Camel IWF

Document SQ-UG-029

Version 1.5

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Change History

Version	Change Made	Author	Authorised	Date
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1.1	Updated SDR section	JF	AC	22.03.18
1.2	Applied the following: Updated IWF attributes table. Updated Section 3. Applied Links to related User Guides Added New Sections Section 5 - TDRs, Section 6 - Error Codes, Section 7 - Redundancy Architecture, Section 8 - USSD, Section 9 - Debug, Section 10 - Data Management, Section 11 - Other Features	BT/MM	SS	29.10.20
1.3	Added new Sections for SVI-MS, SNMP, Backup & Restore.	PW		23-03-23
1.4	Expanded section 3.6.4 to cover the Voice Announcement Functionality in the IWF	MM	SS	21.05.2024
1.5	Added Section 14 referring to Removal of Configuration	SS	SS	21.05.2024

Contents

1.0	Introduction.....	5
1.1	Network Nodes	5
1.1.1	GMSC	5
1.1.2	STP	5
1.1.3	SVI-DSC	5
1.1.4	SVI-IWF	5
1.1.5	OCS	6
1.1.6	Mediation Capability	6
2.0	Overview of Camel to Diameter Interworking	7
2.1	Functionality.....	7
2.2	Overview of Interworking	7
3.0	Configuration	8
3.1	SVI-DSC diameter configuration	8
3.2	SVI-DSC SS7 configuration	8
3.3	SVI-IWF SS7 configuration	13
3.4	SVI-IWF configuration	13
3.4.1	SVI-IWF Attributes	13
3.4.2	Showing Configured Interworking Functions	13
3.4.3	Configuring a New Interworking Function	13
3.4.4	Normalising InitialDP MSISDN	14
3.4.5	Address/Number Manipulation	14
3.4.6	Address/Number Manipulation MO Rules	15
3.4.7	Address/Number Manipulation MT Rules	16
3.4.8	Address/Number Manipulation MF Rules.....	16
3.4.9	Address/Number Manipulation - Refer in IWF Resource	17
3.4.10	Diameter Template.....	17
3.4.11	Format	17
3.4.12	Message Definition Element.....	17
3.4.13	Message Element.....	18
3.4.14	AVP Element	18
3.4.15	Configuration Overview.....	19
3.5	Resources & Attributes	19
3.6	Wizards	20

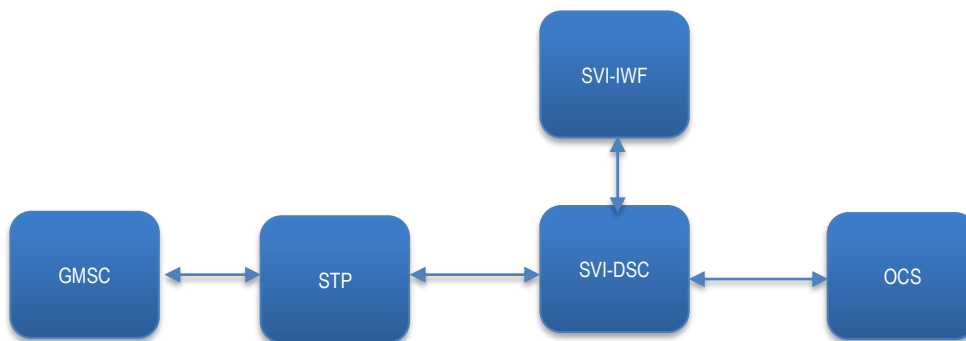
3.6.1	Diameter Resource Hierarchy	21
3.6.2	Resources Hierarchy.....	21
3.6.3	Hierarchy.....	22
3.6.4	Announcement Handling Functionality	22
4.0	SDRs Session Data Records	26
4.1	SDR Fields	26
5.0	TDRs (Transaction Data Records)	28
6.0	CAMEL Diameter Interworking Function Error Codes	31
7.0	Redundancy Architecture.....	32
8.0	USSD.....	34
9.0	Debug	35
10.0	Data Management.....	38
11.0	SVI-MS (SVI-MS Management)	39
▶	System Health.....	41
12.0	Backup & Restore	59
13.0	SNMP	61
13.1	Example snmp commands	61
13.2	Get Status of Diameter Remote Peer:	62
13.3	Common Data.....	62
13.4	Statistics.....	63
13.5	Generating Mib Files	64
14.0	Removal of Configuration	65
15.0	Function Specific Features.....	66

1.0 Introduction

The Squire Technologies SVI-DSC Camel to Diameter Interworking Function provides interworking between Camel and Diameter to allow for pre- and post-paid integration of a diameter supported OSC into non diameter networks which support Camel.

1.1 Network Nodes

The following diagram shows how the IWF fits into a network to combine the SS7 network with a diameter network.



The following network elements in the above diagram are described below

1.1.1 GMSC

The Gateway MSC (GMSC) is the home or visited GMSC of a GSM network that the Mobile Subscriber (MSC) is currently registered to. Through configuration of the GMSC either directly or through provisioning via the home network's HLR, CAMEL triggers are set to initiate a CAMEL dialogue with the SVI-DSC.

1.1.2 STP

The Signalling Transfer Point (STP) provides the connection into the GSM SS7 network allowing for the GMSC's CAMEL messages to be routed to the SVI-DSC.

1.1.3 SVI-DSC

The SVI-DSC provides both the SS7 interconnect and on board DRA capabilities for the IWF. The SS7 interconnect can be on either TDM or SIGTRAN, supporting SIGTRAN application layers of M2PA, M3Ua or SUA.

1.1.4 SVI-IWF

The SVI-IWF connects to the SVI-DSC using the SVI-DSC TAS APIs to provide the interworking between CAMEL and diameter.

1.1.5 OCS

The diameter compliant Online Charging System (OCS) which provides the home networks charging functionality.

1.1.6 Mediation Capability

The SVI-DSC provides a mediation function that allows for the manipulation and steering of Diameter messages solving interoperability issues, providing access control, network topology hiding and advanced routing among other functions. See [User Guide](#).

2.0 Overview of Camel to Diameter Interworking

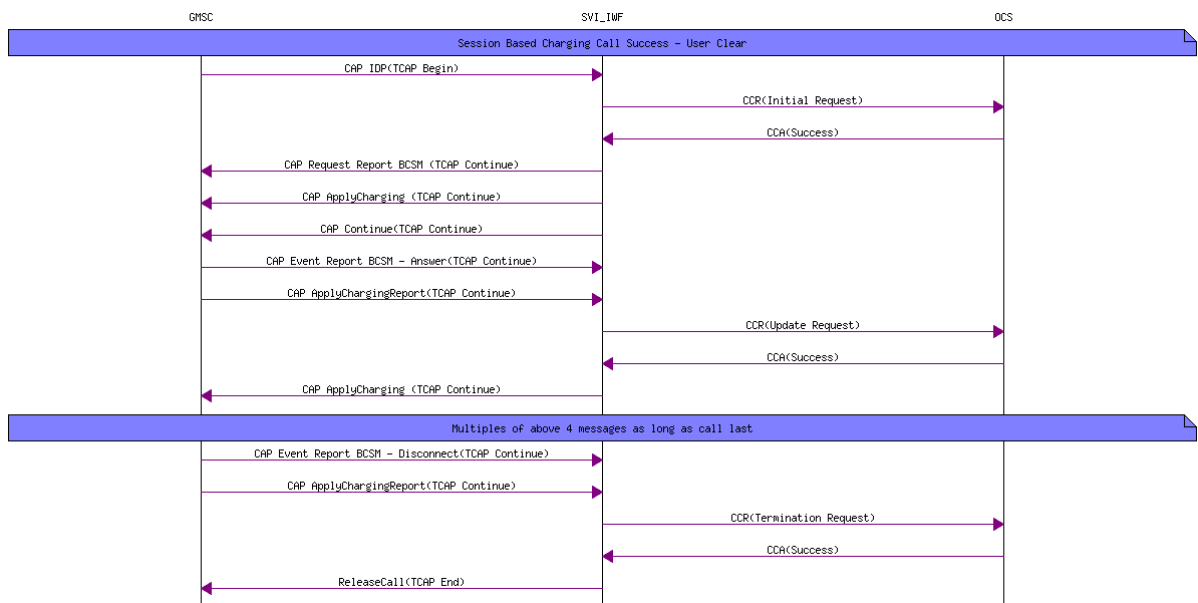
2.1 Functionality

The IWF provides the following high level support

- Online charging for Voice Calls
- Online charging for SMS
- On credit failure redirection of call to IVR
- USSD messaging for end of call information (AoC, Credit, etc).

2.2 Overview of Interworking

The following ladder interworking diagram shows the basis of the interworking between CAMEL and diameter for a voice call.



Further ladder interworking information can be found [HERE](#)

The full interworking specification can be obtained from Squire Technologies on request.

3.0 Configuration

The configuration to provide the SVI-IWF Camel function is broken down into three separate areas:

- SVI-DSC configuration for diameter peer connections
- SVI-DSC configuration for SS7 interconnect
- SVI-IWF for Camel interworking function

3.1 SVI-DSC diameter configuration

The SVI-DSC is responsible for the diameter peer connections, routing, retries and binding policies.

The SVI-IWF connects to the DSC over a diameter peer. The SVI-DSC is responsible for routing the traffic to the required peer and maintaining the bound path to the OCS.

Document [SVI-DSC Diameter User guide](#) provides the steps for setting up the following

- Setting up the peer connection for delivery of the diameter service (Refer to section 6.2/6.3 in the above DSC User Guide)
- Setting up the routing table (Refer to Section 7 in the above DSC User Guide)
- Setting up the binding rules if required
- Setting up retry, reattempt policies.

3.2 SVI-DSC SS7 configuration

The SVI-DSC is responsible for routing the correct SS7 traffic to the SVI-IWF over the SVI-TAC interface.

Document [SVI-SG-STP User-Guide](#) provides the steps for setting up the following

- SS7 network interconnect
- Setting up the SVI-TAC
- Setting up the SS7 routing tables to deliver the required SS7 messages to the TAC.

Attribute	Description	Type	Values	Cfg action
Description	Unique name for each resource instance	String		
Status	Specifies the status of the resource	Enum	Niu Oos Start Ins	SC
initial_dp_response	Specifies response to InitialDP	Enum	IWF_Connect IWF_ReleaseCall IWF_Continue Default : Continue	RT
release_cause	This specifies the default CAMEL release cause used for mapping between Diameter and CAMEL resut-code/cause	Integer	Default 16	RT
apply_charging	Specifies if apply-charging is included in the backward response to the CAMEL initialDP		On Off Default: on	RT
call_information	Specifies if call-information is included in the backward response to the CAMEL initialDP		On Off Default: off	RT
request_report_bcsn	Value of BCSM request report		BCSM_INTERRUPTED BCSM_NOTIFY_AND_C ONTINUE Default: BCSM_NOTIFY_AND_C ONTINUE	RT
destination_address	If initial_dp_response is set to IWF_Connect this attribute contains the included destination address	String		RT
originating_caller_number		String		RT
redirecting_number		String		RT
calling_party_domain		String		RT
called_party_domain		String		RT
redirecting_number_information		Unit32		RT

T_DIAM_CC_Tx	The value of the Credit-Control Tx Timer in ms (see RFC4006 section 13)	Uint32	Default: 1000	RT
T_CAMEL_CCTIME_GRACE	Grace period in ms. The remote Camel device must respond within CC-Time plus this period	Unit32	Default: 10000	RT
T_SESSION	Over all session time	Unit32	Default:0	RT
T_CAMEL_DISC_REPORT	Timer that waits for all elements that are needed for a complete CCR-Final to be produced	Unit32	Default:1000	RT
T_ANNOUNCEMENT	Maximum time that an announcement is allowed to play before the call is cleared.	Unit32	Default: 60000	RT
Temporary Failures	List of comma-delimited Diameter Result-Codes (as integers) which will be treated as if the OCS did not respond	String Max 500		RT
CC-Failure-Handling default	If The Credit-Control-Failure-Handling AVP is not present in CCA this value is assumed	Enum	TERMINATE RETRY_AND_TERMINATE DELETE SESSION Default: TERMINATE	RT
CC-Time default	If the OCS does not respond to CCR with CCA within T_DIAM_CC_Tx this value of CC-Time will be used. If 0 then Camel Release-Call is sent	Uint32	Default:0	RT
Announcement Repetitions	The number of times the IWF instructs the Camel device to play announcements	Byte	Default:1	RT
Announcement Server	The INAP ipRoutingAddress that is used for announcements whose ID is not in the 'Id Prefix List'	String Max 500		RT
Announcement Id Prefix List	a list to direct special handling of specified announcement-ids. INAP Connect (with destRoutingAddress={prefix}{ann-id}) will be sent.	String Max 500		RT

	Id/Prefix definitions are ; separated. Allowable formats: {ann-id};{ann-id}={;ann-id}={prefix};{ann-id}={prefix} The first version uses the 'Announcement Server' attribute as the prefix; the second uses no prefix			
Incoming SmscNormalise	DB parameter resource pointer for normalisation of InitialDp number parameters	Group		RT
MO Call Service-Id	The Diameter Service-Id to use for MO calls. [Default is the Camel Service-Key value]	Unit32	Default: 255	RT
MT Call Service-Id	The Diameter Service-Id to use for MT calls. [Default is the Camel Service-Key value]	Unit32	Default:255	RT
SMS Service-Id	The Diameter Service-Id to use for SMS. [Default is the Camel Service-Key value]	Unit32	Default:255	RT
MO Forward Service-Id	The Diameter Service-Id to use for MO forwarded calls. [Default is the Camel Service-Key value]	Unit32	Default:255	RT
NTP localtime	If set the Camel NTP timestamps will be in the local timezone - not UTC	Byte	True False Default: False	RT
Max-Ussd-Octets	The maximum length of a USSD message string - measured in octets rather than characters	Byte	Default: 140	RT
Remote Peer		Resource		
Diameter Dictionary	File location of diameter dictionary	String Max 500		
Diameter Template	File location of template to define aspects of contents of Diameter messages	String Max 500		
timezone		Byte	Default: 0	RT

timezoneSign		Enum	True False Default: False	RT
SDRs	To enable production of session data records	Enum	True False Default: True	RT
Max-CCR-Before-Ans	The maximum number of CCR-U that will be sent when waiting for call-answer. After this count the call is cleared	Byte	Default: 0	RT
Realm	The diameter realm for this local peer. Used by DNS to find the addresses to listen on and used in the Origin-Realm AVP sent to remote peers.	String		RT
Host(pref_iwf_hostname)	The diameter host name for the peer on the preferred IWF plane.	String		RT
Acct Appls	List of integer accounting application IDs supported by local peer	Integer List		RT
Auth Appls	List of integer Authentication application IDs supported by local peer	Integer List		RT
Pref_diam_ip	Preferred Plane Diameter Network Interface address			
Port (diam_remoteport)	Diameter Peer Remote Port (Internal connection to SS)			
Host (pref_dsc_hostname)	The diameter host name for the DSC remote peer on the preferred plane.	String		RT
Host(npref_iwf_hostname)	The diameter host name for the peer on the non-preferred IWF plane.	String		RT
Npref_diam_ip	Non-Preferred Plane Diameter network interface address			
Host (npref_dsc_hostname)	The diameter host name for the DSC remote peer on the non-preferred plane.	String		RT

3.3 SVI-IWF SS7 configuration

Document [SVI-SG-STP User-Guide](#) provides the steps required for OPC/Linkset and DPC - see sections noted below for specific configuration items.

