CHAPTER 2

Configuring the SCE Platform to Support VAS Traffic Forwarding

Revised: November 8, 2010, OL-23843-01

This chapter describes how the SCE platform can be configured to support VAS traffic forwarding.

Configuring VAS on the SCE Platform: Servers and Groups

There are three broad aspects to configuring VAS traffic forwarding on the SCE platform:

- Configuring global VAS traffic forwarding options, such as enabling or disabling VAS traffic forwarding, or specifying the VAS traffic link.
- Configuring a VAS server, such as enabling or disabling a specific VAS server, or enabling or disabling the VAS health check for a specified VAS server.
- Configuring a VAS server group, such as adding or removing a specific VAS server, configuring the minimum number of active servers per group, or configuring VAS server group failure behavior.

This chapter contains the following topics:

How to Configure the Global Options

There are two global VAS traffic forwarding options:

- Enable or disable VAS traffic forwarding.
- Configure the link number on which to transmit VAS traffic (necessary only if the VAS servers are connected to Link 0, rather than Link 1, which is the default VAS traffic link).

Enabling VAS Traffic Forwarding

By default, VAS traffic forwarding is disabled. If VAS traffic forwarding is required, you must enable it.

For instructions on how to disable VAS traffic forwarding, see Disabling VAS Traffic Forwarding, page 2-3.

There are certain other SCE platform features that are incompatible with VAS traffic forwarding. Before enabling VAS traffic forwarding, ensure that no incompatible features or modes are configured.

These features and modes cannot coexist with the VAS mode:

- Line-card connection modes—receive-only, receive-only-cascade, inline-cascade
- Link mode other than forwarding
- All link encapsulation protocols, including VLAN, MPLS, L2TP
- Enhanced open flow mode

SUMMARY STEPS

1. **enable**
2. **configure**
3. **interface linecard 0**
4. **VAS-traffic-forwarding**

DETAILED STEPS

	Command	Purpose
Step 1	**enable** **Example:** `SCE> enable`	Enables privileged EXEC mode. Enter your password if prompted.
Step 2	**configure** **Example:** `SCE#> configure`	Enters global configuration mode.
Step 3	**interface linecard 0** **Example:** `SCE(config)#> interface linecard 0`	Enters linecard interface configuration mode.
Step 4	**VAS-traffic-forwarding** **Example:** `SCE(config-if)#> VAS-traffic-forwarding`	Enables VAS traffic forwarding.

Disabling VAS Traffic Forwarding

There are two conditions to consider while disabling the VAS Traffic Forwarding feature in runtime:

- You cannot disable VAS mode on the SCE platform while the applied SCA BB policy instructs the SCE platform to forward traffic to the VAS servers.

  Therefore, you must dismiss all VAS traffic forwarding rules in the applied SCA BB policy before you disable the VAS traffic forwarding on the SCE platform.

- After the SCA BB has been reconfigured, there may still be some open flows that have already been forwarded to the VAS servers. If the VAS feature is stopped while there are still such flows open, the packets coming back from the VAS servers may be routed to their original destination with the VLAN tag of the VAS server on it.

  Therefore, it is also highly recommended that you shut down the line card before you disable the VAS traffic forwarding on the SCE platform to avoid inconsistency with flows that were already forwarded to the VAS servers.

SUMMARY STEPS

1. From the SCA BB console, remove all the VAS table associations to packages and apply the changed policy.
2. **enable**
3. **configure**
4. **interface linecard 0**
5. **shutdown**
6. **no VAS-traffic-forwarding**
7. **no shutdown**

DETAILED STEPS

	Command	Purpose
Step 1	From the SCA BB console, remove all the VAS table associations to packages and apply the changed policy.	—
Step 2	**enable** **Example:** `SCE> enable`	Enables privileged EXEC mode. Enter your password if prompted.
Step 3	**configure** **Example:** `SCE#> configure`	Enters global configuration mode.
Step 4	**interface linecard 0** **Example:** `SCE(config)#> interface linecard 0`	Enters linecard interface configuration mode.

	Command	Purpose
Step 5	**shutdown** **Example:** `SCE(config-if)#> shutdown`	Shuts down the line card.
Step 6	**no VAS-traffic-forwarding** **Example:** `SCE(config-if)#> no VAS-traffic-forwarding`	Disables VAS traffic forwarding.
Step 7	**no shutdown** **Example:** `SCE(config-if)#> no shutdown`	Reenables the line card.

