Oracle[®] Communications Diameter Signaling Router

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Oracle Communications DSR Security Application Using Mediation Example Procedure User's Guide, Release 8.5

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Disclaimer: This is just a reference to an example for creating security application using DSR Mediation functionality.

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1. Introduction

1.1 Purpose and Scope

This document provides a sample procedure required to build a security application using mediation.

No additional software installation is required before executing this procedure. The standard DSR installation procedure loads all required software. You do need to activate the Mediation feature before implementing the security application.

1.2 Overview of Security Application

- Most of the Diameter security vulnerabilities are for interconnect from roaming networks through IPX or directly from roaming partner networks.
- DEA is considered as the only point of contact into and out of an operator's network at the Diameter application level.
- Attacks are induced in operator's home network through Diameter messages passing through DEA.
- Security threats currently being discussed for SS7 are around below mentioned attacks:
 - Location tracking
 - Call intercept
 - Subscriber Denial of Service
 - Subscriber Account fraud
 - SMS SPAMS
- DSR based Diameter Security Counter measures can be used to mitigate different diameter attacks.
- Diameter security countermeasures shall be implemented using ART or Mediation rules based screening.
- In this user guide, we use Mediation to configure and implement Diameter security countermeasures (Security Application).
- Diameter Security Countermeasures shall be applied on:
 - Ingress messages received from the peers of external foreign network
 - Egress messages sent from home network to external foreign network.
- For the purposes of applying countermeasures, subscribers are classified into one of following three types:
 - Inbound roaming subscribers: Security countermeasures are applicable for visited network subscribers roaming in home network
 - Outbound roaming subscribers: Security countermeasures are applicable for home network subscribers roaming in visited network
 - Non-Roaming home network subscribers: Security countermeasures are applicable for home network subscribers who are not roaming outside home network

2. Example Procedure

This section list the steps followed to build the sample security application using mediation. The security application uses various countermeasure checks. User may vary the templates (add/delete/modify) as per their needs.

Test Setup topology: DSR Setup with 1 NO + 1 SO + 1 MP. In the example (sample testing), DSR 80.14.1 is used with 1 NO + 1 SO + 1 MP and taken as reference in this user guide.

2.1 Define Internal Variables

The internal variable provides inputs (i.e., Peer Type, Roamer Type, etc.) to templates, which implements countermeasures, generates alarms, and drops the vulnerable message.

To configure Internal Variables:

- 1. Launch an active SO GUI.
- 2. Navigate to Main Menu -> Diameter -> Mediation -> Internal Variables Screen.
- 3. Click Insert to insert each internal variable individually.
- 4. Define the internal variables as shown in Table 1 and shown in Figure 1 as reference. The templates set and read these internal variables.

Variable Name	Description	Туре	Default Value
\$msgDisallowed	If true, then message is not allowed further; false then message is allowed, and it is still tracked by other templates.	Integer32	0
\$foreignIngressPeer	If true, then message is from foreign network to home network.	Integer32	0
\$foreignEgressPeer	If true, then message is from home network to foreign network.	Integer32	0
\$inboundRoaming	If true, then subscriber is inbound subscriber.	Integer32	0
\$outboundRoaming	If true, then subscriber is outbound subscriber.	Integer32	0
\$index	Used as an index to delete the multiple occurrence of an AVP in one shot	Integer32	0

Table 1: Internal Variables

Main Menu: Diameter -> Mediation -> Internal Variables

Filter* 🔻

Table Description: Internal Variables Table

Variable Name	Туре	Default Value	Description
foreignEgressPeer	Integer32	0	It determines whether peer is foreign peer or not for egress message.
foreignIngressPeer	Integer32	0	It determines whether peer is foreign peer or not.
inboundRoaming	Integer32	0	If non-zero, it decides the message is from inbound roaming subscriber.
index	Integer32	0	Use as an index to delete the multiple occurrence of an AVP in one shot.
msgDisallowed	Integer32	0	if non-zero then message will not be allowed.
outboundRoaming	Integer32	0	If non-zero, it decides the message is from outbound roaming subscriber.

Figure 1: Define Internal Variables

2.2 Define Measurements

Measurements calculate the number of vulnerable messages dropped by the Security application. For each type of countermeasure, create an entry.

To configure Measurements,

- 1. Launch an active SO GUI.
- 2. Navigate to Main Menu -> Diameter -> Mediation -> Measurements.
- 3. Click **Insert** to insert each measurement individually.

Use the measurements from Table 2 and shown in Figure 2 as a reference for this example.

Table 2: Measuremei

Measurement Name	Description
measurement_inbound_10	Application ID and CC whitelist for inbound roamers
measurement_outbound_20	Application ID and CC whitelist for outbound roamers
measurement_DRWhitelist_40	DR whitelist
measurement_DestRealm_ER_100	Destination Realm Egress Request
measurement_Handle_RRecordAVP_60	Handle Route Record AVP
measurement_OH_ends_with_OR_50	OH ends with OR
measurement_ORWhitelist_30	OR whitelist

Main Menu: Diameter -> Mediation -> Measurements

Filter* 🔻

Table Description: Measurements Table

Measurement Name	Description	
measurement_DestR ealm_ER_100	Destination Realm Egress Request	
measurement_DRW hitelist_40	DR whitelist	
measurement_Handl e_RRecordAVP_60	Handle Route Record AVP	
measurement_inbou nd_10	Application Id and CC white list for inbound roamers	
measurement_OH_e nds_with_OR_50	OH ends with OR	
measurement_ORW hitelist_30	OR whitelist	
measurement_outbo und_20	Application Id and CC white list for outbound roamers	

Figure 2: Sreenshot of Measurements

2.3 Add AVP to DSR Custom Dictionary

Add the following AVPs to the DSR custom dictionary:

2.3.1 OC-Supported-Features AVP

OC-Supported-Features ::= < AVP Header: 621 >

[OC-Feature-Vector]

* [AVP]

2.3.2 OC-OLR AVP

OC-OLR ::= < AVP Header: 623 >

< OC-Sequence-Number >

< OC-Report-Type >

[OC-Reduction-Percentage]

[OC-Validity-Duration]

* [AVP]

2.3.3 DRMP AVP

The DRMP (AVP code 301) is an Enumerated type. Use Figure 3 as a reference.

```
Main Menu: Diameter -> AVP Dictionary -> Custom Dictionary
```

Filter* 🔻

Table Description: Custom Dictionary Table

Attribute Name	AVP Code	v	м	P	r3	r4	r5	г6	r7	Vendor ID	Data Type	Protocol
DRMP	301	0	0/1	0/1	0/1	0/1	0/1	0/1	0/1	0	Participant- Access-Priority	3GPP
OC-Feature-Vector	622	0	0/1	0/1	0/1	0/1	0/1	0/1	0/1	0	Unsigned64	3GPP
OC-OLR	623	0	0/1	0/1	0/1	0/1	0/1	0/1	0/1	0	Grouped	RFC 7683
OC-Reduction-Percentage	627	0	0/1	0/1	0/1	0/1	0/1	0/1	0/1	0	Unsigned32	RFC6733
OC-Report-Type	626	0	0/1	0/1	0/1	0/1	0/1	0/1	0/1	0	CC-Unit-Type	RFC6733
OC-Sequence-Number	624	0	0/1	0/1	0/1	0/1	0/1	0/1	0/1	0	Unsigned64	RFC6733
OC-Supported-Features	621	0	0/1	0/1	0/1	0/1	0/1	0/1	0/1	0	Grouped	3GPP
OC-Validity-Duration	625	0	0/1	0/1	0/1	0/1	0/1	0/1	0/1	0	Unsigned32	RFC6733

Figure 3: Screenshot of DRMP AVP

2.4 Ruleset Configuration

To implement all six counter measures, configure the 14 Mediation templates. A few of these templates are common (i.e., not related to any specific counter measure), which performs generic actions like computing Peer Type/Roamer Type, generating alarms, pegging corresponding counters, and dropping the vulnerable messages. The remaining templates implement the counter measure specific business logic.

Refer to Table 1 to see counter measures to template mapping.

Table 3: Mediation Templates

Counter Measure Name	Used Template
Application-ID Whitelist Screening	Template 2 & 3
Application-ID and Command Code Consistency Check	Template 2 & 3
Origin Realm and Destination Realm Whitelist Screening	Template 4, 5 & 11
Origin host and Origin Realm Consistency Check	Template 6
Route-Record Validation	Template 7
Removal of Blacklisted AVPs	Template 9a, 9b, 12a & 12b

2.4.1 Template 1: Roaming Scenario Identification

This template computes Peer Type [Foreign or Home Peer], Roamer Type [Inbound or Outbound roamer], which is used by remaining templates.

It is associated with trigger point RTP1.

Template Definition

If @dsr.ingress.peer equals list of foreign peers

Then

Set Internal Variable: \$foreignIngressPeer = 1

Set Internal Variable \$outboundRoaming = (@msg.avp["User-Name"][1].imsi.mccmnc == <LOCAL MCCMNC>)

Set Internal Variable: \$inboundRoaming = !\$outboundRoaming

This template sets internal variables if ingress peer is listed in a foreign peer list.

If the peer is in the whitelist then, check IMSI (International Mobile Subscriber Identity) from User-Name AVP to find out the home network of this user.

If the MCCMNC (extracted from IMSI) is equal to the local MCCMNC, then this subscriber is an **outbound** roaming subscriber.

If the MCCMC (extracted from IMSI) is not equal to the local MCCMNC, then this subscriber is an **inbound** roaming subscriber.

How to Extract MCC and MNC from IMSI Stored in USIM

The value of MNC (two or three digits) depends on the value of MCC.



In our sample testing, we used the following IMSIs:

 Table 4: Sample IMSIs

МСС	MNC	Country	IMSI	Network
404	17	India	404179712345678	Home Network Subscriber
460	02	China	460022112345678	Foreign Network Subscriber

These IMSIs have been used for outbound and inbound subscriber in our sample testing and can be used as a reference.

Main Menu: Diameter -> Mediation -> Rule Templates [Edit]

Ok	Apply	Cancel						
1		Sattings			Description			
N N					Name used to tabel this Rule Template in the system			
Rule remplate	e Name	Roaming scenario identification-RTP1			[Default = n/a. Range = A 255 character string. Valid characters are [a-2], [A-2], [0-9], space, dash (-), period (-), @, and underscore (_).]			
Message type	Message type support Request 🖌				Indicates what type of message processing is supported by the Rule Template, i.e. Request, Answer, or both. The message type support depends on the selected conditions and actions.			
		Conditions			Description			
Fastsearch	1	A		~>>				
Name	Identifying	the Ingress peer		\sim				
Description	Check Pee	r for Roaming scenario identification						
Left value	@dsr.ingr	ess.peer		[second	When the condition set matches on the message, the selected actions are applied in the order they are shown. Each condition consists of a <left-hand operand=""></left-hand>			
Operator		- Case sensitive			operator>-right hand operand- tripte where -right hand operand- is either a value provisioned by the Rule Set Administrator or a fixed value that comes for exa- come the message being reconstant (in the former come. "Some") is above on the provisioning strength of right hand operand-the provision of the former come. The some is a the provision of the former come and the value is not filled the			
Right value	Peer		1		"default value". "Optional" makes the condition optional, and "Fast search" results in fast database lookups			
Default value	EN MME1		-	(Addard				
	Optional	Fixed						
[3:00]								
Condition Set	Condition Set				Specify whether the conditions are logically ANDed, ORed or they form a complex logical expression like: (A OR B) AND C AND (D OR E). Notes: Use parentheses in the condition set that contains both AND and OR. Try to optimize the complex expression to achieve the fast-search lookups.			
		Actions			Description			
Action		Default Values	Optional					
Set internal var	riable	Internal variable foreigningressPeer Set Value		~~×	The action allows setting the value for an internal variable that is valid for the entire duration of a transaction.			
Set internal var	riable	Internal variable outboundRoaming 💌 Set Value (@msg.avp["User-Name [wizard]		~~×	The action allows setting the value for an internal variable that is valid for the entire duration of a transaction.			
Set internal var	riable	Internal variable Inboundkoaming v SetValue (Soutboundkoaming===([wit2rd]		~~×	The action allows setting the value for an internal variable that is valid for the entire duration of a transaction.			
New action		Modify Diameter Header Parts T [Add]			Add a new action to the action list that is applied when the conditions of the Rule Template match on the message.			
Ok	Apply	Cancel						

Figure 4: Screenshot of Roaming Scenario Identification Template

2.4.2 Template 2: Application ID and CC WhiteList for Inbound Roamers

This template is applicable for the subscriber marked as Valid Inbound Subscriber by Template 1 "Roaming Scenario Identification."

If the diameter message is for inbound subscriber, then this template is executed.

This template checks for \$msgDisallowed (to allow this message or not), @msg.application_id (to check that application ID is in the whitelist or not) and @msg.command.code (to check that this command code is allowed or not).

If above conditions are satisfied, then it allows the message by setting \$msgDisallowed = 0.

If not satisfied, then it abandons the message by setting \$msgDisallowed = 10. 10 indicates "Application ID and CC whitelist for inbound roamers" template check fails for this message. Hence, every template sets a different msgDisallowed value in case of failure.

It is associated with trigger point RTP1.