Refer to Section 5.3 to 5.6 for OPC/Linkset and DPC

Refer to Section 6.5 to 6.8 for Sigtran M3UA or P2PA connections.

3.4 SVI-IWF configuration

The configuration of the IWF is handled by the Camel-Diameter Interworking wizard

3.4.1 SVI-IWF Attributes

The SVI-IWF has the following configurable attributes

See below description of attributes in IWF resource.

3.4.2 Showing Configured Interworking Functions

To see the current configured interworking function configured through a wizard go to Configuration > Wizards > Diameter > Camel-Diameter Interworking. A table is displayed showing the current configured interworking functions

Wizard Instances: Camel-Diameter Interworking

New

Delete

Copy

Import From CSV File

Export to CSV File

Search: Next

☐	id	initial_dp_response (initialdpresponse)	release_cause (releasecause)	apply_charging (applycharging)	call_information (callinformation)	request_report_bcsms (requestreportbcsms)
☐	IWF	IWF_Continue	16	true	false	BCSM_NOTIFY_AND_CONTINUE

<<<

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Rows Per Page 20

Page 1

>

>>>

3.4.3 Configuring a New Interworking Function

To configure a new interworking function through the interworking function wizard navigate to Configuration > Wizards > Diameter > Camel-Diameter Interworking >

The following form will appear.

Attribute	Value
initial_dp_response (initialdpresponse)	IWF_Continue
release_cause (releasecause)	16
apply_charging (applycharging)	☒
call_information (callinformation)	☐
request_report_bcsn (requestreportbcsn)	BCSM_NOTIFY_AND_CONTINUE
CC-Time default (cctimedefault)	300
destination_address (destinationaddress)	
calling_party_domain (callingpartydomain)	
called_party_domain (calledpartydomain)	
Incoming SmscNormalise	
originating_caller_number (originatingcallernumber)	
redirecting_number (redirectingnumber)	
redirecting_number_information (redirectingnumberinformation)	
T_DIAM_CC_Tx (tdiamccctx)	
T_CAMEL_CCTIME_GRACE (tcamelcctimegrace)	
T_SESSION (tsession)	

The wizard will default the initial configuration to the required values to provide a base system. If any of the base configuration needs to be changed, these values can be changed as defined in the above attribute table.

To save the configuration, select the button.

3.4.4 Normalising InitialIDP MSISDN

The SVI-IWF allows for the normalisation of the incoming MSISDN that is interworked from the InitialIDP across into the Diameter CCR message.

To add MSISDN normalisation the Camel-Diameter Interworking attribute, Address Manipulation Rules are configured to setup a set of normalisation rules.

3.4.5 Address/Number Manipulation

Address Manipulation Resource handles decode of a variety of INAP number parameters and normalise them.

MO Address Manipulation / MT will be picked based on the IDP csi.

MF will be picked for MO calls that have redirectingNumber and/or originalCalledNumber contents.

SMS will be used for IDPSMS messages.

Each parameter has an option that controls which IDP parameters are passed to the matching algorithm.

The IDP parameters are grouped into categories -

Called-Party-Number - IDP calledPartyNumber/calledPartyBCDNumvber/callingPartyNumber

Calling-Party-Number

Redirecting-Party-Number

Original-Called-Party

Imsi

Originating-Switch-Address - IDP LI->vlr-number, msc-address, gmsc-address, etc

By default the following number categories are passed to the matching algorithm -

MO/MT - called/calling

MF - called/calling/redirecting/originalcalled

3.4.6 Address/Number Manipulation MO Rules

Name:

Add Items

AddressManipulation Resources In Group: MO_rules

New

Remove

Copy

Print

Edit

Columns

AddressManipulation

Select	id	wizard	status	Description	Match Parameter-Name	Match Digits	Match Type-Of-Number	Match Nature-Of-Address	Set Digits to Strip	Set Prefix	Set Type-Of-Number	Set Nature-Of-Address
☐	cdpn_noa_nli_prefix?variants		INS	cdpn_noa_nli_prefix?variants	INAP Calling Party Number	7781,77003,77007,77008,7624,7924,7911,7797,7829,7839		3-national		44		4-international
☐	cdpnBCD_ton_ukn_prefix00		INS	cdpnBCD_ton_ukn_prefix00	INAP Called Party BCD Number	00	0-unknown		2		1-international	
☐	cdpnBCD_ton_ukn_prefix900		INS	cdpnBCD_ton_ukn_prefix900	INAP Called Party BCD Number	900	0-unknown			44	1-international	
☐	cdpnBCD_ton_ukn_prefix0		INS	cdpnBCD_ton_ukn_prefix0	INAP Called Party BCD Number	0	0-unknown		1	44	1-international	
☐	cdpn_prefix?_len10_nat		INS	cdpn_prefix?_len10_nat	INAP Called Party Number	7xxxxxxxxx	2-national			44	1-international	
☐	cdpn_prefix?_len10_ukn		INS	cdpn_prefix?_len10_ukn	INAP Called Party Number	7xxxxxxxxx	0-unknown			44	1-international	

FirstUpDownLast

<<<Rows Per Page20Page1of1>>>

3.4.7 Address/Number Manipulation MT Rules

Name: MT_rules

Add Items

AddressManipulation Resources In Group: MT_rules												
New Remove Copy Copy Edit Columns				AddressManipulation								
Select	Id	wizard	status	Description	Match Parameter-Name	Match Digits	Match Type-Of-Number	Match Nature-Of-Address	Set Digits to Strip	Set Prefix	Set Type-Of-Number	Set Nature-Of-Address
☐	cgn_noa_ukn_prefix00		INS	cgn_noa_ukn_prefix00	INAP Calling Party Number	00		2-unknown	2			4-international
☐	cgn_noa_ukn_prefix0		INS	cgn_noa_ukn_prefix0	INAP Calling Party Number	0		2-unknown	1	44		4-international
☐	cgn_noa_int_prefix0		INS	cgn_noa_int_prefix0	INAP Calling Party Number	0		3-national	1	44		4-international
☐	cgn_noa_int_prefix1-9_len10		INS	cgn_noa_int_prefix1-9_len10	INAP Calling Party Number	100000000,200000000,300000000,400000000,500000000,600000000,700000000,800000000,900000000		3-national			44	4-international
☐	cgn_noa_ukn_prefix1-9		INS	cgn_noa_ukn_prefix1-9	INAP Calling Party Number	1,2,3,4,5,6,7,8,9		2-unknown			44	4-international
☐	cgn_noa_ukn_prefix0044		INS	cgn_noa_ukn_prefix0044	INAP Called Party Number	0044		2-unknown	2			4-international
☐	cgn_noa_int_prefix0044		INS	cgn_noa_int_prefix0044	INAP Called Party Number	0044		4-international	2			4-international
☐	cgn_noa_ukn_prefix0		INS	cgn_noa_ukn_prefix0	INAP Called Party Number	0		2-unknown	1	44		4-international
☐	cgn_noa_int_prefix0		INS	cgn_noa_int_prefix0	INAP Called Party Number	0		3-national	1	44		4-international
☐	cgn_prefix7_len10		INS	cgn_prefix7_len10	INAP Called Party Number	7000000000					44	1-international
FirstUpDownLast <<<Rows Per Page 20Page 1 of 1>>>												

3.4.8 Address/Number Manipulation MF Rules

Name: MT_rules

Add Items

AddressManipulation Resources In Group: MIT_rules												
AddressManipulation												
Select	Id	wizard	status	Description	Match Parameter-Name	Match Digits	Match Type-Of-Number	Match Nature-Of-Address	Set Digits to Strip	Set Prefix	Set Type-Of-Number	Set Nature-Of-Address
☐	cgn_noa_ukn_prefix00		INS	cgn_noa_ukn_prefix00	INAP Calling Party Number	00		2-unknown	2			4-international
☐	cgn_noa_ukn_prefix0		INS	cgn_noa_ukn_prefix0	INAP Calling Party Number	0		2-unknown	1	44		4-international
☐	cgn_noa_int_prefix0		INS	cgn_noa_int_prefix0	INAP Calling Party Number	0		3-national	1	44		4-international
☐	cgn_noa_int_prefix1-9_len10		INS	cgn_noa_int_prefix1-9_len10	INAP Calling Party Number	100000000,200000000,300000000,400000000,500000000,600000000,700000000,800000000,900000000		3-national			44	4-international
☐	cgn_noa_ukn_prefix1-9		INS	cgn_noa_ukn_prefix1-9	INAP Calling Party Number	1,2,3,4,5,6,7,8,9		2-unknown			44	4-international
☐	cgn_noa_ukn_prefix0044		INS	cgn_noa_ukn_prefix0044	INAP Called Party Number	0044		2-unknown	2			4-international
☐	cgn_noa_int_prefix0044		INS	cgn_noa_int_prefix0044	INAP Called Party Number	0044		4-international	2			4-international
☐	cgn_noa_ukn_prefix0		INS	cgn_noa_ukn_prefix0	INAP Called Party Number	0		2-unknown	1	44		4-international
☐	cgn_noa_int_prefix0		INS	cgn_noa_int_prefix0	INAP Called Party Number	0		3-national	1	44		4-international
☐	cgn_prefix7_len10		INS	cgn_prefix7_len10	INAP Called Party Number	7000000000					44	1-international
First Up Down Last << < Rows Per Page 20 Page 1 of 1 > >>												

3.4.9 Address/Number Manipulation - Refer in IWF Resource

Wizard: Camel-Diameter Interworking

Configures the Camel-Diameter IWF resource

Name: iwf

initial_dp_response (initialdpresponse) IWF_Continue

release_cause (releasecause) 16

apply_charging (applycharging) ☒

call_information (callinformation) ☐

request_report_bscm (requestreportbscm) BCSM_NOTIFY_AND_CONTINUE

CC-Time default (cctimedefault) 900

destination_address (destinationaddress)

calling_party_domain (callingpartydomain)

called_party_domain (calledpartydomain)

[Incoming SmsNormalise](#)

MO Address Manipulation MO_rules

MO Address Numbers

MT Address Manipulation MT_rules

MT Address Numbers

MF Address Manipulation MF_rules

MF Address Numbers

3.4.10 Diameter Template

The diameter template is an XML definition file that allows the user to define the following.

- Interworked AVPS from Camel that should be included in the CCR messages.
- User defined AVPS that should be included in the CCR messages.
- Removal of AVPs contained in the CCA message that will trigger logic within the IWF.

3.4.11 Format

The following section describes the XML format of the Diameter Template XML definition files.

3.4.12 Message Definition Element

The top level <Message Definition> element contains the message definitions.

Name	Type	Repeat	Description
Message	Element	Yes	This element specifies the diameter message. Element: Message

3.4.13 Message Element

The <Message> element contains the definition of a message.

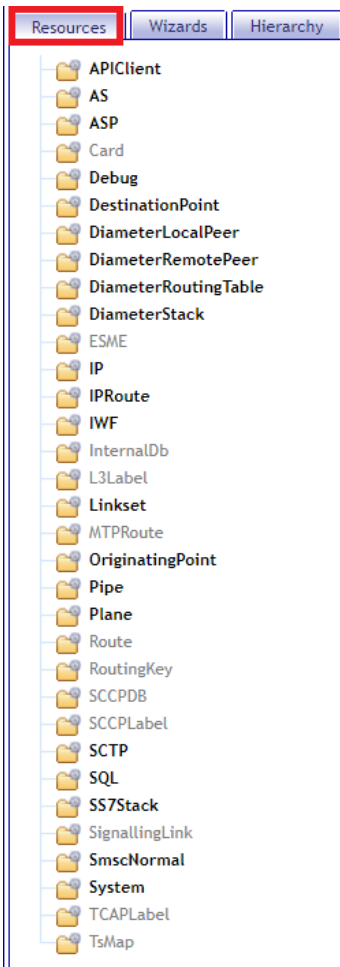
Name	Type	Repeat	Description
Name	Attribute String	No	This contains the username of the diameter message.
Code	Attribute Integer	No	This contains the diameter messages code value
Type	Attribute Enum	No	This specifies if the message defined is for Requests or Answer messages. Answer: This is an Answer message Request: This is a request message
AVP	Element	Yes	Contains the list of diameters AVP definitions Element: AVP

3.4.14 AVP Element

The <AVP> element contains the definition of a message.

Name	Type	Repeat	Description
Name	Attribute String	No	This contains the user name of the diameter AVP as defined in the diameter dictionary. Requests : If defined in a request message with no value attribute the IWF will include this AVP if interworked by the IWF from CAMEL. If defined in a request message with a value attribute the AVP will be added to the outgoing message with the defined value contents Answer : If defined in an answer message and this AVP is used to interwork to the CAMEL interconnect, this function will be executed. If removed this function will not be executed.
Value	Attribute	No	Only valid in requests. The contents must contain the correct syntax for the type of AVP being defined.