Configuring the VAS Traffic Link

By default, the VAS traffic is transmitted on Link 1. If the VAS servers are connected on Link 0, you must configure the VAS traffic link to Link 0.

Note Although it supports up to eight GBE links, the SCE8000 GBE platform supports only the VAS traffic forwarding on Link 0 and Link 1. VAS traffic cannot be configured to any other link.

Note The VAS traffic link should be in forwarding mode.

Selecting the Link for VAS Traffic

Complete the following instructions to select the VAS traffic link. Use the **no** form of the command to revert to the default VAS traffic link (Link 1).

SUMMARY STEPS

1. **enable**
2. **configure**
3. **interface linecard 0**
4. **VAS-traffic-forwarding traffic-link {link-0 | link-1}**

DETAILED STEPS

	Command	Purpose
Step 1	**enable** **Example:** `SCE> enable`	Enables privileged EXEC mode. Enter your password if prompted.
Step 2	**configure** **Example:** `SCE#> configure`	Enters global configuration mode.
Step 3	**interface linecard 0** **Example:** `SCE(config)#> interface linecard 0`	Enters linecard interface configuration mode.
Step 4	**VAS-traffic-forwarding traffic-link {link-0 | link-1}** **Example:** `SCE(config-if)#> VAS-traffic-forwarding traffic-link link-0`	Selects the link on which to transmit VAS traffic.

How to Configure a VAS Server

VAS servers must be user-defined. Each VAS server has the following parameters:

- Admin-mode—Enabled or Disabled
- Health Check mode—Enabled or Disabled
- Health Check ports
- VLAN tag

The range of supported server ID numbers is:

- SCE8000: 0-63
- SCE 2000: 0-7

This section explains how to perform the following operations for individual VAS servers:

- Enable a specified VAS server.
- Disable a specified VAS server.
- Define the VLAN tag for a specified VAS server.
- Enable or disable the health check for a VAS server.
- Define the source and destination ports to use for the health check.

- Delete all properties for a specified VAS server. The server returns to the default state, which is enabled. However, it is not operational because it does not have VLAN.

Enabling a VAS Server

Complete the following instructions to enable a VAS server. Use the **no** form of the command to disable a VAS server.

Note A VAS server is not operational until the VLAN tag is defined, even if the server itself is enabled.

SUMMARY STEPS

1. **enable**
2. **configure**
3. **interface linecard 0**
4. **VAS-traffic-forwarding VAS server-id** *number* **enable**

DETAILED STEPS

	Command	Purpose
Step 1	**enable** **Example:** `SCE> enable`	Enables privileged EXEC mode. Enter your password if prompted.
Step 2	**configure** **Example:** `SCE#> configure`	Enters global configuration mode.
Step 3	**interface linecard 0** **Example:** `SCE(config)#> interface linecard 0`	Enters linecard interface configuration mode.
Step 4	**VAS-traffic-forwarding VAS server-id** *number* **enable** **Example:** `SCE(config-if)#> VAS-traffic-forwarding VAS server-id 0 enable`	Enables the specified VAS server.

Restoring All VAS Server Properties to Default

Complete the following instructions to restore all the properties of the specified VAS server to their default values.

SUMMARY STEPS

1. **enable**
2. **configure**
3. **interface linecard 0**
4. **no VAS-traffic-forwarding VAS server-id** *number*

DETAILED STEPS

	Command	Purpose
Step 1	**enable** **Example:** `SCE> enable`	Enables privileged EXEC mode. Enter your password if prompted.
Step 2	**configure** **Example:** `SCE#> configure`	Enters global configuration mode.
Step 3	**interface linecard 0** **Example:** `SCE(config)#> interface linecard 0`	Enters linecard interface configuration mode.
Step 4	**no VAS-traffic-forwarding VAS server-id** *number* **Example:** `SCE(config-if)#> no VAS-traffic-forwarding VAS server-id 0`	Restores all the properties of the specified VAS server to their default values.

Assigning a VLAN ID to a VAS Server

Note the following important points:

- The VAS server is not operational until the VLAN tag is defined.
- Disabling the server does not remove the VLAN tag number configured to the server.
- The **no** form of the command (same as the default form of the command), removes the previously configured VLAN tag.
- No VLAN is the default configuration.