Template Definition

IF	\$inboundRoaming	is	true	
AND	\$msgDisallowed	is	false	
AND	@msg.application_id	equals	list of application IDs	
AND	@msg.command.code	equals	list of command-codes per application ID	
THEN	Set Internal Variable:	\$msgDisallowed = 0 for all the rules except the default rule: \$msgDisallowed = 10		

Note: CC can be optional, i.e., App-ID can be put on the whitelist without setting any CC. If you decide not to put CC in the whitelist, then only the App-ID filters the messages irrespective of CC in messages.

Hel



Figure 5: Screenshot of Application ID and CC Whitelist for Inbound Roamers Configured Template

2.4.3 Template 3: Application ID and CC Whitelist for Outbound Roamers

This template is applicable for the subscriber marked as Valid Outbound Subscriber by Template 1(i.e., roaming scenario identification).

If the diameter message is from outbound subscriber, then this template is executed.

This template checks for \$msgDisallowed (to allow this message or not), @msg.application_id (to check that application ID is in the whitelist or not) and @msg.command.code (to check that this command code is allowed or not).

If above conditions satisfied, then it allows the message by setting \$msgDisallowed = 0.

If not satisfied, then it abandons the message by setting \$msgDisallowed = 20. 20 indicates "Application ID and CC whitelist for outbound roamers" template check fails for this message. Hence, every template sets a different msgDisallowed value in case of failure.

It is associated with trigger point RTP1.

Template Definition

IF	\$inboundRoaming	is	true	
AND	\$msgDisallowed	is	false	
AND	@msg.application_id	equals	list of application IDs	
AND	@msg.command.code	equals	list of command-codes per application ID	
THEN	Set Internal Variable:	\$msgDisallowed = 0 for all the rules except the default rule: \$msgDisallowed = 20		

Note: CC can be optional, i.e., App-ID can be put on the whitelist without setting any CC. If you decide not to put CC in the whitelist, then only the App-ID filters the messages irrespective of CC in messages.

Main Menu: Diameter -> Mediation -> Rule Templates [Edit]

Ok	Apply	Cancel			
		Settings			Description
Rule Template Name Application Id and CC white list for outbound roamers-RTP1		*	Name used to label this Rule Template in the system [Default = n/a, RAP], [A-Z], [A-Z], [0-9], space, dash (-), period (.), @, and unders		
Message type s	upport	Request V			Indicates what type of message processing is supported by the Rule Template, i.e. Request, Answer, or both. The message ty denends on the selected conditions and actions
		Conditions			Description
Fast search	1	Α		~×	
Name	Check for C	utbound Romers	*	\sim	
Description	Check for C	utbound Romers			
Len value	Soutbound	coaming		[wizard]	
Diabtuoluo	Is true	Case sensitive			
Dofaultivalue	Integer32			[wizord]	
Delautivatue	Ontional	Fixed		[wizaru]	
Fast search		B		^X	
Name	Check for n	nsgDisallowed	*	\sim	
Description	Check for n	nsgDisallowed			
Left value	\$msgDisallo	owed	*	[wizard]	
Operator	is false	Case sensitive			
Right value	Integer32		Y		
Default value				[wizard]	When the condition set matches on the message, the selected actions are applied in the order they are shown. Each conditio
Feeterst	Optional	Fixed			end operands
Hast search	Check for A	C C		XX	Administrator or a fixed value that comes for example from the message being processed. In the former case, "name" is show provisioning screen instead of <left-hand operand=""> and the value is pre-filled by the "default value". "Optional" makes the cond</left-hand>
Description	Check for A	nnlicationId		Ť	"Fast search" results in fast database lookups.
Leftvalue		ication id		[wizard]	
Operator				[maard]	
Right value	Integer32		-		
Default value	16777251			[wizard]	
	Optional	Fixed			
Name	Check for n	nsqDisallowed		~	
Description	Check for n	nsgDisallowed			
Left value	\$msqDisall	owed		[wizard]	
Operator	is false	 Case sensitive 			
Right value	Integer32		-		
Default value				[wizard]	11/1 - 11
	Optional	Fixed			vinen the condition set matches on the message, the selected actions are applied in the order they are shown. Each conditional set matches are shown. Each conditio
Fast search	1	C		~×	Administrator or a fixed value that comes for example from the message being processed. In the former case, "name" is sh
Name	Check for A	pplicationId	*	~	"Fast search" results in fast database lookups.
Description	Check for A	pplicationId			
Left value	@msg.appl	ication_id		[wizard]	
Operator	==	 Case sensitive 			
Right value	Integer32				
Detault value	16//7251	Finad		wizard	
Fast search	Optional L	D		AX	
Name	Check for C	Commandcode		~	
Description	Check for C	Commandcode			
Left value	@msg.com	mand.code	*	[wizard]	
Operator	==	Case sensitive			
Right value	Integer32		v		
Default value	316			[wizard]	
	Optional	Fixed			
Add]					
Den dillor Dei		ANDed OBard			Specify whether the conditions are logically ANDed, ORed or they form a complex logical expression like: (A OR B) AND C A
Condition Set					Use parentheses for the condition set that contains both AND and OR. Try to optimize the complex expression to achieve th lookups.
		Actions			Description
Action		Default Values	Optional		Description
		Internal variable			
Set internal varia	able	msgDisallowed		AVY	The action allows setting the value for an internal variable that is valid for the entire duration of a transaction
Joe Internar Valla	abie	Set Value		AVX.	The dealer anome sealing are value for an internal variable and is value for the chare duration of a liditSdUlbi.
		[Wizard]			
New action		Modify Diameter Header Parts 👻 [Add]			Add a new action to the action list that is applied when the conditions of the Rule Template match on the message.
OK	Apply	Cancel			

Figure 6: Screenshot of Application ID and CC Whitelist for Outbound Roamers Configured Template

Fri Jan 06 12

2.4.4 Template 4: OR Whitelist

This template checks the Origin Realm of the incoming diameter message against the whitelist of Origin Realms. If the message's Origin Realm is in the whitelist, then the diameter message is allowed for further processing, otherwise it is not.

This template checks for \$foreignIngressPeer (whitelisted foreign peer), \$msgDisallowed (to allow this message or not), and @msg.avp["Origin-Realm"] (to check that message's Origin Realm is in the whitelist or not).

If above conditions are satisfied, then it allows the message by setting \$msgDisallowed = 0.

If not satisfied, then it abandons the message by setting \$msgDisallowed = 30. 30 indicates "OR whiltelist" template check fails for this message. Hence, every template sets a different msgDisallowed value in case of failure.

It is associated with trigger point RTP1.

Template Definition

IF	\$foreignIngressPeer	is	true	
AND	\$msgDisallowed	is	false	
AND	@msg.avp["Origin-Realm"]	equals	list of ORs	
THEN	Set Internal Variable:	\$msgDisallowed = 0 for all the rules except the default ru \$msgDisallowed = 30		

Note: The Origin-Realm is an optional condition. If you do not want to check origin realm, then use the empty value of origin realm or do not use this template.

Main Menu: Diameter -> Mediation -> Rule Templates [Edit]

Fri Jan 06 12:52:24 2017 ES1

Ok	Apply	Cancel			
		Settings			Description
Rule Template N	lame	OR whiltelist-RTP1	•	Name use	d to label this Rule Template in the system
Message type si	upport	Request V		Indicates w	that have of message processing is supported by the Rule Template, i.e. Request, Answer, or both. The message type support that have of message and options
		Conditions		uepenus o	Description
Fast search	1	А	^X		·
Name	Check for Fo	reign Ingress Peer	* ~		
Description	Check for Fo	reign Ingress Peer			
Leftvalue	\$foreignIngr	essPeer	* [wizard]	I	
Operator	is true	Case sensitive			
Right value	Integer32				
Default value			[wizard]		
Fast search	Optional 🗌	Fixed B	~~		
Name	Check for m	gDisallowed	* 🗸		
Description	Check for m	gDisallowed			
Left value	\$msgDisallo	ved	* [wizard]	When the o	condition set matches on the message, the selected actions are applied in the order they are shown. Each condition consists of a
Operator	is false	 Case sensitive 		Administra	tor or a fixed value that comes for example from the message being processed. In the former case, "name" is shown on the
Right value	Integer32		-	"Fast sear	g screen instead of «left-hand operand» and the value is pre-filled by the "default value". "Optional" makes the condition optional, anc ch" results in fast database lookups.
Default value			[wizard]		
	Optional	Fixed			
Fast search	Charly fee Or	C	<u> </u>		
Description	Check for Or	igin Realm AVP	^		
Leftvolue	Check for Or	Igin Realm AVP	* [wizord]		
Operator			[wizaid]		
Right value	DiameterIde	ntity	_		
Default value	fwmme1.cor	n	wizard		
	Optional 🔽	Fixed			
Add					
Name	Check for	Enreign Ingress Peer		* ~	
Description	Chock for	Foreign Ingress Peer			
Leftvalue	deforming Tr	arageBoor		* [wizard]	
Operator	is the second			[wilding]	
Dishtustus	is true				
Right value	Integer32		_		
Default value				wizard	
Footoporch	Optional	Fixed P		~ V	
Name	Check for	msqDisallowed		• 00	
Description	Check for	msqDisallowed			
Leftvolue	Check for	Insgolsallowed		• Ewizord 1	When the condition set matches on the message, the selected actions are applied in the order they are shown. Each
Oneseter	şirisyoisa			[wizaru]	<left-hand operand=""> <operator> <right-hand operand=""> triple where <right-hand operand=""> is either a value provisioned Administrator or a fixed value that some of a symple from the message being processed in the former ages "page".</right-hand></right-hand></operator></left-hand>
Operator	is taise				provisioning screen instead of <left-hand operand=""> and the value is pre-filled by the "default value". "Optional" makes t</left-hand>
Right value	Integer32		_		"Fast search" results in fast database lookups.
Default value				[wizard]	
Footosorah	Optional	Fixed			
Name	Chark fre			• ~×	
Description	Check for			~	
Leftvalue	Check for			• [wirord]	
Operator	@msg.av			wizard	
Operator	==	Case sensitive			
Right value	Diameter	Identity			
Default value	fwmme1.	com		[wizard]	
	Optional	Fixed			
Auu					
Condition Cot		ANDed			Specify whether the conditions are logically ANDed, ORed or they form a complex logical expression like: (A OR B) ANI
Contailion Set					lookups.
		Actions			Description
Action		Default Values	Ontiona		Description
		Internal variable	opuolia		
		msgDisallowed 💌			
Set internal var	able	Set Value		~~X	The action allows setting the value for an internal variable that is valid for the entire duration of a transaction.
		0 [wizard]			
New action		Modify Diameter Header Parts 💌 [Add]			Add a new action to the action list that is applied when the conditions of the Rule Template match on the message.
Ok	Apply	Cancel			

Figure 7: Screenshot of OR Whitelist Configured Template

2.4.5 Template 5: DR Whitelist

After successful execution of Template 4 "OR Whitelist," if \$msgDisallowed is 0 (message is still allowed for further processing), then Template 5 DR Whitelist is executed.

This template checks the Destination Realm of the incoming diameter message against the whitelist of Destination Realms. If the Destination Realm is in the whitelist, then the diameter message is allowed for further processing.

This template checks for \$foreignIngressPeer (whitelisted foreign peer), \$msgDisallowed (to allow this message or not), and @msg.avp["Destination-Realm"] (to check that Destination Realm is in the whitelist or not).

If above conditions are satisfied, then it allows the message by setting \$msgDisallowed = 0.

If not satisfied, then it abandons the message by setting \$msgDisallowed = 40. 40 indicates "DR whiltelist" template check fails for this message. Hence, every template sets different msgDisallowed value in case of failure.

It is associated with trigger point RTP1.

Template Definition

IF	\$foreignIngressPeer	is	true
AND	\$msgDisallowed	is	false
AND	@msg.avp["Destination-Realm"]	equals	list of DRs
THEN	Set Internal Variable:	\$msgDisallowed = 0 for all the rules except the default \$msgDisallowed = 40	

Note: The Destination-Realm is an optional condition. If you do not want to check the destination realm, then use the empty value of destination realm or do not use this template.