3.4.15 Configuration Overview

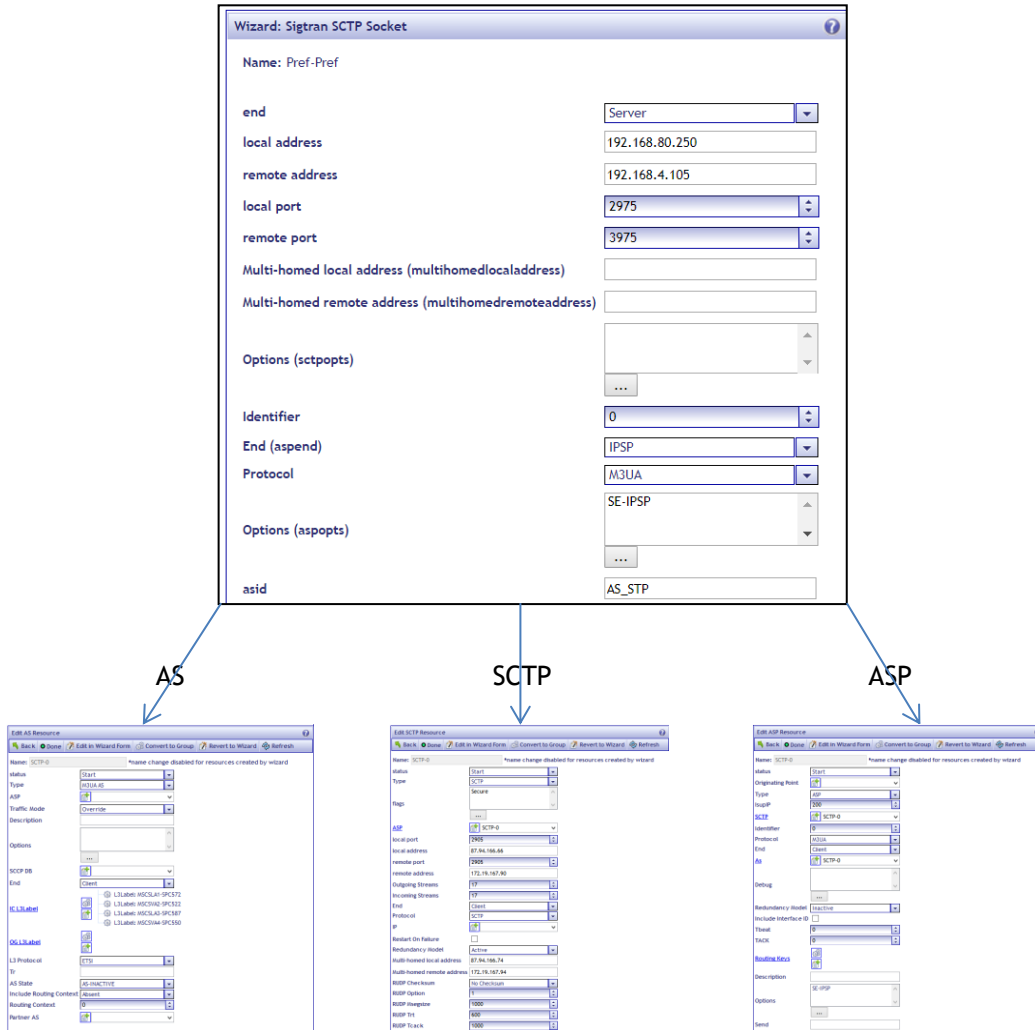


3.5 Resources & Attributes

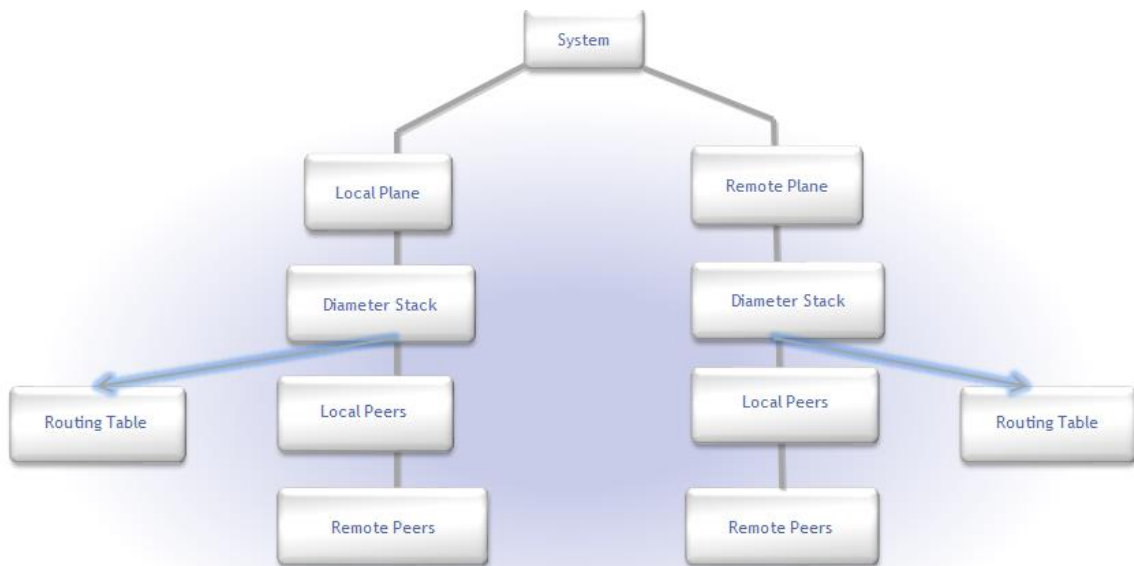
- System abstracted into Resources
Diameter Local Peer, Remote Peer, Diameter Stack
- A resource has a number of attributes
- Linkset references Originating Point , Destination Point etc.
- Additional Configuration is done against these resources
- Resources are arranged into a parent, child hierarchical arrangement
- Child cannot come into service until parent is in service
- If parent fails then children are taken out of service

3.6 Wizards

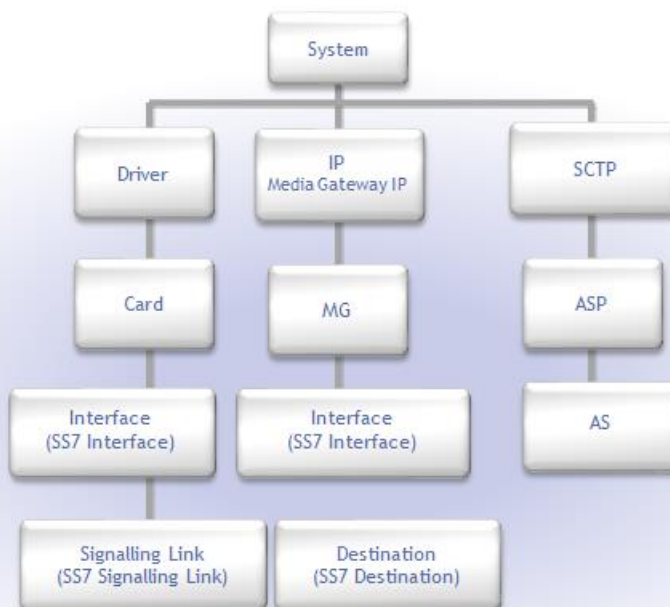
- ▶ Quickly configure multiple resources
- ▶ Parent/Child relationships are automatically created
- ▶ Derived Resources tab will display exactly what the Wizard has created



3.6.1 Diameter Resource Hierarchy



3.6.2 Resources Hierarchy



3.6.3 Hierarchy

The Hierarchy tab is a graphical representation of the parent-child relationship on the SVI and is used to monitor the service state of resource instances, expand the navigation to easily find any faults.

The screenshot shows the 'Hierarchy' tab in the SVI-IWF configuration tool. The left pane displays a tree view of the configuration hierarchy:

- SVI-SS
 - System: none
 - Plane: 0
 - OriginatingPoint: OPC0
 - Linkset: L50
 - SS7Stack: DPC_STP
 - DestinationPoint: DPC_STP
 - DiameterStack: diaPref
 - DiameterLocalPeer: pref
 - DiameterRoutingTable: pref realm.com
 - DiameterRoutingTable: pref ocs1.realm.com
 - DiameterRoutingTable: pref ocs2.realm.com
 - DiameterRoutingTable: pref iwf.realm.com
 - Plane: 1
 - SCTP: Pref-Pref
 - SCTP: Pref-NPref
 - SCTP: NPref-Pref
 - SCTP: NPref-NPref
 - DiameterStack: diaNPref
 - IP: 199
 - IP: tel
 - IP: ss
 - IP: SQUIRE_IWF_Pref
 - SQL: sql
 - SQL: backup
 - Security
 - System: none
 - SMSC
 - System: none

The right pane shows the 'View OriginatingPoint Resource(s)' details for the selected resource:

| OriginatingPoint | OPCO | Edit |
|----------------------|----------------------------|------|
| status | INS | |
| Type | SS7 Originating Point | |
| Protocol | ETSI | |
| STPMode | None | |
| pointcode | 3000 | |
| ni | 2 | |
| debug | 0 | |
| Inservice | [02:07:2018][15:41:54:117] | |
| Retrieval Persistent | true | |
| L3Timers | 0 | |

Navigation controls at the bottom of the details pane include: Columns Per Page 10, Page 1 of 1.

3.6.4 Announcement Handling Functionality

The SVI-IWF will handle any announcement specific AVP's passed to it through OCS and generate require CAP connectToResource and CAP playAnnouncement based on the information coming back from OCS.

AVPs from OCS to enable Announcement:

The below AVP's should be sent to SVI-IWF from the OCS to identify the required announcements.

*Announcement-Information (Vendor=10415, AVP Code=3904, type Grouped)

**Announcement-Identifier (Vendor=10415, AVP Code=3905, type Unsigned32)

The Announcement-Identifier AVP will contain a code identifying an announcement to be played.

****Language (Vendor=10415, AVP Code=3914, type UTF8String)**

The Language AVP will contain the language of the announcement.

Configuration to enable the Announcement signalling on IWF:

There are two relevant IWF attributes, 'Announcement Server' and 'Announcement Id Prefix List'

{ "Announcement Server", "The INAP ipRoutingAddress that is used for announcements whose ID is not in the 'Id Prefix List",

{ "Announcement Id Prefix List", "a list to direct special handling of specified announcement-ids. INAP Connect (with destRoutingAddress={prefix}{ann-id}) will be sent. Id/Prefix definitions are ; separated. Allowable formats: {ann-id};{ann-id}={;{ann-id}={prefix};{ann-id}={prefix} The first version uses the 'Announcement Server' attribute as the prefix; the second uses no prefix"},

There are two ways of doing announcements, one of which breaks down into three different sub-methods

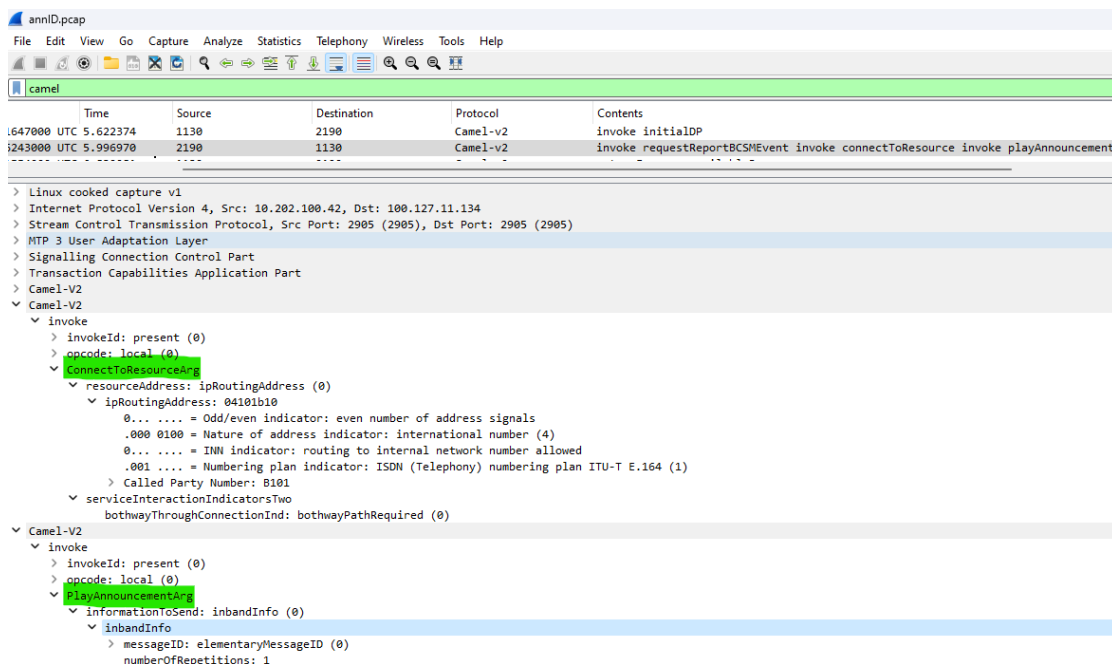
1) Connect-to-resource/play announcement

If the announcement-id is not in the prefix list, this method is used.

Connect-to-resource contains ip-routing-address with contents 'announcement server'

Play announcement contains information-to-send with the ann-id as contents (#reps from config)

Screenshot for reference:

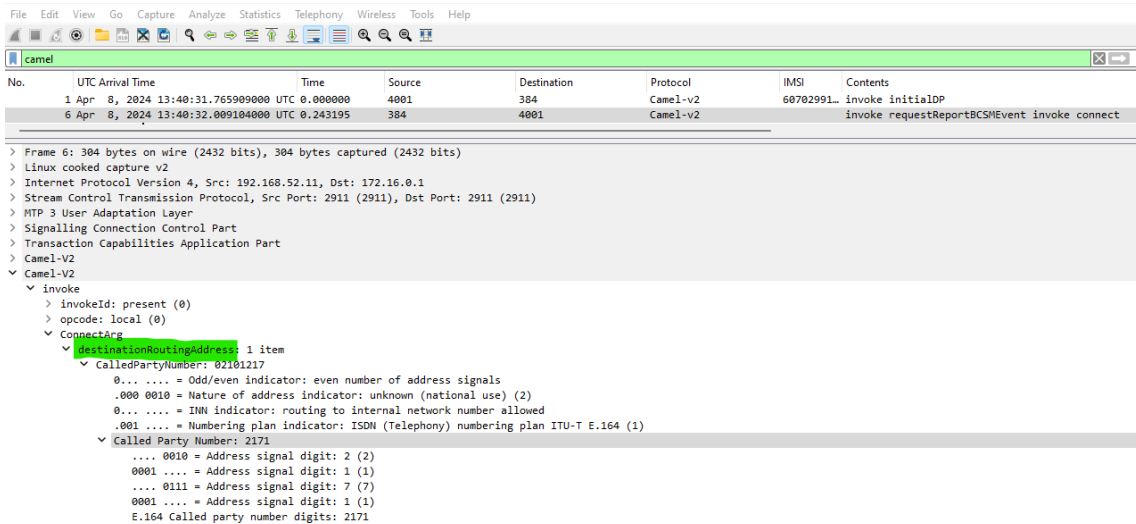


2) Connect

Announcement-id is in the ‘id prefix list’

Connect contains destination-routing-address with variable contents depending on ‘id prefix list’, see below

Screenshot for Reference:



Method (2) sub methods

Formats of prefix list - {ann-id};{ann-id}={;ann-id}={prefix};{ann-id}={prefix}

The ‘announcement server’ is only used when the first format is used.

a) Route to standard announcement server (with announcement-id as suffix)

Announcement server “99999”

Announcement Id Prefix List 1,2,3

When diameter ann-id 1 is received, the value 999991 would be put into the inap destination-routing-address.

b) Route to another announcement server (with no suffix)

Announcement Id Prefix List 8888=

When diameter ann-id 8888 is received, the value 8888 would be put into the inap destination-routing-address.