Configuring the VLAN Tag Number for a Specified VAS Server

Complete the following instructions to assign a VLAN tag to a VAS server. Use the **no** form of the command to remove the VLAN tag configuration from the VAS server.

SUMMARY STEPS

1. **enable**
2. **configure**
3. **interface linecard 0**
4. **VAS-traffic-forwarding VAS server-id** *id-number* **VLAN** *vlan-id*

DETAILED STEPS

	Command	Purpose
Step 1	**enable** **Example:** `SCE> enable`	Enables privileged EXEC mode. Enter your password if prompted.
Step 2	**configure** **Example:** `SCE#> configure`	Enters global configuration mode.
Step 3	**interface linecard 0** **Example:** `SCE(config)#> interface linecard 0`	Enters linecard interface configuration mode.
Step 4	**VAS-traffic-forwarding VAS server-id** *id-number* **VLAN** *vlan-id* **Example:** `SCE(config-if)#> VAS-traffic-forwarding VAS server-id 0 VLAN 600`	Assigns the specified VLAN tag to the VAS server.

Configuring the Health Check

By default, the VAS server health check is enabled, however you can disable it.

The health check is activated only if all the following conditions are true. If the health check is enabled, the server will bein a **Down** state if one or more conditions are not met:

- VAS traffic forwarding mode is enabled.
- Pseudo IPs are configured for the SCE platform GBE ports on the VAS traffic link.
- VAS server is enabled.

- Server has a VLAN tag.
- Health check for the server is enabled.

If the health check of the server is disabled, its operational status depends on the following (requirements for **Up** state are in parentheses):

- admin status (enable)
- VLAN tag configuration (VLAN tag defined)
- group mapping (assigned to group)

Enabling VAS Server Health Check

Complete the following instructions to enable health check on the specified VAS server. Use the **no** form of the command to disable the health check.

SUMMARY STEPS

1. **enable**
2. **configure**
3. **interface linecard 0**
4. **VAS-traffic-forwarding VAS server-id** *number* **health-check**

DETAILED STEPS

	Command	Purpose
Step 1	**enable** **Example:** `SCE> enable`	Enables privileged EXEC mode. Enter your password if prompted.
Step 2	**configure** **Example:** `SCE#> configure`	Enters global configuration mode.
Step 3	**interface linecard 0** **Example:** `SCE(config)#> interface linecard 0`	Enters linecard interface configuration mode.
Step 4	**VAS-traffic-forwarding VAS server-id** *number* **health-check** **Example:** `SCE(config-if)#> VAS-traffic-forwarding VAS server-id 1 health-check`	Enables health check on the specified VAS server.

Defining the UDP Ports to be Used for Health Check

If you define health check ports, you must define both a source port number and a destination port number. By default, the port numbers begin with <63140,63141> used for server 0 and continue sequentially for all configured VAS servers.

Use the **no** form of the command to remove the UDP port configuration.

SUMMARY STEPS

1. **enable**
2. **configure**
3. **interface linecard 0**
4. **VAS-traffic-forwarding VAS server-id** *number* **health-check UDP ports source** *source-portnumber* **destination** *destination-portnumber*

DETAILED STEPS

	Command	Purpose
Step 1	**enable** **Example:** `SCE> enable`	Enables privileged EXEC mode. Enter your password if prompted.
Step 2	**configure** **Example:** `SCE#> configure`	Enters global configuration mode.
Step 3	**interface linecard 0** **Example:** `SCE(config)#> interface linecard 0`	Enters linecard interface configuration mode.
Step 4	**VAS-traffic-forwarding VAS server-id** *number* **health-check UDP ports source** *source-portnumber* **destination** *destination-portnumber* **Example:** `SCE(config)#> VAS-traffic-forwarding VAS server-id 2 health-check UDP ports source 63158 destination 63159`	Defines the UDP ports to be used for health check on the specified VAS server.

Configuring Pseudo IP Addresses for the Health Check Packets

Use the **pseudo-ip** command to configure source and destination pseudo IP addresses for the health check packets. This command allows you to specify a unique IP address to be used by the health check packets.