Main Menu: Diameter -> Mediation -> Rule Templates [Edit]

			Fri Jar
Ok	Apply Cancel		
	Settings		Description
Rule Template	Name DR whiltelist-RTP1		[Default = n/a. Range = A 255 character string. Valid characters are [a-z], [A-Z], [0-9], space, dash (-), period (.), @, and un
Message type s	support Request 🗸		Indicates what type of message processing is supported by the Rule Template, i.e. Request, Answer, or both. The mess
	Conditions		depends on the selected conditions and actions.
Fast search	A A	^	X
Name	Check for Foreign Ingress Peer	* ~	
Description	Check for Foreign Ingress Peer		
Left value	\$foreignIngressPeer	* [wizar	d]
Operator	is true Case sensitive		
Right value	Integer32	-	
Default value		[wizar	d]
	Optional Fixed		
Fast search Name	Chark for monDicallowed	<u> </u>	X
Description	Check for msgDisallowed		
Leftvalue	emcaDicallowed	* [wiza	When the condition set matches on the message, the selected actions are applied in the order they are shown. Each co
Operator	is false	L TTILLT	4 <left-hand operand=""> <operator> <right-hand operand=""> triple where <right-hand operand=""> is either a value provisioned b Administrator or a fixed value that comes for example from the message being processed. In the former case, "name" is</right-hand></right-hand></operator></left-hand>
Rightvalue			provisioning screen instead of <left-hand operand=""> and the value is pre-filled by the "default value". "Optional" makes the</left-hand>
Default value	Jinteger 52	wiza	"Fast search" results in fast database lookups.
-	Optional Eixed		-1
Fast search	C	^	X
Name	Check for Destination-Realm AVP	* ~	
Description	Check for Destination-Realm AVP		
Left value	@msg.avp["Destination-Realm"][1].data	* [wizar	d]
Operator	== Case sensitive		
Right value	DiameterIdentity	-	
Default value	homme1.com	[wizai	d]
[Add]	Optional M Fixed		
Name	Check for Foreign Ingress Peer	* ~	
Description	Check for Foreign Ingress Peer		
Left value	\$foreignIngressPeer	* [wizard]	
Operator	is true Case sensitive		
Right value	Integer32	w.	
Default value		[wizard]	
	Optional Fixed		
Fast search	B Chack for mcaDicallowed	^X	
Description	Check for msgDisallowed		
Left value	\$msaDisallowed	* [wizard]	When the condition set matches on the message, the selected actions are applied in the order they are shown. Each condition c
Operator	is false Case sensitive		<encertain <="" a="" by="" either="" inple="" is="" operands="" operators="" provisioned="" right-hand="" ru<br="" the="" value="" where="">Administrator or a fixed value that comes for example from the message being processed. In the former case, "name" is shown</encertain>
Right value	Integer32	Ψ.	provisioning screen instead of «left-hand operand» and the value is pre-filled by the "default value". "Optional" makes the condition "Fast search" results in fast database lookups
Default value		[wizard]	
	Optional Fixed		
Fast search Name	C C	,X	
Description	Check for Destination-Realm AVP		
Left value	@msg.avp["Destination-Realm"][1] data	• [wizard]	
Operator	== Case sensitive	[· · · · · · ·]	
Right value	DiameterIdentity	~	
Default value	homme1.com	[wizard]	
	Optional 🗹 Fixed 🗌		
Add			
Condition Ont	ANDed Operation		Specify whether the conditions are logically ANDed, ORed or they form a complex logical expression like: (A OR B) AND C AND (I
Condition Set	Complex Expression A AND B AND C		use parenareses for are comparently and contains bour AND and OK. Try to opartize the complex expression to achieve the fast lookups.
	Actions		Description
Action	Default Values	Optional	
	Internal variable		
Set internal varia	ble Set Value		The action allows setting the value for an internal variable that is valid for the entire duration of a transaction.
	0 [wizard]		
New action	Modify Diameter Header Parts 👻 [Add]		Add a new action to the action list that is applied when the conditions of the Rule Template match on the message.

Figure 8: Screenshot of DR Whitelist Configured Template

2.4.6 Template 6: OH Ends with OR

After successful screening of the diameter message with Template 5 "DR whitelist," if the internal variable \$msgDisallowed is still false, then it means the diameter message is allowed for further processing and Template 6 "Origin Host Ends with Origin Realm" is executed.

This template picks the Origin-Host and Origin-Realm AVP from the diameter message and it checks that the Origin-Host is ending with Origin-Realm or not.

If not, then it abandons the diameter message and sets \$msgDisallowed = 50.

It also checks for \$foreignIngressPeer and \$msgDisallowed in the same way as it has been tested by the previous template.

It is associated with trigger point RTP1.

Template Definition

IF	\$foreignIngressPeer	is	true
AND	\$msgDisallowed	is	false
AND	@msg.avp["Origin-Host"]	does not end with	"." + @msg.avp["Origin-Realm"]
THEN	Set Internal Variable:	\$msgDisallowed =	50

Below is the screen shot of configured template "OH ends with OR":

Main Menu: Diameter -> Mediation -> Rule Templates [Edit]

Ok	Ap	ply	Cancel					
			Settings					Description
Rule Templa	late Name OH ends with OR-RTP1 *					*	Name used to label this Rule Template in the system [Default = n/a_Range = A 255 character string_Valid characters are [a-7]_[A-7]_[0-9]_s	
Message typ	ssage type support Request 🖌				Indicates what type of message processing is supported by the Rule Template, i.e. F depends on the selected conditions and actions.			
			Conditions					Description
Fast search			A				~×	
Name	Che	ck for Fo	reign Ingress Peer				* ~	
Description	Che	ck for Fo	reign Ingress Peer					
Left value	\$for	eignIngr	essPeer				* [wizard]	
Operator	is tr	ue	 Case sensitive 					
Right value	Inte	ger32						
Default valu	e j	anal 🗆	Fixed				wizard	
Fast search	opu ✓		B				~X	
Name	Che	ck for m	sgDisallowed				* 🗸	
Description	Che	ck for m	sgDisallowed					
Left value	\$ms	gDisallov	wed				* [wizard]	When the condition set matches on the message, the selected actions are applied in <left-hand operand=""> <operator> <right-hand operand=""> triple where <right-hand oper<="" td=""></right-hand></right-hand></operator></left-hand>
Operator	is fa	alse	Case sensitive					Administrator or a fixed value that comes for example from the message being proce
Right value	Inte	ger32				-		Provisioning screen instead of <ien-nand operand=""> and the value is pre-filled by the "Fast search" results in fast database lookups.</ien-nand>
Default valu	e						[wizard]	
	Opti	onal	Fixed					
Fast search	Cho	C C					• X	
Description	Orig	Check for Origin-Host AVP				lue	Ť	
Leftvalue	@m	Origin-Host AVP Value does not ends with Origin-Realm AVP Value					* [wizard]	
Operator	1=\$	ogravpt	Case sensitive					
Right value	xl-v	alue				-		
Default valu	e "," +	- @msa.a	avp["Origin-Realm"]				[wizard]	
	, Opti	onal 🗌	Fixed		()			
Name	Check for	Foreign In	gress Peer		\sim			
Description	Check for	Foreign In	gress Peer	—	[wizord]			
Operator	is true	v C	Case sensitive		[with a]			
Right value	Integer32			Y				
Default value	Ontinent	- Fired			[wizard]			
Fast search		Fixed	В		~×			
Name	Check for	msgDisallo	owed	^	\sim			
Left value	\$msgDisa	llowed	Jweu	*	[wizard]	When the co	ondition set mai	ches on the message, the selected actions are applied in the order they are shown. Each condition consist
Operator	is false	- C	Case sensitive			Administrate	or or a fixed valu	e that comes for example from the message being processed. In the former case, "name" is shown on the
Right value	Integer32			T	Lucian and L	"Fast search	" results in fas	database lookups.
Delault value	Optional	Fixed			[wizard]			
Fast search	J Charles	October 11-1	C		^X			
Description	Origin-Ho	st AVP Valu	ue does not ends with Origin-Realm AVP Val	ue	~			
Left value	@msg.av	o["Origin-H	lost"][1].data	*	[wizard]			
Operator	!=\$	- C	Case sensitive					
Right value Default value	xl-value	sa.avn["Ori	ioin-Realm"]		[wizard]			
	Optional	Fixed	V					
[Add]			ed					
Condition Set		O ORe Com	d plex Expression: A AND B AND C			Specify whe Use parent lookups.	ther the condition the conditi	ins are logically ANDed, Oked of they form a complex logical expression like: (A OK B) AND C AND (D OK E ndition set that contains both AND and OR. Try to optimize the complex expression to achieve the fast-searc
			Actions	0.1				Description
Action		Internal v	variable	Optional				
Set internal varia	ble	msgDis Set Value 50	e [wizard]		~~×	The action a	llows setting th	e value for an internal variable that is valid for the entire duration of a transaction.
New action		, Modify	Diameter Header Parts 👻 [Add]			Add a new a	iction to the acti	on list that is applied when the conditions of the Rule Template match on the message.
Ok	Apply	Cance	el					

Figure 9: Screenshot of OH Ends with OR Configured Template

2.4.7 Template 7: Handle Route Record AVP

After successful screening of diameter message with Template 6 "OH Ends with OR," if the internal variable \$msgDisallowed is still false, it means the diameter message is allowed for further processing and Template 7 "Handle Route Record AVP" is executed.

This template basically iterated through all the route record AVPs which are present in the diameter message and will compare each rout record AVP with blacklist of Realms. If any Rout Record AVP from diameter message match with ANY realm from blacklisted realms then it will abandoned the message by setting \$msgDisallowed = 60.

It is associated with trigger point RTP1.

Template Definition

IF	\$foreignIngressPeer	is	true
AND	\$msgDisallowed	is	false
AND	`@msg.avp["Route-Record"][any].data	ends with	list of realms
THEN	Set Internal Variable:	\$msgDisallow	/ed = 60

Note: In this template, we are using ANY keyword, which acts as a loop and iterates through all the route record AVPs to find out blacklisted realms present in any of the route record AVPs. Create one rule for each blacklisted realm.

The right hand side type is set to xl-value to a force slow-search.

Main Menu: Diameter -> Mediation -> Rule Templates [Edit]

Ok	Apply	Cancel			
		Settings			Description
Rule Template N	lame	Handle RouteRecord AVP			Name used to label this Rule Template in the system [Default = n/a Rance = A 255 character string Valid characters are [a-7] [A-7] [0-9] space dash (-) period (-) @ a
vlessage type si	upport	Request 🗸			Indicates what type of message processing is supported by the Rule Template, i.e. Request, Answer, or both. The
		Answer: Conditions			depends on the selected conditions and actions. Description
Fast search	1	A		X	
Name	Check for F	oreign Ingress Peer		* 🗸	
Description	Check for F	oreign Ingress Peer			
Left value	\$foreignIng	ressPeer		* [wizard	
Operator	is true	Case sensitive			
Right value	Integer32		~		
Default value				[wizard	
Fast search	Optional	Fixed B		~~	
Name	Check for m	sqDisallowed		* 📿	
Description	Check for m	sqDisallowed			
Left value	\$msqDisallo	wed		* [wizard	When the condition set matches on the message, the selected actions are applied in the order they are shown. Ea
Operator	is false	Case sensitive			Administrator or a fixed value that comes for example from the message being processed. In the former case, "nai
Right value	Integer32		v		provisioning screen instead of <left-hand operand=""> and the value is pre-filled by the "default value". "Optional" mak "East search" results in fast database lookups</left-hand>
Default value				(wizard	
	Optional	Fixed			
Fast search	<u> </u>	C		X	
Name	Check for R	outeRecord AVP		* ~	
Description	RouteRecor	d AVP, if any Route-Record AVP is ending with blacklis	sted rea		
Left value	@msg.avp['Route-Record"][any].data		* [wizard	
Operator	=\$	Case sensitive			
Right value	xl-value		T		
Default value	blistmme1.	com		[wizard	
Add	Optional 🗠	Fixed			
Name	Check for F	oreign Ingress Peer	*	\sim	
Description	Check for F	oreign Ingress Peer			
Leftvalue	\$foreignIng	ressPeer	*	[wizard]	
Operator	is true	Case sensitive			
Right value	Integer32		~		
Default value				[wizard]	
East search	Optional	Fixed P		~~	
Name	Check for m	nsqDisallowed			
Description	Check for m	nsgDisallowed	_		
Left value	\$msgDisallo	wed	*	[wizard]	When the condition set matches on the message, the selected actions are applied in the order they are shown. Each c
Operator	is false	Case sensitive			Administrator or a fixed value that comes for example from the message being processed. In the former case, "name"
Right value	Integer32		-		provisioning screen instead of <left-hand operand=""> and the value is pre-filled by the "default value". "Optional" makes the "Fast search" results in fast database lookups.</left-hand>
Default value				[wizard]	
_	Optional	Fixed			
Fast search		C C	—.	X	
Description	Check for R	outerecord AVP	od ros	~	
Left value	@msg avol	"Route-Record"][anv].data	*	[wizard]	
Operator	=\$	Case sensitive			
Right value	xl-value		-		
Default value	blistmme1.	com		[wizard]	
	Optional 🛛	Fixed			
[Add]					
Condition On		ANDed Opend			Specify whether the conditions are logically ANDed, ORed or they form a complex logical expression like: (A OR B) ANE
Condition Set		Complex Expression: A AND P AND C			Use parentitieses for the condition set that contains both AVUD and UK. If y to optimize the complex expression to achie lookups.
		Actions			Description
Action		Default Values 0	Optional		
		Internal variable			
Set internal vari	able	msgDisallowed		~~×	The action allows setting the value for an internal variable that is valid for the entire duration of a transaction.
		60 [wizard]			
New action		Modify Diameter Header Parts V [Add]			Add a new action to the action list that is applied when the conditions of the Rule Template match on the message.
		,			
Ok	Apply	Cancel			

Figure 10: Screenshot of Handle Route Record AVP Configured Template

2.4.8 Template 8: Handle Disallowed Requests

Template 8 picks certain AVPs from the diameter message, and tests them again with certain countermeasure, which you configure.

If the diameter message fails at any countermeasure, then \$msgDisallowed is set to a non-zero integer.

This template acts on the \$msgDisallowed value.

Template 8 takes three types of action, but you can be modify the requirements.