Note - this has the limitation that the Announcement-Identifier AVP is a 32-bit number, and so the length of the announcement server number is limited to that.

c) Route to another announcement server (with announcement-id as suffix)

Announcement Id Prefix List 7777=66666

When diameter ann-id 7777 is received, the value 666667777 would be put into the inap destination-routing-address.

Worked example of method 2 -

Say you have four announcement servers, 11111, 22222, 33333, 44444

11111 - plays announcements 1 to 3. Number Format is 11111x where x is the announcement

22222 - plays announcements 6-7. Number Format is 22222x where x is the announcement

33333 - plays announcements 11-12. Number Format is 33333xx where x is the announcement

44444 - only plays one announcement and it is un-numbered. Number is 44444

Announcement server "11111"

Announcement Id Prefix List 1,2,3,6=22222,7=22222,11=33333,12=33333,44444=

4.0 SDRs Session Data Records

The SVI-IWF produces Session Data Records (SDRs) containing information on a billing session through the IWF. The SDR fields are stored in an SQL database allowing for later interrogation and profiling of these records.

The SVI-IWF maintains two tables for handling the SDRs. The first table (svi_smsc.active_sdr) contains the current active SDR records and the second table (svi_smsc.final_cdr) contains the completed SDR records. The active table is used for redundancy allowing for the securing of active sessions across the redundant planes.

4.1 SDR Fields

The following table describes the available fields.

| Column | Type | Description |
|---------------------------|----------------------------|--|
| SessionId | String/varchar | Unique Id representing the session |
| session_type | String/varchar | This field represents the type of session
Can be
MO_SMS,MT_SMS,MT_voice,MF_voice_regular,MO_voice |
| mtp_params | String/varchar
Non NULL | This field has all the MTP3 layer parameters available in a format
opc=x;dpc=y;ni=z |
| sccp_cdpn_params | String/varchar
Non NULL | This field has all the SCCP layer parameters for Called Party Address available in a format
cdpn.digits=a;cdpn.tt=b;cdpn.gti=c;cdpn.np=d;cdpn.noa=e;cdpn.es=f;cdpn.ssn=g;cdpn.pc=h;cdpn.ri=l;cdpn.ntl=j; |
| sccp_cgpn_params | String/varchar
Non NULL | This field has all the SCCP layer parameters for Calling Party Address available in a format
cgpn.digits=a;cgpn.tt=b;cgpn.gti=c;cgpn.np=d;cgpn.noa=e;cgpn.es=f;cgpn.ssn=g;cgpn.pc=h;cgpn.ri=l;cgpn.ntl=j; |
| tcap_params | String/varchar
Non NULL | This field has all the TCAP layer parameters in a format
origid=a;destid=b;appctxt=c; |
| camel_params | String/varchar
Non NULL | This field has all the CAMEL layer parameters in a format
idp.cdpn.digits=a; idp.cdpn.noa=b; idp.cdpn.numplan=c;
idp.cdpn.ton=d;idp.cgpn.digits=e; idp.cgpn.noa=f;
idp.cgpn.numplan=g; idp.cgpn.ton=h;
idp.imsi=i;idp.loc.vlr.digits=j; idp.loc.vlr.ton=k;
idp.loc.vlr.numplan=l; |
| diameter_params | String/varchar
Non NULL | This field has all the Diameter layer parameters in a format
cca.initial.ccfh=a; |
| diameter_transport_params | String/varchar
Non NULL | This field has the name of the diameter peer used to send the messages and any host names of the ocs that the session is bound to
peer.name=a;remotepeer.hostname=b;localpeer.name=c; |
| session_state | Integer
Non NULL | State of the record |
| timer_params | String/varchar
Non NULL | This field has all the timers parameters in a format
tm.camel.response=b;tm.tx.timer=c;tm.session.timer=d;tm.camel.disc.report=e; |

| | | |
|--------------------|----------------------------|---|
| | | Times are absolute expiry time in UTC which can then be converted back into local time and appropriate timers restarted. |
| events | String/varchar
Non NULL | This field has all the events that has happened in a datetime string format
cap.idp.received=a;dia.ccr.sent=b;cap.erbsm.answer=c;cap.erbsm.disconnect=d; |
| flags | String/varchar
Non NULL | This field has all the session related flags that are for internal use in below format |
| session_params | String/varchar
Non NULL | This field has all the session related parameters that are for internal use
cc_req_num=a;h2h=b;e2e=c;invokeid=d;cctime=e;acr_rxd_for_ac=f;validity=g; |
| cap_initial_params | Mediumblob
Non NULL | This field represents the initial IDP or IDP SMS received by the system which resulted in the creation of session. The data is in hex format same as that of the info block received by the iwf task from CAMEL stack |
| wireshark_fileter | String/varchar
Non NULL | This field represents a wireshark filter that can be used to filter a pcap trace to find the session that created this SDR |

5.0 TDRs (Transaction Data Records)

The SVI-DSC produces into the SQL database, Transaction Data Records which provide a detailed record of each transaction through the SVI.

To view the Transaction Data Records navigate to Diameter > TDRS. The following table will be shown.

| Configuration SMC Diameter Fired Alarms Status System Details Charts + | | | | | | | | | | | | | |
|---|---------------------|---------------------|---------------|--------------------|------------|------------|----------------------------|-----------|----------|--------------------|--------|-------------------------------------|--|
| Refresh Update every 30 s | | | | | | | | | | | | | |
| Configured Local Peers Configured Remote Peers TDRs Statistics | | | | | | | | | | | | | |
| Functions | Start Time | Stop Time | Incoming Peer | Outgoing Peer | Local Peer | SVI Result | Rstt-Code | Rstt-Code | Cmd-Code | Cmd-Code | App-Id | App-Id | |
| | 2018-04-23 10:15:24 | 2018-04-23 10:15:24 | hvf_pref | | pref | No Route | DIAMETER_UNABLE_TO_DELIVER | 3002 | 272 | Credit-Control-Req | 4 | Diameter Credit Control Application | |
| | 2018-04-23 10:15:24 | 2018-04-23 10:15:24 | hvf_pref | | pref | No Route | DIAMETER_UNABLE_TO_DELIVER | 3002 | 272 | Credit-Control-Req | 4 | Diameter Credit Control Application | |
| | 2018-04-23 10:15:24 | 2018-04-23 10:15:24 | hvf_pref | | pref | No Route | DIAMETER_UNABLE_TO_DELIVER | 3002 | 272 | Credit-Control-Req | 4 | Diameter Credit Control Application | |
| | 2018-04-23 10:17:04 | 2018-04-23 10:17:04 | hvf_pref | cerillion_ocs_pref | pref | Success | DIAMETER_AVP_UNSUPPORTED | 5001 | 272 | Credit-Control-Req | 4 | Diameter Credit Control Application | |
| | 2018-04-23 10:17:04 | 2018-04-23 10:17:04 | hvf_pref | cerillion_ocs_pref | pref | Success | DIAMETER_AVP_UNSUPPORTED | 5001 | 272 | Credit-Control-Req | 4 | Diameter Credit Control Application | |
| | 2018-04-23 10:17:04 | 2018-04-23 10:17:04 | hvf_pref | cerillion_ocs_pref | pref | Success | DIAMETER_AVP_UNSUPPORTED | 5001 | 272 | Credit-Control-Req | 4 | Diameter Credit Control Application | |
| | 2018-04-23 10:43:43 | 2018-04-23 10:43:43 | hvf_pref | | pref | No Route | DIAMETER_UNABLE_TO_DELIVER | 3002 | 272 | Credit-Control-Req | 4 | Diameter Credit Control Application | |
| | 2018-04-23 10:43:43 | 2018-04-23 10:43:43 | hvf_pref | | pref | No Route | DIAMETER_UNABLE_TO_DELIVER | 3002 | 272 | Credit-Control-Req | 4 | Diameter Credit Control Application | |
| | 2018-04-23 10:43:43 | 2018-04-23 10:43:43 | hvf_pref | | pref | No Route | DIAMETER_UNABLE_TO_DELIVER | 3002 | 272 | Credit-Control-Req | 4 | Diameter Credit Control Application | |
| | 2018-04-23 10:56:46 | 2018-04-23 10:56:46 | hvf_pref | cerillion_ocs_pref | pref | Success | DIAMETER_INVALID_AVP_BITS | 3009 | 272 | Credit-Control-Req | 4 | Diameter Credit Control Application | |
| | 2018-04-23 10:56:46 | 2018-04-23 10:56:46 | hvf_pref | cerillion_ocs_pref | pref | Success | DIAMETER_AVP_UNSUPPORTED | 5001 | 272 | Credit-Control-Req | 4 | Diameter Credit Control Application | |
| | 2018-04-23 10:56:46 | 2018-04-23 10:56:46 | hvf_pref | cerillion_ocs_pref | pref | Success | DIAMETER_AVP_UNSUPPORTED | 5001 | 272 | Credit-Control-Req | 4 | Diameter Credit Control Application | |
| | 2018-04-23 10:59:32 | 2018-04-23 10:59:32 | hvf_pref | cerillion_ocs_pref | pref | Success | DIAMETER_AVP_UNSUPPORTED | 5001 | 272 | Credit-Control-Req | 4 | Diameter Credit Control Application | |
| | 2018-04-23 10:59:32 | 2018-04-23 10:59:32 | hvf_pref | cerillion_ocs_pref | pref | Success | DIAMETER_AVP_UNSUPPORTED | 5001 | 272 | Credit-Control-Req | 4 | Diameter Credit Control Application | |
| | 2018-04-23 10:59:32 | 2018-04-23 10:59:32 | hvf_pref | cerillion_ocs_pref | pref | Success | DIAMETER_AVP_UNSUPPORTED | 5001 | 272 | Credit-Control-Req | 4 | Diameter Credit Control Application | |
| | 2018-04-23 11:00:42 | 2018-04-23 11:00:42 | hvf_pref | cerillion_ocs_pref | pref | Success | DIAMETER_AVP_UNSUPPORTED | 5001 | 272 | Credit-Control-Req | 4 | Diameter Credit Control Application | |
| | 2018-04-23 11:00:42 | 2018-04-23 11:00:42 | hvf_pref | cerillion_ocs_pref | pref | Success | DIAMETER_AVP_UNSUPPORTED | 5001 | 272 | Credit-Control-Req | 4 | Diameter Credit Control Application | |
| | 2018-04-23 11:02:58 | 2018-04-23 11:02:58 | hvf_pref | cerillion_ocs_pref | pref | Success | DIAMETER_AVP_UNSUPPORTED | 5001 | 272 | Credit-Control-Req | 4 | Diameter Credit Control Application | |
| | 2018-04-23 11:02:58 | 2018-04-23 11:02:58 | hvf_pref | cerillion_ocs_pref | pref | Success | DIAMETER_AVP_UNSUPPORTED | 5001 | 272 | Credit-Control-Req | 4 | Diameter Credit Control Application | |
| Rows Per Page: 20 Page 1 of 16 | | | | | | | | | | | | | |

Detailed Transaction Data Record View

A single transactions data can be displayed in greater detail by selecting the icon next to the desired TDR record.

On selection of this icon a detailed record will be displayed.

Configuration

SMSC

Diameter

Fired Alarms

Status

System Details

Charts

Refresh

Update every 30 s

Configured Local Peers

Configured Remote Peers

TDRs

Statistics

| Functions | Start Time | Stop Time | Incoming Peer | Outgoing Peer | Local Peer | SVI Result | Rstt-Code | Rstt-Code | Cmd-Code | Cmd-Code | App-Id | App-Id | |
|-----------|---------------------|---------------------|---------------|---------------|-------------------|------------|----------------------------|--------------------------|----------|--------------------|--------------------|-------------------------------------|-------------------------------------|
| | 2018-04-23 10:15:24 | 2018-04-23 10:15:24 | twf_pref | | pref | No Route | DIAMETER_UNABLE_TO_DELIVER | 3002 | 272 | Credit-Control-Req | 4 | Diameter Credit Control Application | |
| | 2018-04-23 10:15:24 | 2018-04-23 10:15:24 | twf_pref | | pref | No Route | DIAMETER_UNABLE_TO_DELIVER | 3002 | 272 | Credit-Control-Req | 4 | Diameter Credit Control Application | |
| | 2018-04-23 10:15:24 | 2018-04-23 10:15:24 | twf_pref | | pref | No Route | DIAMETER_UNABLE_TO_DELIVER | 3002 | 272 | Credit-Control-Req | 4 | Diameter Credit Control Application | |
| | 2018-04-23 10:17:04 | 2018-04-23 10:17:04 | twf_pref | cer | | | | | 272 | Credit-Control-Req | 4 | Diameter Credit Control Application | |
| | 2018-04-23 10:17:04 | 2018-04-23 10:17:04 | twf_pref | cer | | | | | 272 | Credit-Control-Req | 4 | Diameter Credit Control Application | |
| | 2018-04-23 10:17:04 | 2018-04-23 10:17:04 | twf_pref | cer | | | | | 272 | Credit-Control-Req | 4 | Diameter Credit Control Application | |
| | 2018-04-23 10:43:43 | 2018-04-23 10:43:43 | twf_pref | cer | | | | | 272 | Credit-Control-Req | 4 | Diameter Credit Control Application | |
| | 2018-04-23 10:43:43 | 2018-04-23 10:43:43 | twf_pref | cer | | | | | 272 | Credit-Control-Req | 4 | Diameter Credit Control Application | |
| | 2018-04-23 10:43:43 | 2018-04-23 10:43:43 | twf_pref | cer | | | | | 272 | Credit-Control-Req | 4 | Diameter Credit Control Application | |
| | 2018-04-23 10:43:43 | 2018-04-23 10:43:43 | twf_pref | cer | | | | | 272 | Credit-Control-Req | 4 | Diameter Credit Control Application | |
| | 2018-04-23 10:56:46 | 2018-04-23 10:56:46 | twf_pref | cer | | | | | 272 | Credit-Control-Req | 4 | Diameter Credit Control Application | |
| | 2018-04-23 10:56:46 | 2018-04-23 10:56:46 | twf_pref | cer | | | | | 272 | Credit-Control-Req | 4 | Diameter Credit Control Application | |
| | 2018-04-23 10:56:46 | 2018-04-23 10:56:46 | twf_pref | cer | | | | | 272 | Credit-Control-Req | 4 | Diameter Credit Control Application | |
| | 2018-04-23 10:59:32 | 2018-04-23 10:59:32 | twf_pref | cer | | | | | 272 | Credit-Control-Req | 4 | Diameter Credit Control Application | |
| | 2018-04-23 10:59:32 | 2018-04-23 10:59:32 | twf_pref | cer | | | | | 272 | Credit-Control-Req | 4 | Diameter Credit Control Application | |
| | 2018-04-23 11:00:42 | 2018-04-23 11:00:42 | twf_pref | cer | | | | | 272 | Credit-Control-Req | 4 | Diameter Credit Control Application | |
| | 2018-04-23 11:00:42 | 2018-04-23 11:00:42 | twf_pref | cer | | | | | 272 | Credit-Control-Req | 4 | Diameter Credit Control Application | |
| | 2018-04-23 11:00:42 | 2018-04-23 11:00:42 | twf_pref | cer | | | | | 272 | Credit-Control-Req | 4 | Diameter Credit Control Application | |
| | 2018-04-23 11:02:58 | 2018-04-23 11:02:58 | twf_pref | cer | onitelln_ocs_pref | pref | Success | DIAMETER_AVP_UNSUPPORTED | 5001 | 272 | Credit-Control-Req | 4 | Diameter Credit Control Application |
| | 2018-04-23 11:02:58 | 2018-04-23 11:02:58 | twf_pref | cer | onitelln_ocs_pref | pref | Success | DIAMETER_AVP_UNSUPPORTED | 5001 | 272 | Credit-Control-Req | 4 | Diameter Credit Control Application |