The SCE platform uses the pseudo IP as follows:

- Pseudo IP configured for the subscriber-side interface:
  - source IP address for health check packets going in the Upstream direction
  - destination IP address for health check packets going in the Downstream direction

- Pseudo IP configured for the network side interface:
  - source IP address for health check packets going in the Downstream direction
  - destination IP address for health check packets going in the Upstream direction

You must configure a pseudo-IP address for both the subscriber-side and the network-side interfaces. The interfaces that should be configured are those interfaces which connect the SCE platform with the VAS servers. By default, the following are the interfaces:

- SCE 2000—GBE 0/3 and GBE 0/4
- SCE8000 GBE—3/0/2 and 3/0/3
- SCE8000 10G—3/2/0 and3/3/0

The interface designations are:

- SCE 2000—0/*port-number*
- SCE8000 GBE—3/0/*port-number*
- SCE8000 10G—3/*port-number*/0

Note The **pseudo-ip** command is a ROOT level command in the Gigabit Interface Configuration mode.

Defining the Pseudo IP Address

Complete the following instructions to define pseudo IP addresses for the VAS interfaces. Use the **no** form of the command to delete the pseudo IP addresses.

SUMMARY STEPS

1. **enable** *authorization-level*
2. **configure**
3. **interface gigabitethernet** *interface-designation*
4. **pseudo-ip** *ip-address [mask]*
5. **exit**
6. **interface gigabitethernet** *2nd-interface-designation*
7. **pseudo-ip** *2nd-ip-address [mask]*

DETAILED STEPS

	Command	Purpose
Step 1	**enable** *authorization-level* **Example:** `SCE> enable 15`	Enables privileged EXEC mode at root level. Enter your password if prompted.
Step 2	**configure** **Example:** `SCE#> configure`	Enters global configuration mode.
Step 3	**interface gigabitethernet** *interface-designation* **Example:** `SCE(config)#> interface gigabitethernet 3/0/0-1`	Enters gigabit interface configuration mode for either subscriber or network side GBE interface.
Step 4	**pseudo-ip** *ip-address [mask]* **Example:** `SCE(config-if)#> pseudo-ip 1.1.1.1 255.255.255.252`	Defines the pseudo IP address to be used for the health check for this interface. • The IP address can be any IP address as long as it is not possible to be found in the network traffic, such as a private IP. – Default—No IP address • The mask defines the range of IP addresses that can be used by the SCE platform. The SCE platform is not required to reside in this subnet. Default—255.255.255.255 (The subnet mask can be set to 255.255.255.255, because the health check mechanism requires only one IP address per interface.)
Step 5	**exit** **Example:** `SCE(config)#> exit`	Exits to global configuration mode.

	Command	Purpose
Step 6	**interface gigabitethernet** *2nd-interface-designation* **Example:** `SCE(config)#> interface gigabitethernet 3/1/0-1`	Enters gigabit interface configuration mode for the second GBE interface.
Step 7	**pseudo-ip** *2nd-ip-address [mask]* **Example:** `SCE(config-if)#> pseudo-ip 1.1.1.2 255.255.255.252`	Defines the pseudo IP address to be used for the health check for the second interface.

How to Configure a VAS Server Group

Up to eight VAS server groups can be defined. Each VAS server group has the following parameters:

- Server Group ID—You can configure up to eight VAS server groups numbered 0 through 7.
- A list of VAS servers attached to this group. The maximum number of VAS servers (total, not per group) supported is:
  - SCE8000: 0-63
  - SCE 2000: 0-7
- Failure detection—Minimum number of active servers required for this group for it to be considered active. If the number of active servers goes below this minimum, the group will be in Failure state.
- Failure action—Action performed on all new data flows that should be mapped to this server group while it is in Failure state.

  Options:
  - block
  - pass

The commands in this section perform these operations for a VAS server group:

- Add or remove a VAS server to or from a specified group.
- Configure the minimum number of active servers for a specified group.
- Configure failure behavior for a specified group.

Adding and Removing Servers

This section explains how to add servers to and remove servers from a specified VAS server group.

- Adding a VAS Server to a Specified VAS Server Group, page 2-15
- Removing All VAS Servers from a Specified VAS Server Group, page 2-16

Adding a VAS Server to a Specified VAS Server Group

Complete the following instructions to add a VAS server to a specified VAS server group. Use the **no** form of the command to delete a VAS server from a specified VAS server group.