- Peg Counter: Count the number of disallowed request.
- Raise Alarm: Include the value of \$msgDisallowed in the alarm description.
- Abandon the diameter message.

It is associated with trigger point RTP1.

Template Definition

IF \$msgDisallowed

is true

 THEN
 Peg counter
 Count the number of disallowed ingress requests

 Raise alarm
 Include the value of \$msgDisallowed in the alarm description

 Abandon message
 Include the value of \$msgDisallowed in the alarm description

Main Menu: Diameter -> Mediation -> Rule Templates [Edit]

Ok	Apply	Cancel				
		Settings			Description	
Rule Template I	Name	Handle disallowed requests		*	Name used to label this Rule Template in the system IDefault = n/a Rance = A 255 character string Valid characters are [a-7] [A-7] [0-9] space, dash (-) period (-) @ ar	
Message type s	upport	Request 🗸 Answer: 🗸			Indicates what type of message processing is supported by the Rule Template, i.e. Request, Answer, or both. The r on the selected conditions and actions.	
		Conditions			Description	
Fast search	1	А		~X		
Name	Check for m	isgDisallowed	*	\sim		
Description	Check for m	isgDisallowed				
Left value	\$msqDisallo	wed	*	[wizard]	When the condition set matches on the message, the selected actions are applied in the order they are shown. Eac	
Operator	==	Case sensitive			Administrator or a fixed value that comes for example from the message being processed. In the former case, "nam	
Right value	Integer32	nteger32			screen instead of <left-hand operand=""> and the value is pre-filled by the "default value". "Optional" makes the conditi results in fast database leakues</left-hand>	
Default value	0	[wizard]		[wizard]		
	Ontional Fixed					
[Add]						
		ANDed				
Condition Set		ORed			Specify whether the conditions are logically ANDed, ORed or they form a complex logical expression like: (A OR B) A	
		Complex Expression: A			Ose parentitieses for the condition set that contains both AND and OK. Hy to optimize the complex expression to ac	
		Actions			Description	
Action		Default Values	Optional			
		Alarm/Event				
Assert Alarm/Ev	ent	Mediation Generic Alarm Major		~~Y	This action allows raising an alarm if the conditions for the rule match	
AssertAlamitev	on	Additional info			This action allows faising an alarm if the conditions for the fulle match.	
		"[" + "Error Code :-" + 5 [wizard]				
Reg Counter		Measurement		~~~Y	Pag selected measurement	
r eg counter		mesurement_1012		~~~	r eg selected measurement	
Abandon Messa	age			~~×	Silently drop the message. The action is supported by Requests and Answers.	
Exit from Execut	ion Trigger			~~×	Exit from the Execution Trigger bypassing any subsequent Rule Template in it	
New action		Modify Diameter Header Parts 💌 [Add]			Add a new action to the action list that is applied when the conditions of the Rule Template match on the message.	
Ok	Apply	Cancel				

Figure 11: Screenshot of Handle Disallowed Requests Configured Template

2.4.9 Template 9a: Remove DOIC AVP

After successful execution of Template 8 "Handle Disallowed Requests," if the message has failed at any countermeasure check, then the "Handle Disallowed Requests" template abandons the message (As per current configuration).

Once the diameter message passes all the above countermeasure checks (\$msgDisallowed is still 0), then Template 9a "Remove DOIC AVP" is executed.

It checks for DOIC AVP (OC-Supported-Features and OC-OLR AVPs). If it is present in the diameter message, then it deletes the DOIC AVPs and forwards the message for further processing.

It is associated with trigger point RTP1.

IF	\$foreignIngressPeer	is	true
AND	@msg.avp["OC-Supported-Features"]	exists	
OR	@msg.avp["OC-OLR"]	exists	
THEN	Delete AVP	OC-Supporte	d-Features
	Delete AVP	OC-OLR	

Main Menu: Diameter -> Mediation -> Rule Templates [Edit]

Ok	Apply	Cancel		
		Settings		Description
Rule Template N	Name	Remove DOIC AVP-RTP1		Name used to label this Rule Template in the system
Message type s	upport	Request 🗸		Indicates what type of message processing is supported by the Rule Template, i.e. Request, Answer, or both. T
mooodgo (jpo o	apport	Answer: Conditions		depends on the selected conditions and actions.
Fast search	1	A	1	NX Description
Name	Check for f	oreignIngressPeer	* `	
Description	Check for f	oreignIngressPeer	_	
Left value	\$foreignIng	jressPeer	* [wiz	ard]
Operator	is true	 Case sensitive 	_	
Right value	Integer32		-	
Default value			[wiz	ard]
Fact coarch	Optional	Fixed		
Name	Check for A	VP OC-Supported-Features	-* (
Description	Check for /	VP OC-Supported-Features	-	
Left value	@msg.avp	"OC-Supported-Features"][1].data	* [wiz	When the condition set matches on the message, the selected actions are applied in the order they are shown.
Operator	exists	Case sensitive		Administrator or a fixed value that comes for example from the message being processed. In the former case, "
Right value	Integer32		-	provisioning screen instead of <left-hand operand=""> and the value is pre-filled by the "default value". "Optional" n "East search" results in fast database lookups</left-hand>
Default value			[wiz	ard]
	Optional	Fixed		
Fast search	<u> </u>	С		^X
Name	Check for (DC-OLR AVP	_* `	×
Description	Check for 0	JC-OLK AVP	_	
Operator	@msg.avp		- [WIZ	aru
Rightvalue	Intogor22		-	
Defaultivalue	Theger 52		- wiz	ard
Delaan value	Optional	Fixed	1	an a 1
[Add]	-,			
		ANDed		Specify whether the conditions are logically ANDed, ORed or they form a complex logical expression like: (A OR
Condition Set		O ORed		Use parentheses for the condition set that contains both AND and OR. Try to optimize the complex expression to lookups
Name	Check for A	/P OC-Supported-Features *	\sim	
Description	Check for A	/P OC-Supported-Features		
Left value	@msg.avp['	OC-Supported-Features"][1].data *	[wizard]	When the condition set matches on the message, the selected actions are applied in the order they are shown. Each condi <left-hand operand=""> <operator> <rioht-hand operand=""> triple where <rioht-hand operand=""> is either a value provisioned by the</rioht-hand></rioht-hand></operator></left-hand>
Operator	exists	Case sensitive		Administrator or a fixed value that comes for example from the message being processed. In the former case, "name" is sh
Right value	Integer32	v		"Fast search" results in fast database lookups.
Default value			[wizard]	
Fast search	Optional L	C	~×	
Name	Check for O	C-OLR AVP *	\sim	
Description	Check for O	C-OLR AVP		
Left value	@msg.avp['	OC-OLR"][1].data	[wizard]	
Operator	exists	✓ Case sensitive		
Right value	Integer32	· · · · · · · · · · · · · · · · · · ·	[winest?	
Delault value	Ontional	Eived	wizaru	
[Add]	opuolidi			
		OANDed		Specify whether the conditions are logically ANDed, ORed or they form a complex logical expression like: (A OR B) AND C A
Condition Set		O ORed		Use parentheses for the condition set that contains both AND and OR. Try to optimize the complex expression to achieve the lookups.
		Complex Expression: A AND (B OR C)		Description
Action		Default Values Optional		Description
		Delete parent AVP if it is empty:		
Delete AVP		OC-Feature-Vector	$\sim \!$	The action allows deleting a specified AVP in the message.
		With the value:		
		[wizard]		
		Delete parent AVP if it is empty:		
		OC-OLR		
Delete AVP		OC-Reduction-Percentage	$\sim \times \times$	The action allows deleting a specified AVP in the message.
		With the value:		
		[wizard]		
New action		Modify Diameter Header Parts 💌 [Add]		Add a new action to the action list that is applied when the conditions of the Rule Template match on the message.
	(and	Creat		
UK	Apply	Cancer		

Figure 12: Screenshot of Remove DOIC AVP Configured Template

2.4.10 Template 9b: Remove DRMP AVP

After successful execution of Template 8 "Handle Disallowed Requests," if the message has failed at any countermeasure check, then the "Handle Disallowed Requests" template abandons the message (As per current configuration).

Once the diameter message passes all the above countermeasure checks (\$msgDisallowed is still 0), then Template 9b "Remove DRMP AVP" is executed.

It checks for DRMP AVP. If it is present in the diameter message, then it deletes the DRMP AVP and forwards the message for further processing.

It is associated with trigger point RTP1.

IF	\$foreignIngressPeer	is	true
AND	@msg.avp["DRMP"]	exists	
THEN	Delete AVP	DRMP	



Figure 13: Screenshot of Remove DRMP AVP Configured Template

2.4.11 Template 10: Roaming Scenario Identification

Template 10 checks for an egress peer before sending the diameter message to the connection.

It checks for application ID s6a, which is fixed in the current configuration; egress peer (check for egress foreign peer); and command code. In the sample configuration, only two commands are allowed: AIR and ULR.

If the condition is satisfied, then the diameter message is marked for keeping track by setting \$foreignEgressPeer = 1.

It is associated with trigger point RTP10.

IF	@msg.application_id	equals	S6a	
AND	@dsr.egress.peer	equals	list of	foreign peers
AND	@msg.command.code	equals	AIR	
OR	@msg.command.code	equals	ULR	
THEN	Set Internal Variable:	\$foreignEgressPeer	r = 1	

		Settings				Description
Rule Template	Name	Poaming constinuidontification-PTP10			*	Name used to label this Rule Template in the system
Rule remplate	INAILIE					[Default = n/a. Range = A 255 character string. Valid characters are [a-z], [A-Z], [0-9], space, dash (-), period (.), @
Message type s	support	Answer:				Indicates what type of message processing is supported by the Rule Template, i.e. Request, Answer, or both. The depends on the selected conditions and actions.
		Conditions				Description
Fast search	1	Α			$^{\times}$	
Name	Identifying	the Egress peer		*	\sim	
Description	Check Pee	r for Roaming scenario identification		_		
Left value	@dsr.egre	ss.peer		* [\\	vizard]	
Operator	==	 Case sensitive 				
Right value	Peer			T		
Default value	FN_HSS1			▼ [W	vizard]	
	Optional	Fixed				
Fast search	Chark for	Application TD		<u> </u>		
Description	Check for	Application ID			~	
Description	Check for	Application ID				When the condition set matches on the message, the selected actions are applied in the order they are shown.
Operator	j@msg.app				vizaru j	<left-hand operand=""> <operator> <right-hand operand=""> triple where <right-hand operand=""> is either a value provis</right-hand></right-hand></operator></left-hand>
Operator	==	Case sensitive		_		provisioning screen instead of <left-hand operand=""> and the value is pre-filled by the "default value". "Optional" m</left-hand>
Right value	Integer32			<u> </u>		"Fast search" results in fast database lookups.
Default value	16777251			l w	vizard	
Fastsearch	Optional	Fixed C			~Y	
Name	Check for	Command code		*	\sim	
Description	Check for	Command code		_		
Leftvalue	@msq.cor	omand code		* [w	vizard 1	
Operator						
Right value	Integer22	Case sensitive		-		
Default value	316				vizard 1	
Dendant Faller	Ontional	Fixed			1	
[Add]	optional					
		ANDed				Specify whether the conditions are logically ANDed. ORed or they form a complex logical expression like: (A OR
Condition Set		O ORed	_			Use parentheses for the condition set that contains both AND and OR. Try to optimize the complex expression to
		Complex Expression: A AND B AND C				lookups.
		Actions				Description
Name	Identifvina th	e Egress peer	,	tionol		
Description	Check Peer f	or Roaming scenario identification				
Left value	@dsr.egress	.peer		[wizard]		
Operator	==	Case sensitive				
Right value	Peer		-			
Default value	FN_HSS1		-	[wizard]		
	Optional 🗹	Fixed				
Fast search	Chark for An	B B	<u> </u>	$\sim \times$		
Description	Check for Ap	plication ID		~		
Leftvalue	Omca applie	ation id	——.	[wizard]	When	the condition set matches on the message, the selected actions are applied in the order they are shown. Each conditio
Operator				[within a]	<left-h Admin</left-h 	and operand> <operator> <right-hand operand=""> triple where <right-hand operand=""> is either a value provisioned by the vistrator or a fixed value that comes for example from the message being processed. In the former case, "name" is show</right-hand></right-hand></operator>
Right value	Integer32		-		provis	ioning screen instead of <left-hand operand=""> and the value is pre-filled by the "default value". "Optional" makes the con</left-hand>
Default value	16777251			[wizard]	+ast s	search results in fast database lookups.
	Optional 🔽	Fixed				
Fast search	1	с		^X		
Name	Check for Co	mmand code		\sim		
Description	Check for Co	mmand code				
Left value	@msg.comn	and.code		[wizard]		
Operator	==	Case sensitive				
Right value	Integer32		T			
Default value	316			[wizard]		
Add]	Optional 🗹	Fixed				
in total		ANDed			Coocif	further the conditions are legically ANDed. ORed or they form a complex legical expression like: (A OR R) AND C AN
Condition Set		O ORed			Use p	arentheses for the condition set that contains both AND and OR. Try to optimize the complex expression like. (A OR B) AND C ANI
		Complex Expression: A AND B AND C			lookup	ps.
		Actions				Description
Action		Default Values	Optional			
Set internal varia	ble	Set Value		~~X	The a	ction allows setting the value for an internal variable that is valid for the entire duration of a transaction.
		1 [wizard]				
New action		Modify Diameter Header Parts 💌 [Add]			Add a	new action to the action list that is applied when the conditions of the Rule Template match on the message.
Ok	Apply	Cancel				

Figure 14: Screenshot of Roaming Scenario Identification Configured Template

2.4.12 Template 11: Destination-Realm Whitelist

Once the Template 10 "Roaming Scenario Identification" successfully executes, and \$foreignEgressPeer is set to 1, Template 11 checks for Destination Realm AVP.