TDR Details

Start Time:

2018-04-23 10:15:24

Stop Time:

2018-04-23 10:15:24

Incoming Peers:

twf_pref

Outgoing Peers:

Local Peer:

pref

SVI Result:

No Route

Rstt-Code:

DIAMETER_UNABLE_TO_DELIVER

Rstt-Code:

3002

Cmd-Code:

272

Cmd-Code Text:

Credit-Control-Req

App-Id:

4

App-Id:

Diameter Credit Control Application

IC HBH-Id :

1001

OG HBH-Id:

0

EZE-Id:

2001

IC-Rtrip:

0

<<

Rows Per Page 20

Page 1

of 16

>>

TDR Format

| Column | GUI Description | Type | Description |
|--------------|-----------------|------------------|--|
| TRANS_ID | n/a | BIGINT | Unique identifier for each entry into the database |
| START_TIME | Start Time | Datetime | Time at which the incoming transaction request was received on the SVI |
| STOP_TIME | Stop Time | Datetime | Time at which the incoming transaction request was answered |
| IC_PEER_NAME | Incoming Peer | Varchar
(255) | The name of the remote peer resource the incoming transaction was on. |
| OG_PEER_NAME | Outgoing Peer | Varchar
(255) | The name of the remote peer resource the outgoing transaction was on. |
| LC_PEER_NAME | Local Peer | Varchar
(255) | The name of the local peer resource the incoming transaction was on. |

| | | | |
|-------------------------|------------|------------------|--|
| TDR_RESULT | n/a | Int
(11) | <p>The integer value of the internal result of the transaction attempt</p> <ul style="list-style-type: none"> (1) TDR_SUCCESS:- The transaction was successfully routed through the SVI (2) TDR_NO_ROUTE:- No route was defined for the transmission of a transaction request (3) TDR_INVALID_PACKET: The incoming request was rejected due to an invalid packet (4) TDR_INVALID_MSG:- The incoming request was rejected due to an invalid diameter message (5) TDR_LOOP_DETECTED:- The incoming request was rejected due to a loop being detected. (6) TDR_REATTEMPT:- The incoming request for a peer to peer connection was reattempted. A new TDR will be created for the reattempt. (7) TDR_THROTTLED :- The Transaction did not proceed because the transaction was throttled at the SVI Diameter stack (8) TDR_TIMEOUT:- The Transaction failed due to a timer expiry |
| TDR_RESULT_TEXT | SVI Result | Varchar
(255) | A text representation of the TDR_RESULT code |
| RESULT_CODE | Rslt-Code | Int
(11) | Value of the Result-Code AVP contents as received in the outgoing transaction |
| RESULT_CODE_TEXT | Rslt-Code | Varchar
(255) | Textual representation of the Result-Code AVP |
| CC | Cmd-Code | Int
(11) | Contains the value of the incoming requests Command Code |
| CC_TEXT | Cmd-Code | Varchar
(255) | Contains a textual representation of the Command Code, as a Request. |

6.0 CAMEL Diameter Interworking Function Error Codes

This section details the error codes that a SVI-IWF produces when a session has ended abnormally.

SDR table (final_sdr) has a column session_params which will have an error=x data which can be used to determine why a session has failed. Value 0 is success. Other values are detailed below:

// Defines for IWF Errors

//Defined as 5 class of errors currently

//SS7 Errors 1000-1999

| | |
|-----------------------------------|--|
| #define _IWF_SESS_SS7_UNAVAILABLE | 1000 //SS7 Network Down/Not reachable |
| #define _IWF_SESS_SCCP_UDTS | 1001 //SCCP UDTS |
| #define _IWF_SESS_TCAP_ABORT | 1002 //TCAP Abort |
| #define _IWF_SESS_TCAP_REJECT | 1003 //TCAP Reject |
| #define _IWF_SESS_TCAP_END | 1004 //TCAP End |
| #define _IWF_SESS_CAP_EVENT | 1005 //CAP EventReport(cause code+event) |

//Diameter Errors 2000-2999

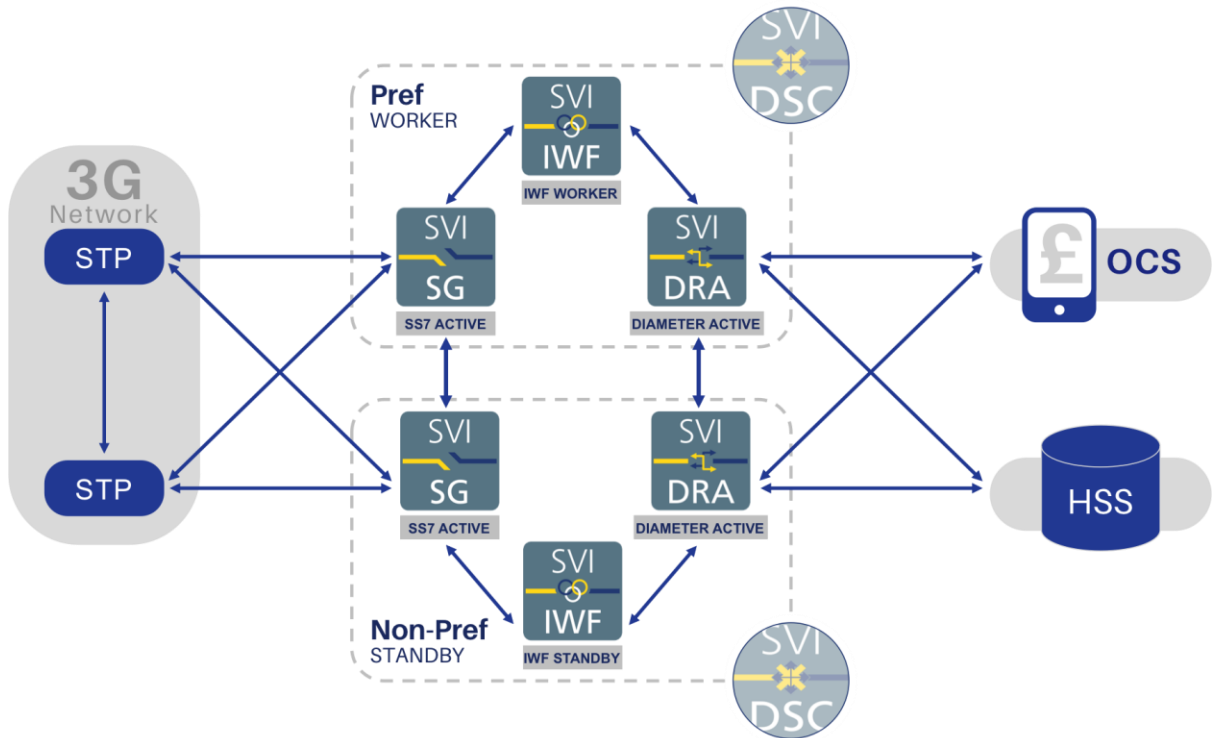
| | |
|-------------------------------------|---|
| #define _IWF_SESS_DIAM_UNAVAILABLE | 2000 //Diameter Network Down/Not reachable |
| #define _IWF_SESS_DIAM_STR_RECEIVED | 2001 //Diameter Session Termination Request |
| #define _IWF_SESS_DIAM_ASR_RECEIVED | 2002 //Diameter Abort Session Request |
| #define _IWF_SESS_DIAM_INIT_ERROR | 2003 //Diameter CCR Initial Error Codes |
| #define _IWF_SESS_DIAM_UPDATE_ERROR | 2004 //Diameter CCR Update Error Codes |
| #define _IWF_SESS_DIAM_TERM_ERROR | 2005 //Diameter CCR Final Error Codes |

//IWF Errors 3000-3999

| | |
|---------------------------------------|---|
| #define _IWF_SESS_CAP_TIMEOUT | 3000 //IWF Initiated Clear CAP Timeout |
| #define _IWF_SESS_DIAM_TIMEOUT | 3001 //IWF Initiated Clear Diameter Timeout |
| #define _IWF_SESS_CAP_INVALID_PARAM | 3002 //IWF Initiated Clear Invalid/Missing Parameter CAP |
| #define _IWF_SESS_DIAM_INVALID_PARAM | 3003 //IWF Initiated Clear Invalid/Missing Parameter Diameter |
| #define _IWF_SESS_INTERNAL_ERR_REJECT | 3004 //IWF Initiated Clear due to an internal error state/could not create message/out of resources etc |
| #define _IWF_SESS_CONFIG_REJECT | 3005 //IWF Initiated User Configuration (based on called/calling numbers etc) has caused rejection |
| #define _IWF_SESS_TIMEOUT | 3006 //IWF Initiated Overall Session Timer Timeout |
| #define _IWF_SESS_SQL_TIMEOUT | 3007 //IWF Initiated an SQL query has timed out |
| #define _IWF_SESS_SQL_ERROR | 3008 //IWF Initiated an SQL error occurred |
| #define _IWF_SESS_HTTP_ERROR | 3009 //IWF Initiated clear due to HTTP side error |
| #define _IWF_SESS_DIP_ERROR | 3010 //IWF Initiated a Protocol DIP error occurred |

7.0 Redundancy Architecture

Overview:



Functionality:

- SVI-IWF pair configured via single user interface.
- Worker / Worker configuration
- Single OA&M interface over VIP address connecting to Worker Plane
- Offers alternate routing between SVI-IWF nodes.
- Session check-pointing maintained between IWF nodes.
- SQL Database Master/Master role maintain sync between the planes

► SS7 Signalling Gateway

No concept of worker / standby always active

► Diameter Configuration

Each of the planes has a direct peer to peer connection between the two planes. Each plane has its own routing table that defines the primary routing to the external peers and a secondary route to the other plane if all external peer connections are unavailable.

► Failover Behaviour

If the SVI-Security/Monitor element detects an issue on the worker plane a failover to the secondary plane occurs. This will cause the peer connections to the failed plane to disconnect. The Peer Clients will detect this failure and reattempt any outstanding transactions through the alternate plane.

► **OA&M access**

The worker plane controls the VIP address for OA&M access including SNMP, GUI, telnet, etc. Any external device that is connecting into the OA&M access pool using the VIP address will always be connected to the worker plane.

8.0 USSD

The SVI-IWF will generate a USSD message towards the originating party of a Call or SMS based on specific information text coming back from OCS in the CCA for the CCR Final request. The USSD information will be returned as an formatted text in English to be used directly to send the USSD message.

The below AVP's should be sent to SVI-IWF from the OCS to generate required USSD post call/sms notification.

*Service-Specific-Info (Vendor=10415, AVP Code=1249, type Grouped)

**Service-Specific-Data (Vendor=10415, AVP Code=863, type UTF8String)

The Service-Specific-Info AVP will contain the USSD text to be sent to the subscriber.

9.0 Debug

Enable debug by setting.

Settings

Administration Alarms **Debug & Trace** Preferences

Debug PCAP Tracing

Commit Refresh

Process Specific Settings

SVI-SS Security SMSC

Current Log File: Gateway_05-07-2018

[Download Tail](#)

SVI-SS Tasks:

SVI-SS Discriminators:

SVI-SS Subsystems:

Global Settings

Tasks: SS7 SCCP TCAP

Discriminators: DIS_CC_RX DIS_CC_TX DIS_SS7_ROUTER_RX

Subsystems: IP-UDP IP-TCP IP-SCTP

☒ Message Details (ies)

☐ Message Dump (detailed)

☒ Include Traps

Tasks

Tasks identify high-level information of protocol layers.

Discriminators

Discriminators identify low-level information as to which set of internal/protocol messaging is to be captured in Gateway log file

Subsystems

Diameter Specific debugs for IP /thread/DNS

Select SVI-SS task

Select All Deselect All Invert Selection

| | | |
|---|--|--|
| ☐ Maintenance | ☐ Timer | ☐ IP |
| ☐ snmp | ☐ system | ☐ SQL |
| ☐ Diameter | ☒ IWF | ☐ CallControl |
| ☐ OA&MAccess | ☐ MGCP | ☐ DRVNS700 |
| ☐ H323 | ☐ SIP | ☐ SQAPI |
| ☒ SS7 | ☐ Propagate | ☐ DRVVK100 |
| ☐ SCTP | ☐ radtrans | ☐ Q931stack |
| ☐ paranoid | ☐ MTPL3 | ☐ ISUP |
| ☐ DRVXDS | ☐ DRVTP260 | ☐ Megaco |
| ☐ IUP | ☒ SCCP | ☒ TCAP |
| ☒ SCCPRTR | ☐ RUDP | ☐ SESSMGR |
| ☐ M2PA | ☐ MTPCDR | ☐ APIServer |
| ☒ MAP | ☐ DNS | ☐ SSME |
| ☐ SIPProxy | ☐ GSMSSF | ☐ SIPT |
| ☒ SS7ROUTER | ☐ H323m | ☐ XML |
| ☐ SCTPm | ☐ Harness | ☐ OA&M |
| ☐ SProcess | ☐ Secure | ☐ Slink |
| ☐ gwclient | ☐ smpp | ☐ smsc_apiserver |
| ☐ smscontrol | | |

Tasks

Set the desired tasks depending on nature of issue.