SUMMARY STEPS

1. **enable**
2. **configure**
3. **interface linecard 0**
4. **VAS-traffic-forwarding VAS server-group** *group-number* **server-id** *id-number*

DETAILED STEPS

	Command	Purpose
Step 1	**enable** **Example:** `SCE> enable`	Enables privileged EXEC mode. Enter your password if prompted.
Step 2	**configure** **Example:** `SCE#> configure`	Enters global configuration mode.
Step 3	**interface linecard 0** **Example:** `SCE(config)#> interface linecard 0`	Enters linecard interface configuration mode.
Step 4	**VAS-traffic-forwarding VAS server-group** *group-number* **server-id** *id-number* **Example:** `SCE(config-if)#> VAS-traffic-forwarding VAS server-group 0 server-id 0`	Adds the VAS server to the specified VAS server. group.

Removing All VAS Servers from a Specified VAS Server Group

Complete the following instructions to remove all VAS servers from a specified VAS server group.

SUMMARY STEPS

1. **enable**
2. **configure**
3. **interface linecard 0**
4. **no VAS-traffic-forwardingVAS server-group** *group-number*

DETAILED STEPS

	Command	Purpose
Step 1	**enable** **Example:** `SCE> enable`	Enables privileged EXEC mode. Enter your password if prompted.
Step 2	**configure** **Example:** `SCE#> configure`	Enters global configuration mode.
Step 3	**interface linecard 0** **Example:** `SCE(config)#> interface linecard 0`	Enters linecard interface configuration mode.
Step 4	**no VAS-traffic-forwarding VAS server-group** *group-number* **Example:** `SCE(config-if)#> no VAS-traffic-forwarding VAS server-group 0`	Removes all VAS server from the specified VAS server. group and sets all group parameters to their default values.

Configuring VAS Server Group Failure Parameters

This section explains how to to configure the following failure parameters for the specified VAS server group:

- Minimum number of active servers—If the number of active servers in the server group goes below this number, the group will be in Failure state.

  Default is one.

- Failure action—The action to be applied to all new flows mapped to this server group while it is Failure state:
  - Block—All new flows assigned to the failed VAS server group are blocked by the SCE platform.

– Pass (default)—All new flows assigned to the failed VAS server group are considered as regular non-VAS flows, and are processed without VAS service.

Configuring the Minimum Number of Active Servers for a Specified VAS Server Group

Complete the following instructions to configure the minimum number of active servers required for the specified VAS server group. Use the default form of the command to reset the minimum number of active servers required to the default value (one server).

SUMMARY STEPS

1. **enable**
2. **configure**
3. **interface linecard 0**
4. **VAS-traffic-forwarding VAS server-group** *group-number* **failure minimum-active-servers** *min-number*

DETAILED STEPS

	Command	Purpose
Step 1	**enable** **Example:** `SCE> enable`	Enables privileged EXEC mode. Enter your password if prompted.
Step 2	**configure** **Example:** `SCE#> configure`	Enters global configuration mode.
Step 3	**interface linecard 0** **Example:** `SCE(config)#> interface linecard 0`	Enters linecard interface configuration mode.
Step 4	**VAS-traffic-forwarding VAS server-group** *group-number* **failure minimum-active-servers** *min-number* **Example:** `SCE(config-if)#> VAS-traffic-forwarding VAS server-group 0 failure minimum-active-servers 2`	Sets the minimum number of active VAS servers required for the specified server group.

Configuring the Failure Action for a Specified VAS Server Group

Complete the following instructions to configure the failure action for the specified VAS server group. Use the default form of the command to reset the failure action to the default action (pass).

SUMMARY STEPS

1. **enable**
2. **configure**
3. **interface linecard 0**
4. **VAS-traffic-forwardingVAS server-group** *group-number* **failure action {block | pass}**

DETAILED STEPS

	Command	Purpose
Step 1	**enable** **Example:** `SCE> enable`	Enables privileged EXEC mode. Enter your password if prompted.
Step 2	**configure** **Example:** `SCE#> configure`	Enters global configuration mode.
Step 3	**interface linecard 0** **Example:** `SCE(config)#> interface linecard 0`	Enters linecard interface configuration mode.
Step 4	**VAS-traffic-forwarding VAS server-group** *group-number* **failure action {block | pass}** **Example:** `SCE(config-if)#> VAS-traffic-forwarding VAS server-group 0 failure action block`	Configures the failure action for the specified server group.