If the Destination Realm of the current diameter message is in the Destination Realm whitelist, then the \$msgDisallowed is set to 0; otherwise, \$msgDisallowed is 100, where 100 indicates the "Destination-Realm Whitelist" template check failed.

It is associated with trigger point RTP10.

IF	\$foreignEgressPeer	is	true
AND	\$msgDisallowed	is	false
AND	@msg.avp["Destination-Realm"]	equals	list of DRs
THEN	Set Internal Variable:	\$msgDisallowed = 0 \$msgDisallowed = 7	0 for all the rules except the default rule: 100

		Cottinge				Description
Dute Templete		Settings				Name used to label this Rule Template in the system
Rule remplate	Name	Destination-Realm whitelist-RTP10				[Default = n/a. Range = A 255 character string. Valid characters are [a-z], [A-Z], [0-9], space, dash (-), period (.), @, ar
Message type s	support	Request: 🗸 Answer: 🗸				Indicates what type of message processing is supported by the Rule Template, i.e. Request, Answer, or both. The r depends on the selected conditions and actions.
		Conditions				Description
Fast search	V	Α			^×	
Description	Check for	Foreign Egress Peer		-	~	
Leftvalue	Check for	Foreign Egress Peer		—.	[wizord]	
Operator	storeigne	gressPeer			. [wizard]	
Pichtvalue	Is true			-		
Defaultivalue	Integers	2			[wizord]	
Delault value	Ontional	Fixed			[WIZATU]	
Fast search		B			~×	
Name	Check for	msgDisallowed		*	\sim	
Description	Check for	msgDisallowed				
Left value	\$msgDisa	llowed		*	[wizard]	When the condition set matches on the message, the selected actions are applied in the order they are shown. Ea < eft-hand operand> <operator> <right-hand operand=""> triple where <right-hand operand=""> is either a value provision</right-hand></right-hand></operator>
Operator	is false	Case sensitive				Administrator or a fixed value that comes for example from the message being processed. In the former case, "nam
Right value	Integer32	2		Ŧ		"Fast search" results in fast database lookups.
Default value					[wizard]	
	Optional	Fixed				
Fast search	Chack for	C C		—.	\sim	
Description	Check for	Destination-Realm AVP		-	Ť	
Leftvalue	@mcg av	p["Doctination-Roalm"][1] data			[wizard]	
Operator					[maximum]	
Rightvalue	Diameter	Identity		-		
Default value	fwhss1.co	an a			[wizard]	
	Optional	Fixed				
[Add]						
		ANDed				Specify whether the conditions are logically ANDed, ORed or they form a complex logical expression like: (A OR B) /
Condition Set		ORed				Use parentheses for the condition set that contains both AND and OR. Try to optimize the complex expression to ac
		Complex Expression: A AND B AND C				lookups.
	•	Actions				Description
Name	Check for Fo	Actions reign Egress Peer		~		Description
Name Description	Check for Fo	Actions reign Egress Peer reign Egress Peer	<u> </u>	~		Description
Name Description Left value	Check for Fo Check for Fo \$foreignEgre	Actions reign Egress Peer reign Egress Peer ressPeer	· [vizard]		Description
Name Description Left value Operator Right value	• Check for Fo Check for Fo \$foreignEgre is true Integer32	Actions reign Egress Peer reign Egress Peer essPeer Case sensitive	• [vizard]		Description
Name Description Left value Operator Right value Default value	Check for Fo Check for Fo \$foreignEgre is true Integer32	Actions reign Egress Peer reign Egress Peer essPeer v Case sensitive	• [vizard]		Description
Name Description Left value Operator Right value Default value	Check for Fo Check for Fo \$foreignEgre is true Integer32 Optional	Actions reign Egress Peer reign Egress Peer ussPeer v Case sensitive Fixed	• [vizard] vizard]		Description
Name Description Left value Operator Right value Default value Fast search Name	Check for Fo Check for Fo \$foreignEgre is true Integer32 Optional	Actions reign Egress Peer reign Egress Peer ssPeer Case sensitive Fixed B columniate B	• [• [vizard] vizard]		Description
Name Description Left value Operator Right value Default value Fast search Name Description	Check for Fo Check for Fo \$foreignEgree is true Integer32 Optional	Actions reign Egress Peer reign Egress Peer reign Egress Peer reign Egress Peer sspeer Fixed B sgDisallowed snDisallowed	• • [1 • [vizard]		Description
Name Description Left value Operator Right value Default value Fast search Name Description Left value	Check for Fo Check for Fo SforeignEgre is true Integer32 Optional Check for m Check for m SmsgDisallo	Actions regin Egress Peer sespect Fixed B sgDisallowed wed	• • • •	vizard]	When the cc	Description
Name Description Left value Operator Right value Default value Fast search Name Description Left value Operator	Check for Fo Check for Fo SforeignEgre is true Integer32 Optional Check for m: Check for m: \$msgDisallou is false	Actions regin Egress Peer regin Egress Peer SesPeer Case sensitive Fixed B sgDisallowed sgDisallowed ved Case sensitive	• [1	vizard] vizard]	When the co <left-hand o<br="">Administrate</left-hand>	Description ndition set matches on the message, the selected actions are applied in the order they are shown. Each condition consists of a perand> - <operator> -right-hand operand> triple where <right-hand operand=""> is either a value provisioned by the Rule Set r or a fixed value that comes for example from the message being processed. In the former case, mame its shown on the</right-hand></operator>
Name Description Left value Operator Right value Default value Fast search Name Description Left value Operator Right value	Check for Fo Check for Fo SforeignEgre is true Integer32 Optional Check for m: Check for m: \$msgDisallou is false Integer32	Actions reign Egress Peer reign Egress Peer Case sensitive Fixed B sgDisallowed wed Case sensitive	· ()	vizard]	When the cc ⊲teft-hand o Administrat provisioning Tast searct	ndition set matches on the message, the selected actions are applied in the order they are shown. Each condition consists of a perand-coperator-right-hand operand-tiple where right-hand operand- is either a value provisioned by the Rule Set or a fixed value that comes for example from the message being processed. In the former case, mamer is shown on the screen instead of -left-hand operand- and the value is pre-filled by the "default value". "Optional" makes the condition optional, ar results in fast database lookups.
Name Description Left value Operator Right value Default value Fast search Name Description Left value Operator Right value Default value	Check for Fo Check for Fo SforeignEgre is true Integer32 Optional Check for m: Check for m: \$msgDisallou is false Integer32	Actions reign Egress Peer reign Egress Peer Case sensitive Fixed B sgDisallowed wed Case sensitive	* () * () * () * ()	vizard]	When the cc ≺left-hand o Administrata provisioning Fast search	ndition set matches on the message, the selected actions are applied in the order they are shown. Each condition consists of a perand-~operator~right-hand operand- triple where ~right-hand operand- is either a value provisioned by the Rule Set or a flued value that comes for example from the message being processed. In the former case, "name" is shown on the screen instead of -left-hand operand- and the value is pre-filled by the "default value". "Optional" makes the condition optional, ar i' results in fast database lookups.
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Name Description Left value Operator Right value Default value Fast search Name Description Left value Operator Right value Default value Description Left value	Check for Fo Check for Fo SforeignEgre is true Integer32 Optional Check for m: SmsgDisallo is false Integer32 Optional Check for De Check for De Check for De Check for De	Actions regin Egress Peer regin Egress Peer ssPeer Case sensitive Fixed B sg0bisallowed wed Case sensitive Fixed C stination-Realm AVP Destination-Realm [1].data	· · · · · · · · · · · · · · · · · · ·	vizard] vizard] vizard] vizard] vizard] vizard]	When the cc ≺left-hand o Administrat provisioning Tast search	ndition set matches on the message, the selected actions are applied in the order they are shown. Each condition consists of a perand> -coperator> -right-hand operand> triple where -right-hand operand> is either a value provisioned by the Rule Set or or a fixed value that comes for example from the message being processed. In the former case, "name" is shown on the screen instead of -telf-hand operand> and the value is pre-filled by the "default value". "Optional" makes the condition optional, ar " results in fast database lookups.
Name Description Left value Operator Right value Default value Fast search Name Description Left value Operator Fast search Name Description Left value Default value Default value Default value Description Left value Operator Bindt value Operator Bindt value	Check for Fo Check for Fo SforeignEgre is true Integer32 Optional Check for m Check for m SmsgDisallou is false Integer32 Optional Check for De Check for De Check for De Check for De Check for De	Actions regin Egress Peer regin Egress Peer sesPeer Case sensitive Fixed B sgDisallowed wed C c stination-Realm AVP Destination-Realm MP Destination-Realm MP		vizard] vizard] vizard] vizard] vizard]	When the cc ≺left-hand o Administrat provisioning "Fast search	ndition set matches on the message, the selected actions are applied in the order they are shown. Each condition consists of a berand> - coperator> -right-hand operand> triple where -right-hand operand> is either a value provisioned by the Rule Set or or a fixed value that comes for example from the message being processed. In the former case, "name" is shown on the screen instead of -deft-hand operand> and the value is pre-filled by the "default value". "Optional" makes the condition optional, ar " results in fast database lookups.
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Name Description Left value Operator Right value Default value Default value Fast search Name Description Left value Operator Right value Default value Default value Default value Default value Default value Description Left value Operator Right value Operator Right value Default value	Check for Fo Check for Fo SforeignEgre is true Integer32 Optional Check for ma Check for ma Check for ma Check for ma Check for ma Check for De Check for De Chec	Actions rreign Egress Peer issPeer y Case sensitive Fixed B sopDisallowed sopDisallowed wed y Case sensitive Fixed C estination-Realm AVP Sestination-Realm AVP Destination-Realm AVP Sestination-Realm AVP Sestination-Realm AVP Setination-Realm AVP Setinatio-Realm AVP Setinatio-		vizard] vizard] vizard] vizard] vizard] vizard]	When the cc ≺left-hand o Administrata provisioning 'Fast search	ndition set matches on the message, the selected actions are applied in the order they are shown. Each condition consists of a perand- <operator- <right-hand="" a="" by="" either="" is="" operand-="" provisioned="" rule="" set<br="" the="" triple="" value="" where="">or or a fixed value that comes for example from the message being processed. In the former case, "name" is shown on the screen instead of relefhand operand- and the value is pre-filled by the "default value". "Optional" makes the condition optional, ar " results in fast database lookups.</operator->
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Name Description Left value Operator Right value Default value Fast search Name Description Left value Operator Right value Default value Defa	Check for Fo Check for Fo SforeignEgre Is true Integer32 Optional Check for m SmsgDisalloi Is false Integer32 Optional Check for De Check for De Che	Actions regin Egress Peer regin Egress Peer ssPeer Case sensitive Fixed Fixed Fixed Fixed Fixed C stination-Realm AVP Destination-Realm *[1].data C stination-Realm *[1].data Fixed AND B AND C		vitzard] vitzard] vitzard] vitzard] vitzard] vitzard]	When the cc <iet-hand o<br="">Administratory Fast search Fast search Specify whe Use parenth Jookups.</iet-hand>	Description ndition set matches on the message, the selected actions are applied in the order they are shown. Each condition consists of a perand-soperand-soperand-soperand-sould be active to the ready of the read
Name Description Left value Operator Right value Default value Default value Default value Description Left value Default value Default value Default value Coperator Right value Default value Default value Default value Coperator [Add] Condition Set	Check for Fo Check for Fo SforeignEgrei is true Integer32 Optional Check for m SmsgDisallo is false Integer32 Optional Check for De Check for De Che	Actions regin Egress Peer regin Egress Peer ssPeer Case sensitive Fixed C stination-Realm AVP Destination-Realm AVP Destination-Realm AVP Fixed C stination-Realm AVP Fixed C C stination-Realm AVP C stination-Realm AVP Stination-Realm A		vitzard] vitzard] vitzard] vitzard] vitzard] vitzard]	When the co «left-hand o Administrato provisioning "Fast search Specify whe Use parentt lookups.	Description ndition set matches on the message. The selected actions are applied in the order they are shown. Each condition consists of a perand-separator-scipitchand operand-triple where scipit-hand operand-is either a value provisioned by the Rule Set or a fixed value that comes for example from the message being processed. In the former case, "name" is shown on the screen instead of selection-and-markes the condition optional, ar "results in fast database lookups. her the conditions are logically ANDed. ORed or they form a complex logical expression like: (A OR B) AND C AND (D OR E). Note ease for the condition set that contains both AND and OR. Try to optimize the complex expression to achieve the fast-search expression to achieve the fast-search
Name Description Left value Operator Right value Default value Default value Description Left value Operator Right value Default value Default value Default value Default value Default value Operator Right value Operator Right value Default value Default value Operator Right value Default value Condition Set Action	Check for Fo Check for Fo SforeignEgre is true Integer32 Optional Check for m SmsgDisallo Is false Integer32 Optional Check for De Check for De	Actions regin Egress Peer regin Egress Peer sssPeer Case sensitive Fixed B gDisallowed sgDisallowed ved Case sensitive Fixed Fixed C stination-Realm AVP Destination-Realm AVP Destination-Realm [11].data C stination-Realm [11].data C c c c c c c c c c c c c	· (1)	vizard] vizard] vizard] vizard] vizard] vizard]	When the co <left-hand o<br="">Administrato provisioning 'Fast search Specify whe Use parenth Iookups.</left-hand>	Description ndition set matches on the message, the selected actions are applied in the order they are shown. Each condition consists of a perand>-soperators -right-hand operand>-tiple where sright-hand operand> is either a value provisioned by the Rule Set or a fixed value that comes for example from the message being processed. In the former case, "name" is shown on the screen instead of -def-hand operand>- tiple where sright-hand operand>- is either a value provisioned by the Rule Set or a fixed value that contends for example from the message being processed. In the former case, "name" is shown on the screen instead of -def-hand operand>- and the value is pre-filed by the "default value". "Optional" makes the condition optional, at "results in fast database lookups. her the conditions are logically ANDed, ORed or they form a complex logical expression like: (A OR B) AND C AND (0 OR E). Note esses for the condition set that contains both AND and OR. Try to optimize the complex expression to achieve the fast-search Description
Name Description Left value Operator Right value Default value Default value Default value Description Left value Operator Right value Default	Check for Fo Check for Fo SforeignEgre is true Integer32 Optional Check for m: \$msgDisallor Is false Integer32 Optional Check for De Check for De Ch	Actions regin Egress Peer regin Egress Peer ssPeer Case sensitive Fixed B ggDisallowed ggDisallowed wed Case sensitive Fixed C stination-Realm AVP Destination-Realm AVP D	· ()	vitzard] vitzard] vitzard] vitzard] vitzard] vitzard] vitzard]	When the cc ⊲eft-hand o Administrato provisioning Tast search Specify whe Use parentt lookups.	Description Indition set matches on the message, the selected actions are applied in the order they are shown. Each condition consists of a berand> -coperator> -right-hand operand> tiple where =right-hand operand> is either a value provisioned by the Rule Set or a fixed value that comes for example from the message being processed. In the former case, "name" is shown on the screen instead of -def-hand operand> and the value is pre-filled by the "default value". "Optional" makes the condition optional, at "results in fast database lookups. her the conditions are logically ANDed. ORed or they form a complex logical expression like: (A OR B) AND C AND (D OR E). Note eses for the condition set that contains both AND and OR. Try to optimize the complex expression to achieve the fast-search Description
Name Description Left value Operator Right value Default value Default value Description Left value Operator Right value Default value Default value Default value Default value Default value Operator Right value Operator Right value Default value Default value Default value Indition Set Action	Check for Fo Check for Fo SforeignEgre is true Integer32 Optional Check for m Check for m Check for m Check for m Check for De Check fo	Actions regin Egress Peer regin Egress Peer ssPeer Case sensitive Fixed B sg0bisallowed wed Case sensitive Fixed C stination-Realm AVP restination-Realm AVP restination-Realm [1].data C c c c c c c c c c c c c	· ()	vitzard] vitzard] vitzard] vitzard] vitzard] vitzard]	When the cc ≺left-hand o Administrate provisioning Fast search Specify whe Use parent tookups.	Indition set matches on the message, the selected actions are applied in the order they are shown. Each condition consists of a berand>-coperatorcright-hand operand>- tiple where -right-hand operand>- is either a value provisioned by the Rule Set or a fued value that comes for example from the message being processed. In the former case, "name" is shown on the screen instead of 1-elf-hand operand>- and the value is pre-filled by the "default value". "Optional" makes the condition optional, ar "results in fast database lookups. her the conditions are logically ANDed. ORed or they form a complex logical expression like: (A OR B) AND C AND (D OR E). Note esses for the condition set that contains both AND and OR. Try to optimize the complex expression to achieve the fast-search Description Idows setting the value for an internal variable that is valid for the entire duration of a transaction.
Name Description Left value Operator Right value Default value Default value Description Left value Operator Right value Description Left value Operator Right value Default value Default value Operator Right value Operator Right value Default value Default value Default value Indicit value Default value Default value Condition Set Action	Check for Fo Check for Fo SforeignEgre is true Integer32 Optional Check for m SmsgDisallou is false Integer32 Optional Optional Check for Do Check f	Actions regin Egress Peer regin Egress Peer ssPeer Case sensitive Fixed B sg0isallowed wed Case sensitive Fixed C fixed C	· ()	vitzard] vitzard] vitzard] vitzard] vitzard] vitzard] vitzard]	When the cc <teff-hand o<br="">Administrate provisioning "Fast search Specify whe Use parent lookups.</teff-hand>	Indition set matches on the message, the selected actions are applied in the order they are shown. Each condition consists of a berandcoperatorcright-hand operand tiple where -right-hand operand is either a value provisioned by the Rule Set or or a fixed value that comes for example from the message being processed. In the former case, "name" is shown on the screen instead of 1-elth-nand operand is either a value ""Optional" makes the condition optional, ar " results in fast database lookups.
Name Description Left value Operator Right value Default value Default value Description Left value Operator Right value Description Left value Operator Right value Default value Default value Description Left value Operator Right value Default value Default value Default value Indicit on Set Action Set internal varia New action	Check for Fo Check for Fo SforeignEgre is true Integer32 Optional Check for m Check for m SmsgDisallou is false Integer32 Optional Check for De Check for De Check for De Check for Do Check for Do Chec	Actions regin Egress Peer regin Egress Peer ssPeer Case sensitive Fixed B sg0isallowed wed Case sensitive Fixed C stination-Realm AVP Destination-Realm %P Destination-Realm %P Destination-Realm %P pestination-Realm %P pestination-Realm %P Default Value C extination Default values Internal variable msg0isallowed (weard) C Actions Default values Internal variable msg0isallowed (weard) C Strate Str		vitzard] vitzard] vitzard] vitzard] vitzard] vitzard] vitzard] vitzard] vitzard]	When the cc <teff-hand o<br="">Administrate provisioning "Fast search Specify whe Use parent Jokups. The action a Add a new a</teff-hand>	Indition set matches on the message, the selected actions are applied in the order they are shown. Each condition consists of a berand>- coperator>- cright-hand operand>- tiple where -right-hand operand>- is either a value provisioned by the Rule Set or or a fixed value that comes for example from the message being processed. In the former case, "name" is shown on the screen instead of 1-elth-hand operand>- site either a value provisioned by the Rule Set or each or 1-elth-tiple where -right-hand operand>- is either a value provisioned by the Rule Set or each value that comes for example from the message being processed. In the former case, "name" is shown on the screen instead of 1-elth-hand operand>- and the value is pre-filled by the "default value". "Optional" makes the condition optional, ar " results in fast database lookups. her the conditions are logically ANDed. ORed or they form a complex logical expression like: (A OR B) AND C AND (D OR E). Note each for the condition set that contains both AND and OR. Try to optimize the complex expression to achieve the fast-search Description Items are logically ANDed. ORed or they form a complex logical expression like: (A OR B) AND C AND (D OR E). Note each for the condition set that contains both AND and OR. Try to optimize the complex expression to achieve the fast-search Description
Name Description Left value Operator Right value Default value Default value Description Left value Operator Right value Operator Right value Default value Default value Default value Default value Operator Right value Default value Default value Default value Icondition Set Action Set intermal varia New action	Check for Fo Check for Fo SforeignEgre is true Integer32 Optional Check for m Check for m SmsgDisallou is false Integer32 Optional Check for De Check for De Check for De Check for Do Check for Do Chec	Actions rreign Egress Peer reign Egress Peer ssPeer Case sensitive Fixed B sgDisallowed ved c c stination-Realm AVP Destination-Realm AVP Destination-Realm %P Destination-	Optional	vitzard] vitzard] vitzard] vitzard] vitzard] vitzard] vitzard] vitzard]	When the cc <feft-hand o<br="">Administrate provisioning "Fast search Specify when Use parent Jookups. The action a Add a new a</feft-hand>	Indition set matches on the message, the selected actions are applied in the order they are shown. Each condition consists of a berand>coperator>right-hand operand>- tiple where -right-hand operand>- is either a value provisioned by the Rule Set or or a fixed value that comes for example from the message being processed. In the former case, "name" is shown on the screen instead of 1-eth-hand operand>- and the value is pre-filled by the "default value". "Optional" makes the condition optional, ar " results in fast database lookups. her the conditions are logically ANDed. ORed or they form a complex logical expression like: (A OR B) AND C AND (D OR E). Note ease for the condition set that contains both AND and OR. Try to optimize the complex expression to achieve the fast-search Description Itows setting the value for an internal variable that is valid for the entire duration of a transaction. clion to the action list that is applied when the conditions of the Rule Template match on the message.