Discriminators

Set the desired discriminators depending on nature of issue.

Select SVI-SS discriminator

Select All Deselect All Invert Selection

| | | |
|---|---|---|
| ☐ DIS_IP | ☒ DIS_TIMER | ☐ DIS_REG |
| ☒ DIS_MNT | ☐ DIS_CCURE | ☐ DIS_SEC |
| ☐ DIS_SCH | ☒ DIS_TCAP_TX | ☒ DIS_TCAP_RX |
| ☒ DIS_MAP_TX | ☒ DIS_MAP_RX | ☒ DIS_DIAMETER_TX |
| ☒ DIS_DIAMETER_RX | ☒ DIS_CC_RX | ☒ DIS_CC_TX |
| ☐ DIS_CC_CDR | ☐ DIS_MTP_RX | ☐ DIS_MTP_TX |
| ☐ DIS_M2PA_RX | ☐ DIS_M2PA_TX | ☐ DIS_Q931_RX |
| ☐ DIS_Q931_TX | ☐ DIS_SWITCH | ☐ DIS_MWI |
| ☐ DIS_SQ_API | ☐ DIS_H245 | ☐ DIS_RAD |
| ☐ DIS_MGCP | ☒ DIS_SQL | ☐ DIS_AA |
| ☐ DIS_SCCP_TX | ☐ DIS_SCCP_RX | ☐ DIS_RUDP_RX |
| ☐ DIS_RUDP_TX | ☐ DIS_MTP_CDR_RX | ☐ DIS_MTP_CDR_TX |
| ☐ DIS_GSMSSF | ☐ DIS_SIP_RX | ☐ DIS_SIP_TX |
| ☐ DIS_SCTP_RX | ☐ DIS_SCTP_TX | ☒ DIS_SS7_ROUTER_RX |
| ☒ DIS_SS7_ROUTER_TX | ☐ DIS_ISUP_RX | ☐ DIS_ISUP_TX |
| ☐ DIS_HARNESS_RX | ☐ DIS_HARNESS_TX | ☐ DIS_SMPP_RX |
| ☐ DIS_SMPP_TX | ☐ DIS_SQL_RX | ☐ DIS_SQL_TX |

Done

Subsystem:

Select desired ones depending upon which area need to debug like IP/DNS/THREAD/STATS

Select SVI-SS subsystem

Select All Deselect All Invert Selection

| | | |
|--|--|---|
| ☒ IP-UDP | ☒ IP-TCP | ☒ IP-SCTP |
| ☒ IP | ☒ THREAD | ☒ DNS |
| ☒ IP-TPT | ☒ DIAMETER | ☒ MSG |
| ☒ GENXML | ☒ CSTATS | |

Done

Debug Crib Sheet:

| CAMEL Signalling Problem | M3UA Problem | Diameter Problem |
|--|--|--|
| SS Task Debug
SCCP,TCAP,MAP,APIServer
IWF Task Debug
HARNESS, IWF | Task Debug
MTPL3
SCTP | SS/IWF Task Debug
DIAMETER
Subsystem Debug
IP/MSG/THREAD/DIAMETER |
| Discriminator Debug

DIS_TCAP_RX, DIS_TCAP_TX,
DIS_MAP_RX, DIS_MAP_TX | Discriminator Debug

DIS_MTP_TX
DIS_MTP_RX | Discriminator Debug

DIS_DIAMETER_TX
DIS_DIAMETER_RX |

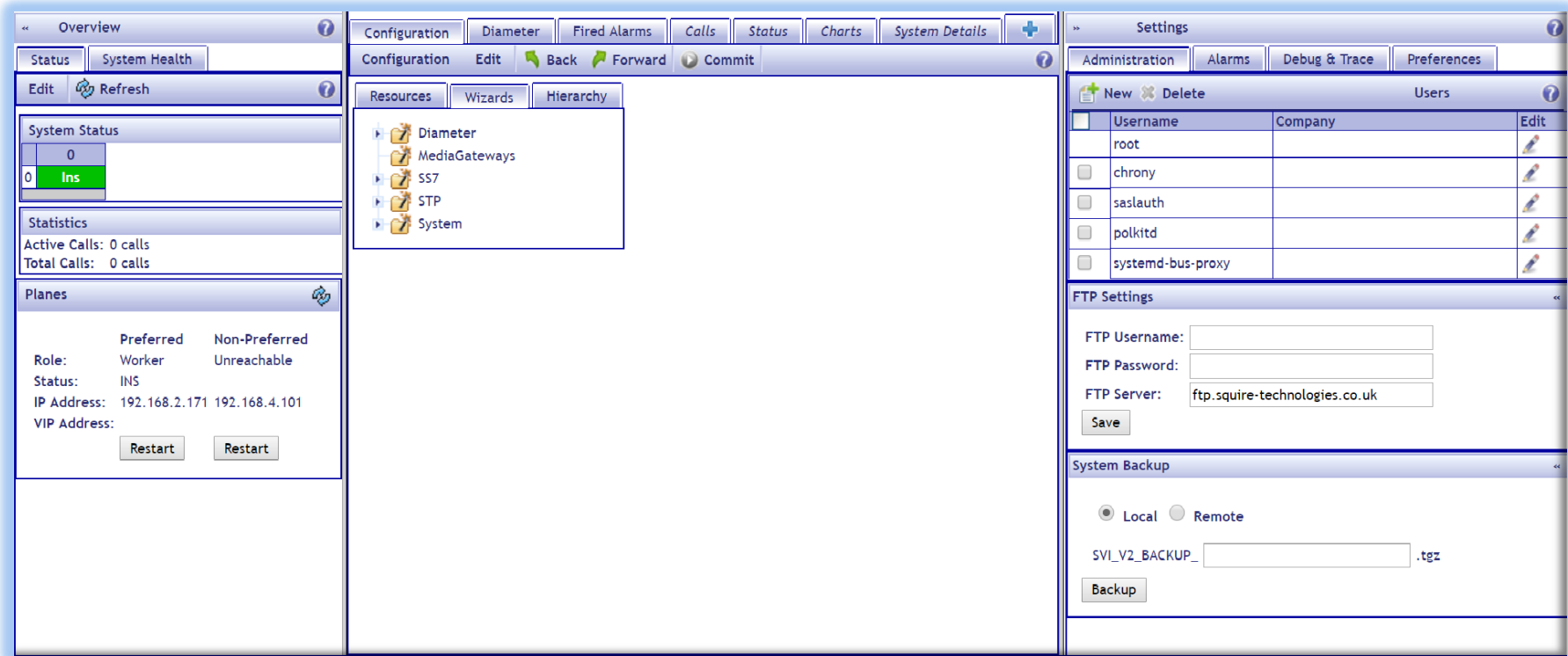
10.0 Data Management

Please refer to Section 9 of the [SVI-DSC User Guide](#)

11.0 SVI-MS (SVI-MS Management)

Following section covers the details that shows how to use SVI-MS for IWF.

Navigation - How to Get Around TheGUI

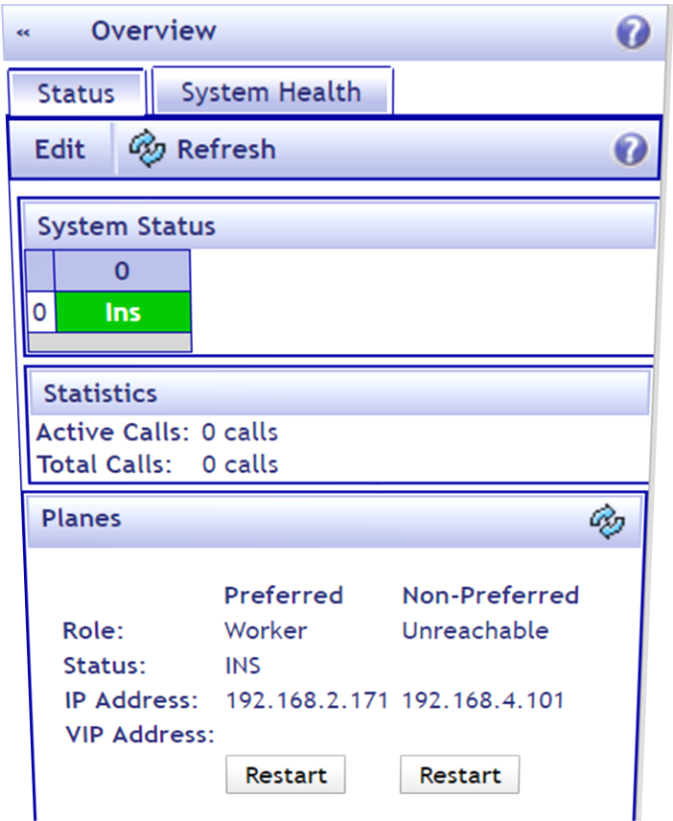


Left Pane

Central Pane

Right Pane

Status



► Left Pane - Overview Pane

► Status tab

- Provides a snapshot of the currently running service on the SVI system.

System Health

| | |
|-------------------------|---------------------------------|
| « Overview | |
| Status | System Health |
| Local Plane | Remote Plane |
| Services | |
| gw: | running |
| sendmail: | running |
| tomcat6: | running |
| httpd: | running |
| mysqld: | running |
| Disk Space | |
| Total Disk Space: 49 GB | |
| Free Disk Space: 45 GB | |
| CPU | |
| User Time: | 00:00:05.790 |
| | 1min: 0.061035 |
| System Load: | 5min: 0.116699 |
| | 15min: 0.116699 |
| Memory | |
| Heap: | 153MB of 1737MB (9%) |
| Non Heap: | 126MB of 0MB (-13,276,508,000%) |
| Shared: | 0 bytes |
| Buffer: | 0 bytes |
| Swap: | 106 MB of 3 GB (3%) |
| Time | |
| Start Time: | 13:57:47 |
| Up Time: | 2281:05:28 |
| Core Files: | |

► Left Pane - Overview Pane

► System Health

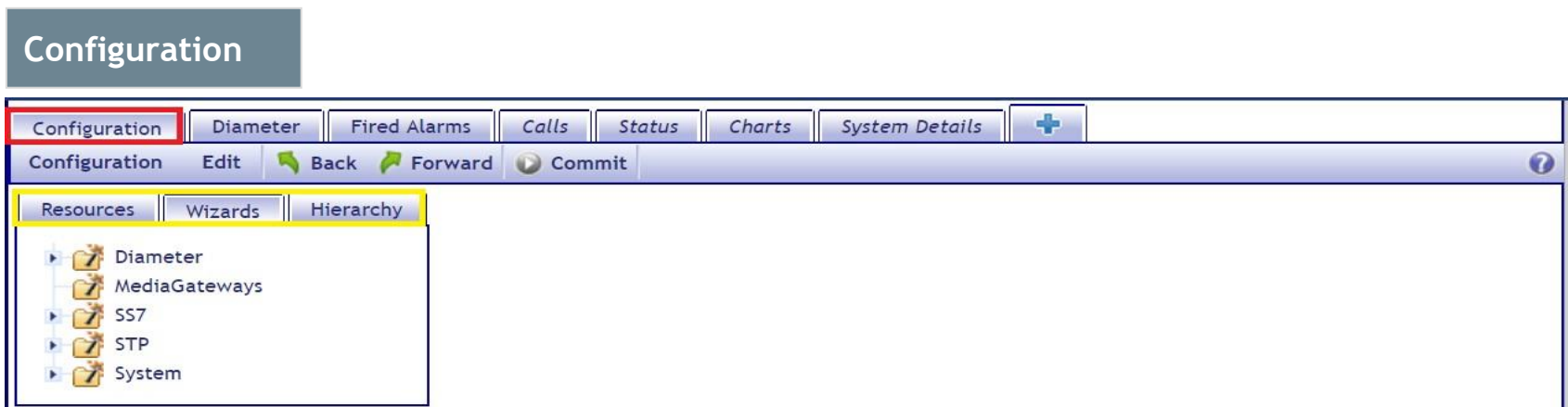
Provides a snapshot of the health of the physical hardware on the SVI system.

Configuration



► Central Pane – Configuration Pane

- Configuration
- Diameter
- Fired Alarms
- Calls (Not Relevant)
- Status
- Charts (SQL)
- System Details



► Configuration Pane - Sub Tabs

- Resources
- Wizards
- Hierarchy

Central Pane - Diameter



- ▶ **Diameter Tab - View for reviewing Current and Historical Statistics**

Sub-Tabs

- ▶ Local Peers
- ▶ Remote Peers
- ▶ TDR's
- ▶ Statistics

Statistics - Current View

ConfigurationDiameterFired Alarms+

Refresh

☒ Update every 30 s

Configured Local PeersConfigured Remote PeersTDRsStatistics

| Functions | Time ↓ | Peer Id ↓ | Peer ↓ | State ↓ | State Reason ↓ | Last Changed ↓ | Local IP ↓ | Remote IP ↓ | Origin-State ↓ | #T |
|-----------|---------------------|-----------|-----------|---------|------------------|---------------------|------------------------|-------------------------|----------------|----|
| | 2018-06-18 16:44:01 | 0 | iwf_pref | R-OPEN | | 2018-06-14 07:16:22 | tcp:192.168.4.123:3868 | tcp:192.168.4.123:46193 | 1528956982 | 0 |
| | 2018-06-14 07:14:16 | 1 | ocs1_pref | CLOSED | Transport Closed | 2018-06-14 07:14:16 | | | 0 | 0 |
| | 2018-06-14 07:14:16 | 2 | ocs2_pref | CLOSED | Transport Closed | 2018-06-14 07:14:16 | | | 0 | 0 |

<<<

<

Rows Per Page 20

Page 1

of 1

>

>>>

- ▶ The current view shows the current state and statistics of the peer. Navigate to **Diameter > Configured Remote Peers**.
- ▶ The statistics are stored in the SQL table **diameter_peer_stats**
- ▶ For Remote Peers, The **TXTRNS_xxx** and **RX_TRNS_xxx** columns show the receive/transmit statistics between the SVI-DSC and the Remote Peer.
- ▶ For Local Peers, The **TXTRNS_xxx** and **RX_TRNS_xxx** columns are cumulative totals for all associated RemotePeers.