Figure 15: Screenshot of Destination-Realm Whitelist Configured Template

2.4.13 Template 12a: Remove DOIC AVP

This template's behavior is same as Template 9a, but association to trigger point is different and this works for egress peer.

It checks for DOIC AVP (OC-Supported-Features and OC-OLR AVPs). If it is present in the diameter message, then it deletes the AVPs and forwards the message for further processing.

It is associated with trigger point RTP10.

IF	\$foreignEgressPeer	is	true
AND	@msg.avp["OC-Supported-Features"]	exists	
OR	@msg.avp["OC-OLR"]	exists	
THEN	Delete AVP	OC-Supporte	d-Features
	Delete AVP	OC-OLR	

Main Men	u: Dian	eter -> Mediation -> Rule Templat	es [Edit]	Set Jan 07 02
Ok	Apply	Cancel			
		Settings			Description
Rule Template I	Name	Remove DOIC AVP-RTP10	-		Name used to label this Rule Template in the system
		Request ✓			[Default = n/a. Range = A 255 character string. Valid characters are [a-2] [A-2], [0-9], space, dash (-), period (.), (g), and underscore ().] Indicates what two of message processing is supported by the Rule Template. I.e. Request. Answer, or both. The message type support depends on the selected.
Message type s	support	Answer: 🗸			actions.
Easteaart		Conditions		~	Uescription
Name	Check for	Foreign Egress Peer		0	
Description	Check for	Foreign Egress Peer		-	
Leftvalue	sforeignE	gressPeer		• 1	1
Operator	is true	Case sensitive			
Right value	Integer32			7	
Default value				[1
	Optional	Fixed			
Name	Match for	IC-Supported-Easture AVP		C	*
Description	Match for	OC-Supported-Feature AVP		-	
Leftvalue	Samso aut	1°0C-Sunnorted-Features"II1Ldata		. parme	1 When the condition set matches on the message, the selected actions are applied in the order they are shown. Each condition consists of a
Operator	caists	Case sensitive			right-hand operand- triple where «right-hand operand» is either a value provisioned by the Rule Sat Administrator or a fixed value that comes for example from the
Right value	Integer32		-	ন	being processed in the former case, name is snown on the provisioning screen instead or -ien-hand operand> and the value is pre-lined by the "default value". C the constitution optional, and "Fast search" results in fast database lookups.
Default value				Avenue	1
	Optional	Fixed			
Fast search	0	c		- ~	K.
Name	Match for	OC-OLR AVP		<u>_</u> 01_20	
Description	Match for	OC-OLR AVP			
Createler	ipmsg.av	COC-OLK J[1].data		24	1
Richtvalue	Exosts				
Defaultivalue	anegers/		-	T arrest	
	Optional	Fixed			
Name	Match for	DC-Supported-Feature AVP		• · •	
Description	Match for	DC-Supported-Feature AVP			
Left value	@msg.avp	["OC-Supported-Features"][1].data		1 1	When the condition set matches on the message, the selected actions are applied in the order they are shown. Each condition consists of a riseh-hand operand- coperator- cricital fund extended actions are applied in the order they are shown. Each condition consists of a riseh-hand operand- coperator- cricital fund extended actions are applied in the order to be actional for the brief action of the operand be actioned actions are applied in the order of the operand be applied on the operand be actioned action
Operator	exists	Case sensitive			Argentiant operand type where vignitiant operand is a where a value provisioned by the value set formation and the value for the value provisioned by the value operand and the value is prefilled by the datality value." Tophona?
Rightvalue	Integer32		*		the condition optional, and "Fast search" results in fast database lookups.
Default value	-			11	
Fast search	Optional	C Fixed		AX	
Name	Match for	DC-OLR AVP	_	•	
Description	Match for	DC-OLR AVP			
Left value	@msg.avp	["OC-OLR"][1].data		• []	
Operator	exists	Case sensitive			
Right value	Integer32				
Detault value	Orternal	- exact -		1 1	
is a	Optional	Fixed			
		ANDed			
Condition Set		ORed			Specify whether the conditions are logically ANDed, ORed or they form a complex logical expression like: (A OK H) AND C AND (D OK E). Notes: Use parentheses for the cost set that contains both AND and OR. Try to optimize the complex expression to achieve the fast-search lookups.
		(9) Complex Expression A AND (B OR C)			
Action		Actions O	otional	1	Description
		Delete parent AVP if it is empty:			
		Instance			
Delete A/P		OC-Supported Features Sindex		~~×	The action allows deleting a specified AVP in the message.
		With the value			
		[enterol			
		Delete parent AVP if it is empty:			
		Instance			
Delete A/P		OC-Reduction Percentrate		~~x	The action allows deleting a specified AVP in the message
		With the value			
		[]			
New action		Modify Diameter Header Parts + [1001]			Add a new action to the action list that is applied when the conditions of the Rule Template match on the message.
	tool.				

Figure 16: Screenshot of Remove DOIC AVP Configured Template

2.4.14 Template 12b: Remove DRMP AVP

This template behavior is same as template 9b but association to trigger point is different and this will work for egress peer.

It checks for DRMP AVP. If it is present in the diameter message, then it deletes the DFRMP AVP and forwards the message for further processing.

It is associated with trigger point RTP10.

Template Definition

IF	\$foreignEgressPeer	is	true
AND	@msg.avp["DRMP"]	exists	
THEN	Delete AVP	DRMP	
	Settings		Description
Rule Template Name	Remove DRMP AVP-RTP10 *	Name used to label this Rule Template in the system	aracters are [a-7] [A-7] [0-9] space dash (-) period () @ and underscore ()]

Rule Template N	lame	Remove DRMP AVP-RTP10			[Default = n/a. Range = A 255 character string. Valid characters are [a-z], [A-Z], [0-9], space, dash (-), period (.), @, and underscore (_).]	
Message type si	upport	Request: 🗸 Answer: 🖌			Indicates what type of message processing is supported by the Rule Template, i.e. Request, Answer, or both. The message type support depends on the selected actions.	
		Conditions			Description	
Fast search	1	А		~×		
Name	Check for I	Foreign Egress Peer	'	\sim		
Description	Check for I	Foreign Egress Peer				
Left value	\$foreignEg	ressPeer	1	[wizard]		
Operator	is true	 Case sensitive 				
Rightvalue	Integer32		-			
Default value				[wizard]		
	Optional	Fixed			When the condition set matches on the message, the selected actions are applied in the order they are shown. Each condition consists of a <left-hand <<="" operand-="" td=""></left-hand>	
Fast search	1	В		~X	<ri>right-hand operands triple where <right-hand a="" administrator="" by="" comes="" either="" example="" for="" from="" is="" operands="" or="" provisioned="" rule="" set="" that="" the="" the<br="" twed="" value="">being processed in the former case. "name" is shown on the provisioning screen instead of sleft-hand operands, and the value is pre-filed by the "default value"."</right-hand></ri>	
Name	Check for I	DRMP AVP	1	\sim	being processing and Fast search results in fast database lookups.	
Description	Check for I	DRMP AVP				
Left value	@msg.avp	["DRMP"][1].data	•	[wizard]		
Operator	exists	exists Case sensitive				
Right value	Integer32		-			
Default value				[wizard]		
	Optional	Fixed				
[Add]						
		ANDed			People whether the conditions are lealed in AND of OD of arthrour from a complex lealed succession like: (A OD D) AND C AND C AND CD OD E). Notes: Lea parentheses	
Condition Set		ORed			specify whether the contains are fogiciary anabed, one of the promina compression has (or CRD) and CRD and CRCE, notes, use parentheses is set that contains both AND and OR. This to online the complex expression to achieve the fast-search lookups.	
		Complex Expression: A AND B				
		Actions			Description	
Action		Default Values	Optional			
		Delete parent AVP if it is empty:				
Delete AVP				~~×	The action allows deleting a specified AVP in the message.	
		L with the value.				
No		wizard				
New action		Modify Diameter Header Parts 💌 [Add]			add a new action to the action list that is applied when the conditions of the Rule Template match on the message.	

Ok Apply Cancel

Figure 17: Screenshot of Configured Template

2.5 Insert Rules within a Rule Set

Insert rules within each rule set according to configuration. The condition value within each rule can be customized according to requirements.

In this sample application testing, templates are created (see screenshots of each of the Templates in Figure 4 though Figure 17) and rules are added accordingly in each template.

To insert a rule into the rule set:

- 1. Navigate to Main Menu -> Diameter -> Mediation -> Rule Sets.
- 2. Select a rule set and click Insert.

The following screenshots display each rule set with rules that can be used as a reference.

Main Menu: Diameter -> Mediation -> Rule Sets -> Roaming scenario identification-RTP1

Display Filter None -												
	IF A THEN Set internal variable, Set internal variable, Set internal variable Displaying Records 1-4 of 4 First Prev 1 Next Last Restore Order											
	Pulo Id	Α	Set internal variable	•	Set internal variable		Set internal variable					
	Rule lu	Identifying the Ingress peer	Internal variable	Set Value	Internal variable	Set Value	Internal variable	Set Value				
	48	FN_HSS1	foreignIngressPeer	1	outboundRoaming	(@msg.avp["User-Name"][1].imsi.mccmnc==40417)	inboundRoaming	(\$outboundRoaming==0)				
	49	FN_HSS2	foreignIngressPeer	1	outboundRoaming	(@msg.avp["User-Name"][1].imsi.mccmnc==40417)	inboundRoaming	(\$outboundRoaming==0)				
	46	FN_MME1	foreignIngressPeer	1	outboundRoaming	(@msg.avp["User-Name"][1].imsi.mccmnc==40417)	inboundRoaming	(\$outboundRoaming==0)				
	47	FN_MME2	foreignIngressPeer	1	outboundRoaming	(@msg.avp["User-Name"][1].imsi.mccmnc==40417)	inboundRoaming	(\$outboundRoaming==0)				
	Displavir	ng Records 1-4 of 4 First Pr	ev 1 Next Last Re	store Orde								

Insert Import Delete All Rules Edit Delete Export Show Counters >>
Pause Updates



IF Ti	IF A AND B AND C AND D THEN Set internal variable										
Displaying Records 1-6 of 6 First Prev 1 Next Last Restore Order											
	ulo Id	A	В	С	D	Set internal varia	ble				
ĸ	uie iu	Check for InboundRoamers	Check for msgDisallowed	Check for ApplicationId	Check for CommandCode	Internal variable	Set Value				
1	69	IS TRUE	IS FALSE	16777251	317	msgDisallowed	0				
1	70	IS TRUE	IS FALSE	16777251	319	msgDisallowed	0				
1	71	IS TRUE	IS FALSE	16777251	320	msgDisallowed	0				
1	72	IS TRUE	IS FALSE	16777251	322	msgDisallowed	0				
1	73	IS TRUE	IS FALSE	16777252		msgDisallowed	0				
1	74	IS TRUE	IS FALSE			msgDisallowed	10				
Diselected A 0 (0) First Devil 4 North Sector Order											

Displaying Records 1-6 of 6 | First | Prev | 1 | Next | Last | Restore Order

Figure 19: Template 2: Application ID and CC Whitelist for Inbound Roamers

Displaying Records 1-6 of 6 First Prev 1 Next Last Restore Order										
Pulo Id	Α	В	С	D	Set internal varia	ble				
Rule lu	Check for Outbound Romers	Check for msgDisallowed	Check for ApplicationId	Check for Commandcode	Internal variable	Set Value				
175	IS TRUE	IS FALSE	16777251	316	msgDisallowed	0				
176	IS TRUE	IS FALSE	16777251	318	msgDisallowed	0				
177	IS TRUE	IS FALSE	16777251	321	msgDisallowed	0				
178	IS TRUE	IS FALSE	16777251	323	msgDisallowed	0				
179	IS TRUE	IS FALSE	16777252		msgDisallowed	0				
180	IS TRUE	IS FALSE			msgDisallowed	20				

Displaying Records 1-6 of 6 | First | Prev | 1 | Next | Last | Restore Order

Figure 20: Template 3: Application ID and CC Whitelist for Outbound Roamers

Si

IF A AND B AND C THEN Set internal variable

Displaying Records 1-5 of 5 | First | Prev | 1 | Next | Last | Restore Order

Dulo Id	Α	В	С	Set internal variable	
Rule lu	Check for Foreign Ingress Peer	Check for msgDisallowed	Check for Origin Realm AVP	Internal variable	Set Value
183	IS TRUE	IS FALSE	fwhss1.com	msgDisallowed	0
184	IS TRUE	IS FALSE	fwhss2.com	msgDisallowed	0
181	IS TRUE	IS FALSE	fwmme1.com	msgDisallowed	0
182	IS TRUE	IS FALSE	fwmme2.com	msgDisallowed	0
185	IS TRUE	IS FALSE		msgDisallowed	30

Displaying Records 1-5 of 5 | First | Prev | 1 | Next | Last | Restore Order

Figure 21: Template 4: OR Whitelist

IF A AND B AND C THEN Set internal variable

Displaying Records 1-5 of 5 | First | Prev | 1 | Next | Last | Restore Order

Pulo Id	Α	В	С	Set internal variable		
Rule lu	Check for Foreign Ingress Peer	Check for msgDisallowed	Check for Destination-Realm AVP	Internal variable	Set Value	
188	IS TRUE	IS FALSE	hohss1.com	msgDisallowed	0	
189	IS TRUE	IS FALSE	hohss2.com	msgDisallowed	0	
186	IS TRUE	IS FALSE	homme1.com	msgDisallowed	0	
187	IS TRUE	IS FALSE	homme2.com	msgDisallowed	0	
190	IS TRUE	IS FALSE		msgDisallowed	40	

Displaying Records 1-5 of 5 | First | Prev | 1 | Next | Last | Restore Order

Figure 22: Template 5: DR Whitelist

THEN Set internal variable

Displaying records reforment in the reference and restore of a	t Last Restore Order	1 Next	Prev	First	of 1	Displaving Records 1-1
--	----------------------	--------	------	-------	------	------------------------

Dulo Id	Α	В	С	Set internal varia	ble					
Rule lu	Check for Foreign Ingress Peer	Check for msgDisallowed	Check for Origin-Host AVP	Internal variable	Set Value					
211	IS TRUE	IS FALSE	"." + @msg.avp["Origin-Realm"]	msgDisallowed	50					
Dieplavi	Displaying Pacarde 1-1 of 1 First Prov 1 Nevt act Pactore Order									

Displaying Records 1-1 of 1 | First | Prev | 1 | Next | Last | Restore Order

Figure 23: Template 6: OH Ends with OR

THEN Set internal variable

Displaying Records 1-2 of 2 Fi	t Prev 1 Next Last Restore Orde
----------------------------------	---------------------------------

Pulo Id	d Move the rule		Α	B C		Set internal variable		Move the rule		
Nule lu			Check for Foreign Ingress Peer	Check for msgDisallowed	Check for RouteRecord AVP	Internal variable	Set Value	MOVE	s ule lule	
148	Up	Down	IS TRUE	IS FALSE	blistmme2.com	msgDisallowed	60	Up	Down	
147	Up	Down	IS TRUE	IS FALSE	blistmme1.com	msgDisallowed	60	Up	Down	

Displaying Records 1-2 of 2 | First | Prev | 1 | Next | Last | Restore Order

Figure 24: Template 7: Handle RouteRecord AVP

IFA		
THEN Assert Alarm/Event	Peg Counter, Abandon Message,	Exit from Execution Trigger

Display	splaying Records 1-/ of / Hirst Prev 1 Next Last Restore Order								
Rulo	Α	Assert Alarm/Event							
Id	Check for msgDisallowed	Alarm/Event	Jarm/Event Additional info						
213	10	Mediation Generic Alarm Major	"(" + "Error Code :-" + String(\$msgDisallowed) + "." + "Error Description :-" + " Application Id and CC white list for inbound roamers check failed. Abandoned the message"	measurement_inbound_10					
219	100	Mediation Generic Alarm Major	"(" + "Error Code :-" + String(\$msgDisallowed) + "." + "Error Description :-" + " Destination-Realm whitelist check failed. Abandoned the message"	measurement_DestRealm_ER_100					
214	20	Mediation Generic Alarm Major	"(" + "Error Code :-" + String(\$msgDisallowed) + "." + "Error Description :-" + " Application Id and CC white list for outbound roamers check failed. Abandoned the message"	measurement_outbound_20					
215	30	Mediation Generic Alarm Major	"(" + "Error Code :-" + String(\$msgDisallowed) + "." + "Error Description :-" + " OR whiltelist check failed. Abandoned the message"	measurement_ORWhitelist_30					
216	40	Mediation Generic Alarm Major	"[" + "Error Code :-" + String(\$msgDisallowed) + "." + "Error Description :-" + " DR whiltelist check failed. Abandoned the message"	measurement_DRWhitelist_40					
217	50	Mediation Generic Alarm Major	"[* * "Error Code :-" + String(\$msgDisallowed) + "." + "Error Description :-" + " OH ends with OR check failed. Abandoned the message"	measurement_OH_ends_with_OR_50					
218	60	Mediation Generic Alarm Major	"(" + "Error Code :-" + String(\$msgDisallowed) + "." + "Error Description :-" + " Handle RouteRecord AVP check failed. Abandoned the message"	measurement_Handle_RRecordAVP_60					