Statistics - Historical View

Configuration

Diameter

Fired Alarms

+

Refresh

Update every 30 s

Configured Local Peers

Configured Remote Peers

TDRs

Statistics

| Functions | Time | Type | Peer Id | Peer | State | State Reason | Last Changed | Local IP | |
|-----------|---------------------|------|---------|-----------|-----------|------------------|---------------------|--|--------|
| | 2018-06-13 15:18:13 | L | 0 | pref | LISTENING | | 2018-06-13 15:18:13 | sctp:192.168.4.123:3868;tcp:192.168.4.123:3868 | |
| | 2018-06-13 15:18:13 | R | 1 | ocs1_pref | CLOSED | Transport Closed | 2018-06-13 15:18:13 | | |
| | 2018-06-13 15:18:13 | R | 2 | ocs2_pref | CLOSED | Transport Closed | 2018-06-13 15:18:13 | | |
| | 2018-06-13 15:18:13 | R | 0 | iwf_pref | R-OPEN | | 2018-06-13 15:18:13 | tcp:192.168.4.123:3868 | tcp:19 |
| | 2018-06-13 15:18:23 | L | 0 | pref | CONNECTED | | 2018-06-13 15:18:13 | sctp:192.168.4.123:3868;tcp:192.168.4.123:3868 | |
| | 2018-06-13 15:18:23 | R | 0 | iwf_pref | R-OPEN | | 2018-06-13 15:18:13 | tcp:192.168.4.123:3868 | tcp:19 |
| | 2018-06-13 15:18:33 | L | 0 | pref | CONNECTED | | 2018-06-13 15:18:13 | sctp:192.168.4.123:3868;tcp:192.168.4.123:3868 | |
| | 2018-06-13 15:18:34 | R | 0 | iwf_pref | R-OPEN | | 2018-06-13 15:18:13 | tcp:192.168.4.123:3868 | tcp:19 |
| | 2018-06-13 15:18:43 | L | 0 | pref | CONNECTED | | 2018-06-13 15:18:13 | sctp:192.168.4.123:3868;tcp:192.168.4.123:3868 | |
| | 2018-06-13 15:18:44 | R | 0 | iwf_pref | R-OPEN | | 2018-06-13 15:18:13 | tcp:192.168.4.123:3868 | tcp:19 |
| | 2018-06-13 15:18:53 | L | 0 | pref | CONNECTED | | 2018-06-13 15:18:13 | sctp:192.168.4.123:3868;tcp:192.168.4.123:3868 | |
| | 2018-06-13 15:18:54 | R | 0 | iwf_pref | R-OPEN | | 2018-06-13 15:18:13 | tcp:192.168.4.123:3868 | tcp:19 |
| | 2018-06-13 15:19:03 | L | 0 | pref | CONNECTED | | 2018-06-13 15:18:13 | sctp:192.168.4.123:3868;tcp:192.168.4.123:3868 | |
| | 2018-06-13 15:19:04 | R | 0 | iwf_pref | R-OPEN | | 2018-06-13 15:18:13 | tcp:192.168.4.123:3868 | tcp:19 |
| | 2018-06-13 15:19:13 | L | 0 | pref | CONNECTED | | 2018-06-13 15:18:13 | sctp:192.168.4.123:3868;tcp:192.168.4.123:3868 | |
| | 2018-06-13 15:19:14 | R | 0 | iwf_pref | R-OPEN | | 2018-06-13 15:18:13 | tcp:192.168.4.123:3868 | tcp:19 |

- The historical view shows the history of the peer statistics over time. Navigate to Diameter > Statistics.

Fired Alarms

[illegible]

- ▶ The Fired Alarm dashboard can be used to actively monitor faults & changes in service state on the SVI, using Alarms provisioned in the Right Pane. If SNMP is to be employed, then this tab can be ignored. Resource status change traps are also available.

Alerts

The Fired Alarms table displays the time alarms are firing and the reason and what actions were taken.

| | |
|--|--|
| Checkbox : ☒ | When external action has been performed to fix the condition of the Fired Alarm check the checkbox to remove the colour indication to show that this alarm has been dealt with |
| Fired Alarm Level: | Indicated the severity of the fired alarm Fatal (Red), Major (Orange) and Minor (Yellow) |
| Timestamp: | Indicates the date and time of the fired alarm |
| Name: | Name of the resource instance effected. |
| Reason: | shows why the resource instance is not in service |
| Value: | Indicates if the resource is In service or out of service |
| Action: | Indicates that action taken when alarm was fired e.g. emails will continue to be sent until the alarm is 'Actioned' |

TRAPS

The Traps table is a automatically populated history log that shows all changes to resource service state

| Traps | | | |
|--|------------------|----------|-------|
| Time | Type | Resource | State |
| Feb 14, 2010 4:36:32 PM | VoIPStack | H323 | INS |
| Feb 14, 2010 4:36:32 PM | VoIPStack | SIP | INS |
| Feb 14, 2010 4:36:32 PM | VoIPDestination | slp2 | INS |
| Feb 14, 2010 4:36:32 PM | VoIPDestination | slp1 | INS |
| Feb 14, 2010 4:36:32 PM | SignallingLink | link1 | INS |
| Feb 14, 2010 4:36:32 PM | SignallingLink | link0 | INS |
| Feb 14, 2010 4:36:32 PM | SS7Stack | dpc2 | INS |
| Feb 14, 2010 4:36:32 PM | SS7Stack | dpc1 | INS |
| Feb 14, 2010 4:36:32 PM | SQL | sql | INS |
| Feb 14, 2010 4:36:32 PM | SCTP | sctp1 | INS |
| Feb 14, 2010 4:36:32 PM | SCTP | sctp0 | INS |
| Feb 14, 2010 4:36:32 PM | RoutingCriteria | routing3 | INS |
| Feb 14, 2010 4:36:32 PM | RoutingCriteria | routing2 | INS |
| Feb 14, 2010 4:36:32 PM | Plane | 1 | INS |
| Feb 14, 2010 4:36:32 PM | Plane | 0 | INS |
| Feb 14, 2010 4:36:32 PM | OriginatingPoint | opc2 | INS |
| Feb 14, 2010 4:36:32 PM | OriginatingPoint | opc1 | INS |
| Feb 14, 2010 4:36:32 PM | MediaTimeslot | 127 | INS |
| Feb 14, 2010 4:36:32 PM | MediaTimeslot | 126 | INS |
| Feb 14, 2010 4:36:32 PM | MediaTimeslot | 125 | INS |
| <div><< < Rows Per Page 20 Page 1 of 22 > >></div> | | | |

Resource - Status

The SVI-MS provides the ability to easily display the status of the peer-to-peer connections. Navigating to the Status Tab will show the current resources that have been setup to display status.

Figure 1: Screenshot of the Juniper Mist Cloud Management Console showing the status of a network device (10.10.10.10) across different components.

The screenshot displays four sections, each with a table showing the status of various components:

- Remote Peer Status:** A table with 8 columns (0-7) and 1 row. The status for all components is **Osf** (Out of Service).
- Local Peer Status:** A table with 2 columns (0-1) and 1 row. The status for component 0 is **INS** (In Service) and for component 1 is **Osf** (Out of Service).
- Plane Status:** A table with 2 columns (0-1) and 1 row. The status for component 0 is **INS** (In Service) and for component 1 is **Osf** (Out of Service).
- System State:** A table with 1 column (0) and 1 row. The status for component 0 is **Ins** (In Service).

The overall status of the device is **Ins** (In Service).

- To identify the name of the remote peer resource the cursor can be hovered over a particular instance.
- To inspect the configuration of this remote peer resource the status instance is clicked.

Take OOS and Bring INS Peer Connection

An existing peer to peer connection can be disconnected via the SVI-MS by navigating to Configuration > Resources > Remote Peer.

| | | | | | | | | | |
|---|----------------------|----------------------------------|--------|------------|-----------|---------------------|--------|-----------------------|--|
| New Delete Copy Edit View Bring INS Take OOS Columns Import From CSV File Export to CSV File DiameterPeer | | | | | | | | | |
| Search: Next | | | | | | | | | |
| ☒ | <input type="text"/> | Wizard | status | | | | | | |
| ☒ | iwf_npref | Diameter Remote Peer: iwf_npref | Os | iwf_npref | realm.com | iwf.npref.realm.com | Client | npref | |
| ☐ | iwf_pref | Diameter Remote Peer: iwf_pref | Osp | iwf_pref | realm.com | iwf.pref.realm.com | Client | pref | |
| ☐ | npref | Diameter Remote Peer: npref | Osp | npref | realm.com | npref.realm.com | Client | pref | |
| ☐ | ocs1_npref | Diameter Remote Peer: ocs1_npref | Os | ocs1_npref | realm.com | ocs1.realm.com | Server | npref | |
| ☐ | ocs1_pref | Diameter Remote Peer: ocs1_pref | Os | ocs1_pref | realm.com | ocs1.realm.com | Server | pref | |
| ☐ | ocs2_npref | Diameter Remote Peer: ocs2_npref | Os | ocs2_npref | realm.com | ocs2.realm.com | Server | npref | |
| ☐ | ocs2_pref | Diameter Remote Peer: ocs2_pref | Os | ocs2_pref | realm.com | ocs2.realm.com | Server | pref | |
| ☐ | pref | Diameter Remote Peer: pref | Os | pref | realm.com | pref.realm.com | Server | npref | |
| << < Rows Per Page 20 Page 1 of 1 > >> | | | | | | | | | |

- Select in the left column the peers which are needed to be taken out of service and select 
- To return the peer-to-peer connection back into service, select: 

Administration, Monitoring and Troubleshooting

Right Hand Pane - Settings Pane

- Administration
- Alarms
- Debug & Trace

The screenshot displays the 'Settings Pane' in the SVI-DSC Camel IWF User Guide. The interface is divided into several sections:

- Navigation Tabs:** 'Administration', 'Alarms', and 'Debug & Trace' are visible at the top.
- Sub-Tabs:** 'Debug' and 'PCAP Tracing' are visible below the main tabs.
- Buttons:** 'Commit' (with a green checkmark icon) and 'Refresh' (with a circular arrow icon) are located below the sub-tabs.
- Process Specific Settings:** This section is currently active and contains:
 - SVI-SS:** A sub-tab.
 - Current Log File:** 'Gateway_30-11-2011'.
 - Download Tail:** A link to download the log file.
 - SVI-SS Tasks:** A 'Select' button.
 - SVI-SS Discriminators:** A 'Select' button.
- Global Settings:** This section is located below the process-specific settings and contains:
 - Tasks:** A list box with a 'Clear All' button.
 - Discriminators:** A list box with a 'Clear All' button.
 - Message Details (ies):** A checked checkbox.
 - Message Dump (detailed):** An unchecked checkbox.
 - Include Traps:** A checked checkbox.

Administration

The screenshot displays the 'Settings' window with the 'Administration' tab selected. It features a 'Users' table with columns for Username, Company, and Edit. Below the table is the 'FTP Settings' section with input fields for Username, Password, and Server, along with a 'Save' button.

| | Username | Company | Edit |
|--------------------------|-----------|---------------------|------|
| ☐ | admin | | |
| ☐ | nfsnobody | | |
| ☐ | root | | |
| ☐ | squire | Squire Technologies | |
| ☐ | steve | Squire Technologies | |
| ☐ | adam | Squire Technologies | |

FTP Settings

FTP Username:

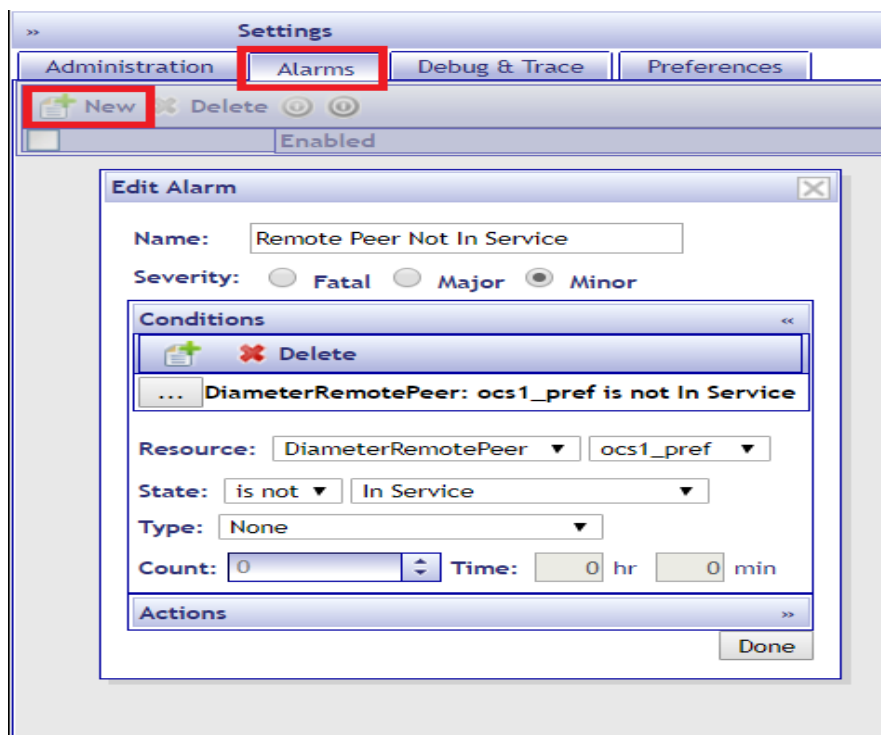
FTP Password:

FTP Server:

- The Administration tab shows the list of available users on the SVI system and allows privileged users to modify, delete and create new users.

Alarms/Alerts - Setup

The Alarms tab is used to configured alarms which will fire when a given condition occurs. Alarms can be configured to fire on changes to service status either singly or over a period. Alarms can also be configured to notify recipients by email and/or to take resources out of service when the alarm fires.