Displaying Records 1-7 of 7 | First | Prev | 1 | Next | Last | Restore Order

Insert Import Delete All Rules Edit Delete Export Show Counters >> Pause Updates

Figure 25: Template 8: Handle Disallowed Requests

Displaying Records 1-1 of 1 | First | Prev | 1 | Next | Last | Restore Order

Rule Id	Move the rule		Α	В	с	Doloto AV/D		Move the rule		
	MOVE	ove the rule	Check for foreignIngressPeer	Check for AVP OC-Supported-Features	Check for OC-OLR AVP	Delete AVP	Delete AVP	wove the rule		
192	Up	Down	IS TRUE	EXISTS	EXISTS	OC-Supported-Features[\$index]	OC-OLR[\$index]	Up	Down	
Displavir	Jisplaving Records 1-1 of 1 First Prev 1 1 Next 1 ast Restore Order									

laying ev 1 Next I st | I





Figure 27: Template 9b: Remove DRMP AVP

THEN Set internal variable

Displaying Records 1-4 of 4 | First | Prev | 1 | Next | Last | Restore Order

Pulo Id	Α	В	С	Set internal variable		Rule Counters	
Rule lu	Identifying the Egress peer	Check for Application ID	Check for Command code	Internal variable	Set Value	Total Pegs	
74	FN_HSS1	16777251	316	foreignEgressPeer	1	0	
76	FN_HSS1	16777251	318	foreignEgressPeer	1	0	
77	FN_HSS2	16777251	316	foreignEgressPeer	1	0	
75	FN_HSS2	16777251	318	foreignEgressPeer	1	0	

Displaying Records 1-4 of 4 | First | Prev | 1 | Next | Last | Restore Order

All Rules	Edit	Delete	Export	<< Hide Counters	Expand Counters	🔲 Pause Updates
-----------	------	--------	--------	------------------	-----------------	-----------------



	THEN Se	t internal variable					
I	Displayir	ng Records 1-3 of 3 First Prev	1 Next Last Restore Orde	er			
	Dulo Id	A	В	С	Set internal variable		
	Rule lu	Check for Foreign Egress Peer	Check for msgDisallowed	Check for Destination-Realm AVP	Internal variable	Set Value	
	195	IS TRUE	IS FALSE	fwhss1.com	msgDisallowed	0	
	196	IS TRUE	IS FALSE	fwhss2.com	msgDisallowed	0	
	197	IS TRUE	IS FALSE		msgDisallowed	100	

Displaying Records 1-3 of 3 | First | Prev | 1 | Next | Last | Restore Order

Figure 29: Template 11. Destination-Realm Whitelist

IF A AND Then De) (BORC) elete AVP, Delete	AVP						
Displayi	ng Records 1-1	of 1 First Prev 1 Next Last I	Restore Order					
Dulo Id	Move the rule	Α	В	С	Delete AVD		Move the rule	
Rule lu	wove the rule	Check for Foreign Egress Peer	Match for OC-Supported-Feature AVP	Match for OC-OLR AVP	Delete AVP	Delete AVP	move die rule	
194	Up Down	IS TRUE	EXISTS	EXISTS	OC-Supported-Features[\$index]	OC-OLR[\$index]	Up Down	
Displayi	ng Records 1-1	of 1 First Prev 1 Next Last	Restore Order					

Figure 30: Template 12a. Remove DOIC AVP



Figure 31: Template 12b. Remove DRMP AVP

2.6 State and Properties of Ruleset

After injecting rules within a rule set, change the state of the template to Active.

- 1. Navigate to Main Menu -> Diameter -> Mediation -> State & Properties.
- 2. Select a template and click Edit.
- 3. Change the State to Active.
- 4. You can change the Action Error Handling: Ignore the error depending on your requirements.
- 5. You can change the Status of Rule Counters: Checked. If checked, then you can see the peg counter for each rule.

Main Menu: Diameter -> Mediation -> State & Properties

Display Filter: - None -	Reset					
	Displaying Records 1-20 of 35 First Prev 1 2 Next Last					
	Rule Template Name		State	Action Error Hand	ling Status of Rule Counters	
	Application Id and CC white list for inbound roamers-RTP1		Test	Ignore the error	Stopped	
	Application Id and CC white list for inbound roamers-RTP1-Fit	rst Ver	Active	Ignore the error	Active	
	Application Id and CC white list for outbound roamers-RTP1		Test	Ignore the error	Stopped	
	Application Id and CC white list for outbound roamers-RTP1-F	irst Ver	Active	Ignore the error	Active	
	DR whiltelist-RTP1		Test	Ignore the error	Stopped	
	DR whiltelist-RTP1-First Ver		Active	Ignore the error	Active	
	Destination-Realm whitelist-RTP10		Test	Ignore the error	Stopped	
	Destination-Realm whitelist-RTP10-First Ver		Active	Ignore the error	Active	
	Handle RouteRecord AVP		Test	Ignore the error	Stopped	
	Handle RouteRecord AVP-First Ver		Active	Ignore the error	Active	
	Handle disallowed requests		Test	Ignore the error	Stopped	
	Handle disallowed requests-First Ver		Active	Ignore the error	Active	
	Handle disallowed requests-RTP1-copy		Test	Ignore the error	Active	
	Miklos lest1		Development	Ignore the error	Stopped	
	MIKIOS IESTI-COPY		Development	Ignore the error	Stopped	
	MIKIOS IESTIT		Development	Ignore the error	Stopped	
	OH ends with OR-RTP1		1est	Ignore the error	Stopped	
	OF ends with OK-KTP I-First ver		Active	Ignore the error	Active	
	Destination-Realm whitelist-RTP10 Destination-Realm whitelist-RTP10-First Ver Handle RouteRecord AVP-First Ver Handle disallowed requests Handle disallowed requests-First Ver Handle disallowed requests-RTP1-copy MiklosTest1 MiklosTest1 OH ends with OR-RTP1 OH ends with OR-RTP1 OH ends with OR-RTP1 OH ends with OR-RTP1 OH ends with OR-RTP1 OR whitelist-RTP1 OR whitelist-RTP1-First Ver Rule Template Name Remove DOIC AVP-RTP1 Remove DOIC AVP-RTP1 Remove DOIC AVP-RTP10 Remove DOIC AVP-RTP10 Remove DOIC AVP-RTP10 Remove DRMP AVP-RTP1 Remove DRMP AVP-RTP10 Remove DRMP AVP-RTP10		est Ignore the error		Stopped	
			Active	ignore the error	Active	
	Reset Go Displaying Records 1-20 of 35 First Prov 1 [2] Next Last Rule Template Name State Active Application Id and CC white list for inbound roamers-RTP1 Test Igno Application Id and CC white list for outbound roamers-RTP1+First Ver Active Igno Application Id and CC white list for outbound roamers-RTP1+First Ver Active Igno Application Id and CC white list for outbound roamers-RTP1+First Ver Active Igno DR whitelist-RTP1 Test Igno Destination-Realm whitelist-RTP10-First Ver Active Igno Handle RouteRecord A/P Test Igno Handle disallowed requests-First Ver Active Igno Handle RouteRecord A/P Test Igno Handle disallowed requests-RTP1-copy Test Igno Handle disallowed requests-RTP1 Test Igno MikidosTest1 Development Igno MikidosTest1 Development Igno MikidosTest1 Development Igno MikidosTest1 Development Igno MikidosTest1 Development Igno OH ends with OR-RTP1	ror Handling S	tatus of Rule Counters			
	Remove DOIC AVP-RTP1	Test	Ignore the	error S	stopped	
	Remove DOIC AVP-RTP1-First Ver	Active	Ignore the	error A	ctive	
	Remove DOIC AVP-RTP10	Test	Ignore the	error S	topped	
	Remove DOIC AVP-RTP10-First Ver	Active	Ignore the	error A	ctive	
	Remove DRMP AVP-RTP1	Test	Ignore the	error S	stopped	
	Remove DRMP AVP-RTP1-First Ver	Active	Ignore the	error A	ctive	
	Remove DRMP AVP-RTP10	Test	Ignore the	error S	topped	
	Remove DRMP AVP-RTP10-First Ver	Active	Ignore the	error A	ctive	
	Roaming scenario identification-RTP1	Test	Ignore the	error S	topped	
	Roaming scenario identification-RTP1 Test Roaming scenario identification-RTP1-First Ver Active Roaming scenario identification-RTP10 Test		Ignore the	error A	ctive	
			Ignore the error		topped	
	Roaming scenario identification-RTP10-First Ver	Active	Ignore the	error A	ctive	
	set extra logs	Test	Ignore the	error S	Stopped	
	testGC	Test	Ignore the	error S	topped	
	try4	Test	Ignore the	error S	topped	

Displaying Records 21-35 of 35 | First | Prev | 1 | 2 | Next | Last

Figure 32: Active Templates Used as Reference

2.7 Association of Ruleset to a Trigger Point

This procedure associates the templates to a trigger point.

Associate Template 1 to Template 9b on trigger point RTP1 in increasing order. Associate Template 10, Template 11, Template 8, Template 12a, and Template 12b on trigger point RTP 10 in given sequence.

Associate Template 12a and 12b for the answer message on trigger point ATP10.

Main Menu: Diameter -> Mediation -> Triggers

Display Filter: - None -				
Rule Set Name	Live	DSR Application	Request	Scope
Trigger: Diameter request message received from connection				
Roaming scenario identification-RTP1-First Ver	1		Normal Request	All
Application Id and CC white list for inbound roamers-RTP1-First Ve			Normal Request	All
Application Id and CC white list for outbound roamers-RTP1-First V	er 🗸		Normal Request	All
OR whiltelist-RTP1-First Ver	1		Normal Request	All
DR whiltelist-RTP1-First Ver	1		Normal Request	All
OH ends with OR-RTP1-First Ver	1		Normal Request	All
Handle RouteRecord AVP-First Ver	1		Normal Request	All
Handle disallowed requests-First Ver	1		Normal Request	All
Remove DOIC AVP-RTP1-First Ver	1		Normal Request	All
Remove DRMP AVP-RTP1-First Ver	1		Normal Request	All
Trigger: Diameter request message prior to be forwarded to con	nection			
Roaming scenario identification-RTP10-First Ver	1		Normal Request	All -
Destination-Realm whitelist-RTP10-First Ver	1		Normal Request	All -
Handle disallowed requests-First Ver	1		Normal Request	All
Remove DOIC AVP-RTP10-First Ver	1		Normal Request	All
Remove DRMP AVP-RTP10-First Ver	1		Normal Request	All
Insert Remove Up Down				
Trigger: Diameter request message attempted for reroute				
Insert Remove Up Down				
Trigger: Diameter answer message received from connection				
Insert Remove Up Down				
Trigger: Diameter answer message prior to be forwarded to con	ection			
Remove DOIC AVP-RTP10-First Ver	1			All -
				411

Figure 33: Screenshot of Rule Set Attached to its Trigger Points

My Oracle Support (MOS)

MOS (<u>https://support.oracle.com</u>) is your initial point of contact for all product support and training needs. A representative at Customer Access Support (CAS) can assist you with MOS registration.

Call the CAS main number at **1-800-223-1711** (toll-free in the US), or call the Oracle Support hotline for your local country from the list at <u>http://www.oracle.com/us/support/contact/index.html</u>. When calling, make the selections in the sequence shown on the Support telephone menu:

- 1. Select 2 for New Service Request.
- 1. Select 3 for Hardware, Networking and Solaris Operating System Support.
- 2. Select one of the following options:

For technical issues such as creating a new Service Request (SR), select 1.

For non-technical issues such as registration or assistance with MOS, select 2.

You are connected to a live agent who can assist you with MOS registration and opening a support ticket. MOS is available 24 hours a day, 7 days a week, 365 days a year.

Emergency Response

In the event of a critical service situation, emergency response is offered by the CAS main number at 1-800-223-1711 (toll-free in the US), or by calling the Oracle Support hotline for your local country from the list at http://www.oracle.com/us/support/contact/index.html. The emergency response provides immediate coverage, automatic escalation, and other features to ensure that the critical situation is resolved as rapidly as possible.

A critical situation is defined as a problem with the installed equipment that severely affects service, traffic, or maintenance capabilities, and requires immediate corrective action. Critical situations affect service and/or system operation resulting in one or several of these situations:

- A total system failure that results in loss of all transaction processing capability
- Significant reduction in system capacity or traffic handling capability
- Loss of the system's ability to perform automatic system reconfiguration
- Inability to restart a processor or the system
- Corruption of system databases that requires service affecting corrective actions
- Loss of access for maintenance or recovery operations
- Loss of the system ability to provide any required critical or major trouble notification

Any other problem severely affecting service, capacity/traffic, billing, and maintenance capabilities may be defined as critical by prior discussion and agreement with Oracle.

Locate Product Documentation on the Oracle Help Center

Oracle Communications customer documentation is available on the web at the Oracle Help Center (OHC) site, http://docs.oracle.com. You do not have to register to access these documents. Viewing these files requires Adobe Acrobat Reader, which can be downloaded at http://www.adobe.com.

- 1. Access the **Oracle Help Center** site at http://docs.oracle.com.
- 2. Click Industries.
- Under the Oracle Communications subheading, click the Oracle Communications documentation link. The Communications Documentation page appears. Most products covered by these documentation sets display under the headings Network Session Delivery and Control Infrastructure or "Platforms."

4. Click on your Product and then the Release Number. A list of the entire documentation set for the selected product and release displays. To download a file to your location, right-click the PDF link, select Save target as (or similar command based on your browser), and save to a local folder.