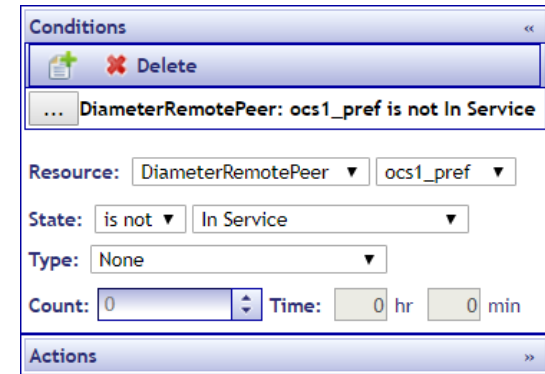


Create new Alarm by clicking -  New This displays a new pop-up window.

This dialog allows the alarm to be created. All alarms should be given a name for identification and the severity can be selected in the radio buttons.

Alarms/Alerts - Conditions

Alarms are triggered by Conditions. Multiple conditions can be added to an alarm and the alarm will fire if any of those conditions become true.



Conditions

+ X Delete

... DiameterRemotePeer: ocs1_pref is not In Service

Resource: DiameterRemotePeer ocs1_pref

State: is not In Service

Type: None

Count: 0 Time: 0 hr 0 min

Actions

A condition can be added to the alarm by selecting the  button in the toolbar within the Conditions panel. This will show a drop-down menu to select State Condition.

Post selecting the resource instance the status can be specified. The condition can be defined to either fire when the instance's status matches a defined value or when it ceases to match a defined value. This is specified by the 'is/is not' drop down selection.

Type list - There are 3 options:

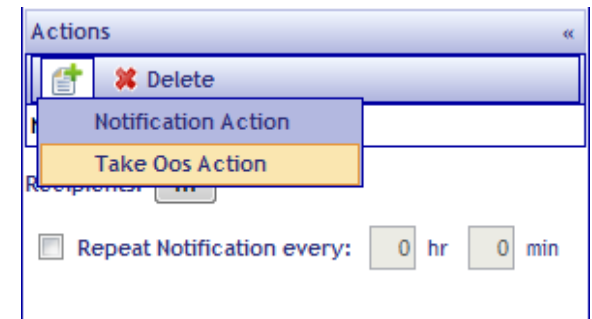
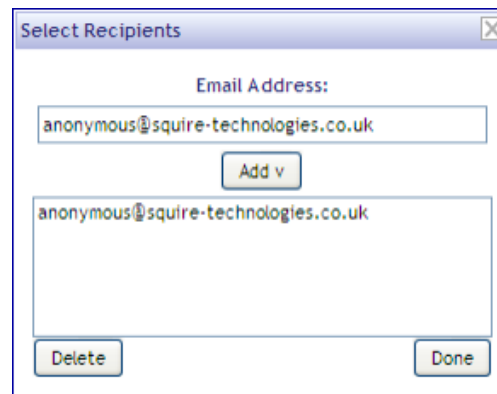
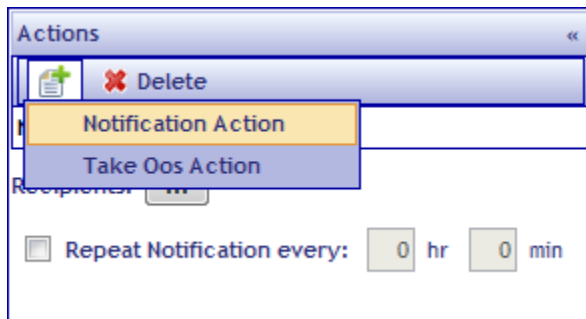
- None
- Condition is true for period.
- Occurs n times during period.

Alarms/Alerts - Notifications

An action can be added to the alarm by selecting the new button in the toolbar within the Actions panel. This will show a menu to select what kind of condition to add. There are two types of Action supported.

Notification Action: When the alarm fires this action will notify one or more users that the alarm has fired, via email.

Take Oos Alarm: When the alarm fires this action will take a specified resource instance out of service.



Debug & Pcap Trace

Debug:

Ability to set debug levels to be printed into daily log file

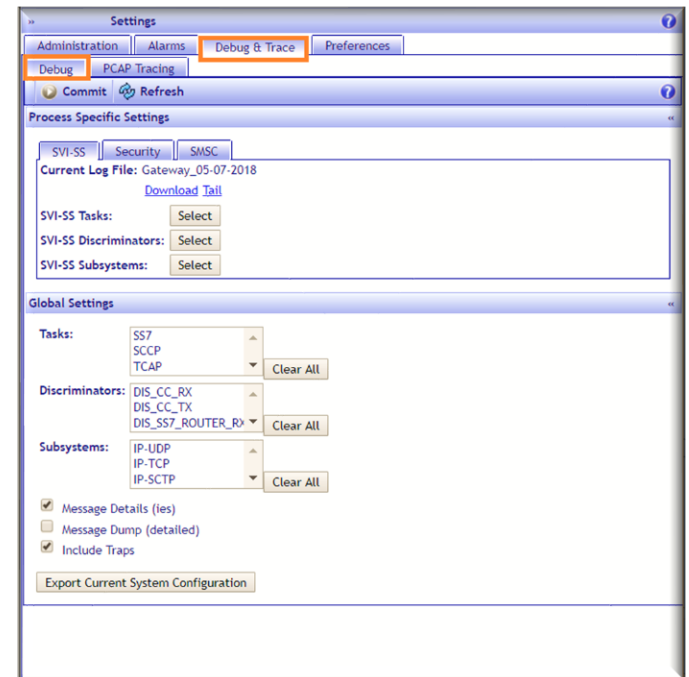
There is a script `cleanlogs.sh` available which can be used to automate the maintenance procedure for the logs files.

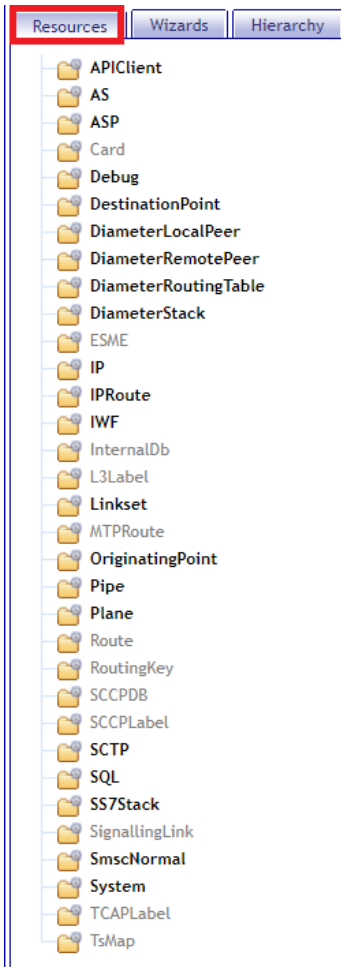
The script will delete any logs files which are X days old, with an option to tar up the logs as a backup before removal.

PCAP Tracing:

PCAP facility to collect real time traces to be used with

Industry standard tools such as Wireshark.





► Resources & Attributes

- System abstracted into Resources.

Diameter Local Peer, Remote Peer, Diameter Stack

- A resource has a number of attributes.
- Linkset references Originating Point , Destination Point etc.
- Additional Configuration is done against these resources.
- Resources are arranged into a parent, child hierarchical arrangement.
- Child cannot come into service until parent is in service.
- If parent fails then children are taken out of service.

12.0 Backup & Restore

How-To Steps

- ▶ svi-backup (Commandline)
 - ▶ Script in /usr/bin/ called svi-backup
 - ▶ Run script from anywhere and follow prompts
 - ▶ **b** for backup , **r** for restore and **e** for exit.
 - ▶ Script compresses all '/home/squire' files/folders with exclusion list.
 - ▶ Automated backup script is available to run via Cronjob

```
[root@tna_smc sme]# svi-backup

Squire Technologies Backup/Restore Script - Exclude-Based.
This script will backup/restore the executables and configuration of the Squire system.
By default, it will not backup logs,cdrs,pcaps,archives,core files,rpm,.sql files.
The list of exclusions is held in /usr/bin/squire-backup-pattern.

-----Select from the following functions-----
e      -      Exit
b      -      backup current system
r      -      restore files
-----

Answer = b
-----Backup-----
Enter archive filename backupSVI
function = backup
filename = backupSVI

Do you want to continue? (y/n) [n] y

SQUIRE BACKUP IN PROGRESS to archive file /SVI_V2_BACKUP_backupSVI-26-04-2018-11-43-32.tgz

Creating /tmp/SQUIRE.tgz using exclude list --exclude=.pcap --exclude=core.* --exclude=*.gz --exclude=*.tgz --exclude=*.tar.gz --exclude=*.tar
clude=*.rpm --exclude=Gateway.* --exclude=Security.* --exclude=MS.* --exclude=MG.* --exclude=RTTRouter.* --exclude=SMSC.* --exclude=COR.* --e
lude=nohup.out --exclude=*.log --exclude=
```

How-To Steps

► GUI ability to perform system Backups.

Local IWF1 and remote IWF2 backups can be done Using this inbuilt backup tool on GUI.

Once Done notification will be issued on GUI.

System Backup

☒ Local ☐ Remote

SVI_V2_BACKUP_ IWF1_18022019 .tgz

Backup

13.0 SNMP

Overview

It is possible to generate a MIB via the SVI using Squires Technologies Private Enterprise Number (44633). This supports SNMP v1, v2c and v3.

This method allows all resources to be view via either the Squire Technologies GUI or an SNMP manager.

This method supports the following SNMP commands:

SNMP GET
SNMP GET
NEXT SNMP
GETBULK

SNMP SET (for statistics only)

SNMP WALK (for all resources)

13.1 Example snmp commands

Get Status of All Diameter Local peers:

```
snmpwalk -v 2c -c svi localhost SQUIRE-TECHNOLOGIES-SVI-SS-MIB::sviDiameterLocalPeerAdminStatus
SQUIRE-TECHNOLOGIES-SVI-SS-MIB::sviDiameterLocalPeerAdminStatus.0 = INTEGER: up(1)
SQUIRE-TECHNOLOGIES-SVI-SS-MIB::sviDiameterLocalPeerAdminStatus.1 = INTEGER: up(1)
```

13.2 Get Status of Diameter Remote Peer:

```
snmpget -v 2c -c svi localhost SQUIRE-TECHNOLOGIES-SVI-SS-  
MIB::sviDiameterRemotePeerAdminStatus.0 SQUIRE-TECHNOLOGIES-SVI-SS-  
MIB::sviDiameterRemotePeerAdminStatus.0 = INTEGER: up(1)
```

13.3 Common Data

Each resource in the SVI will have information about the following data (these data values can not be altered using the SNMP SET command):

| Resource | Details | Values |
|---------------|---|--|
| AdminStatus | The requested status that the resource should be at | Up - Resource In Service
Down - Resource Out Of Service |
| OperStatus | The current status of the resource | Up - Resource In Service
Down - Resource Out Of Service |
| AlarmSeverity | For Future Reference | |
| AlarmReason | For Future Reference | |
| TimeIn | The last time that the resource was in service | Date / Time.
1/1/1970 - Not Set |
| TimeOut | The last time that the resource was out of service | Date / Time. 1/1/1970 - Not Set |
| Description | Description of the resource | |

13.4 Statistics

This section describes which statistics are available for which resource.

Linkset

| Mib Name | Details |
|------------------------|---|
| sviLinksetTxMsuTotal | Total Number of MSUs that have been sent on the linkset |
| sviLinksetTxMsuSec | Number of MSUs that have been sent on the linkset in the current second |
| sviLinksetTxMsuSecMax | Max number of MSUs that have been sent on the linkset in any second |
| sviLinksetRxMsuTotal | Total Number of MSUs that have been received on the linkset |
| sviLinksetRxMsuSec | Number of MSUs that have been received on the linkset in the current second |
| sviLinksetRxMsuSecMax | Max number of MSUs that have been received on the linkset in any second |
| sviLinksetTxBitsTotal | Total Number of Bits that have been sent on the linkset |
| sviLinksetTxBitsSec | Number of bits that have been sent on the linkset in the current second |
| sviLinksetTxBitsSecMax | Max number of bits that have been sent on the linkset in any second |
| sviLinksetRxBitsTotal | Total Number of bits that have been received on the linkset |
| sviLinksetRxBitsSec | Number of bits that have been received on the linkset in the current second |
| sviLinksetRxBitsSecMax | Max number of bits that have been received on the linkset in any second |

Destination Point

| Mib Name | Details |
|-------------------------------|--|
| sviDestinationPointMaxMsgPers | Maximum Number of Messages sent to destination in a second |
| sviDestinationPointMsgPers | Number of Messages sent to destination in the current second |

13.5 Generating Mib Files

To generate the MIB use the following command, from the directory /home/squire:

```
./sswitch -m
```

This generates a set of MIB files that can be located in /home/squire/mibs

Therefore, when a new release of the svi-ss is performed with new stats / resources the MIBS should be regenerated.

It would be possible to keep a version of the MIBs but it seems more realistic to allow the MIBS to be generated on the build.

14.0 Removal of Configuration

If there is a Business need to remove configuration from your SVI please ensure you review the configuration being identified for removal and ensure you have reviewed thoroughly any/all derived resources associated with this configuration so that removal does not impact upon other resources associated.

Once confirmed you should perform the removal of configuration during a Maintenance Window or period of Low Traffic.

Further to this our recommendation would be to remove the configuration once confirmed suitable to do so, in the reverse order it was applied. (See creating new configuration sections to determine further.)

If further clarity is required to confirm safe removal of configuration please contact the Support Team, providing the necessary information regarding the configuration being identified for removal, the reason for removal, along with current dbase.xml for our review so we can advise appropriately.

15.0 Function Specific Features

These are available from the Support Desk, solutions available upon request.

| Title | Description | Reference |
|----------------------------------|--|-----------|
| Custom SDR generation script | Script for extracting SDR data | 00001026 |
| final_sdr table maintenance | Similarly, to cdr_table, SDRs need to be regularly exported/post processed, archived or deleted to maintain final_sdr table size. | 00001029 |
| Address Manipulation | Description of the use of the IWF Address Manipulation resource. | 00001039 |
| Number Translation Rule Creation | Configuration for setting up Number Translation Rule Creation | 00001050 |
| Creating Custom GTs | For customers where the announcements are different and they cannot be found on the same announcement servers. | 00001071 |
| SDR Data | How the hex dump of the initial DP or initialDP SMS available in the Session Data Record(SDR) produced by the SVI-IWF product doing CAMEL-Diameter IWF can be used to extract additional information about the session | 00001093 |
| Roaming Calls Duration Charging | Configuration for setting up Roaming Calls Duration Charging | 00001165 |

Please quote the relevant Reference above when contacting our Support Team to obtain further information.