Configuring the SCE Platform to Support VAS Traffic Forwarding

Introduction

This chapter consists of the following sections:

VAS Configuration 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.

Configuring 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. This configuration is necessary only if the VAS servers are connected on 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 you require VAS traffic forwarding, you can enable it any time.

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

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

These features and modes cannot coexist with 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

Options for Enabling VAS Traffic Forwarding

The following options are available:

- **Enable**—Enable VAS traffic forwarding.
- **Disable**—Disable VAS traffic forwarding.
  - Default—Disable

To enable VAS traffic forwarding, use the **VAS-traffic-forwarding** command in the SCE interface configuration mode.

Example:

```
SCE(config if)# VAS-traffic-forwarding
```

Disabling VAS Traffic Forwarding

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

- 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, dismiss all VAS traffic forwarding rules in the applied SCA BB policy before you disable the VAS traffic forwarding in 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, to avoid inconsistency with the flows that are already forwarded to the VAS servers, shutdown the line card before you disable the VAS traffic forwarding in the SCE platform.

To disable VAS traffic forwarding, complete the following steps:

Step 1   From the SCA BB console, remove all the VAS table associations to packages and apply the changed policy.

Step 2 Shut down the line card.

At the SCE(config if)# prompt, enter the **shutdown** command, and press **Enter**.

Step 3 Disable VAS traffic forwarding.

At the SCE(config if)# prompt, enter the **no VAS-traffic-forwarding** command and press **Enter**.

Step 4 Restart the line card.

At the SCE(config if)# prompt, enter the **no shutdown** command and press **Enter**.

Configuring the VAS Traffic Link

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

Note Although it supports up to eight GBE links, the SCE 8000 GBE platform supports VAS traffic forwarding only on Link 0 and Link 1. VAS traffic cannot be configured on any other link.

Note The VAS traffic link should be in Forwarding mode.

Options for Configuring the VAS Traffic Link

The following option is available:

- **VAS traffic-link {link-0|link-1}**—The link number on which to transmit VAS traffic
  - Default—Link 1

Selecting the Link for VAS Traffic

To select the link for VAS traffic, enter the **VAS-traffic-forwarding traffic-link {link-0|link-1}** command at the SCE interface configuration mode.

Example:

```
SCE(config if)# VAS-traffic-forwarding traffic-link link-0
```

Reverting to the Default Link for VAS Traffic

To revert to the default link for VAS traffic, enter the **no VAS-traffic-forwarding traffic-link** command at the SCE interface configuration mode.

Example:

```
SCE(config if)# no VAS-traffic-forwarding traffic-link
```

Configuring a VAS Server

To configure a VAS server, first define the VAS servers. Each VAS server has the following parameters:

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

These sections explain 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 since it does not have VLAN.

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

VAS Server Options

The following VAS server option is available:

- **number**—The number of the VAS server:
  - SCE8000—0-63
  - SCE 2000—0-7

Enabling a VAS Server

> **Note** The server is not operational until a VLAN tag has also been defined.

To enable a VAS server, enter **VAS-traffic-forwarding VAS server-id** *number* **enable** command at the SCE interface configuration mode.

Example:

```
SCE(config if)# VAS-traffic-forwarding VAS server-id 5 enable
```

Disabling a VAS Server

To disable a VAS server, enter **VAS-traffic-forwarding VAS server-id** *number* **disable** command at the SCE interface configuration mode.

Example:

```
SCE(config if)# VAS-traffic-forwarding VAS server-id 5 disable
```

Restoring All VAS Server Properties to Default

To restore all VAS server properties to default value, **no VAS-traffic-forwarding VAS server-id** *number* command at the SCE interface configuration mode.

Example:

SCE(config if)# **VAS-traffic-forwarding VAS server-id** *5*

Assigning a VLAN ID to a VAS Server

Use **VAS-traffic-forwarding VAS server-id** *number* **VLAN** *vlan-id* command to the assign the VLAN ID to a specified VAS server.

Options for Assigning a VLAN ID to a VAS Server

The following options are available:

- **number**—The number of the VAS server.
- **vlan-id**—The VLAN tag to use for the specified VAS server

  The VLAN tag can be redefined as necessary.

  - Default—No VLAN.

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

To configure the VLAN tag number for a VAS server, enter the **VAS-traffic-forwarding VAS server-id** *number* **VLAN** *vlan-id* command at the SCE interface configuration mode.

Example:

SCE(config if)# **VAS-traffic-forwarding VAS server-id** *5* **VLAN** *5*

Removing the VLAN Tag Number from a Specified VAS Server

To remove the VLAN tag number from a VAS server, enter the **no VAS-traffic-forwarding VAS server-id** *number* **VLAN** command at the SCE interface configuration mode.

Example:

SCE(config if)# **no VAS-traffic-forwarding VAS server-id** *number* **VLAN**

You can also use the default form of the command to remove the VLAN tag configuration.

Example:

SCE(config if)# **default VAS-traffic-forwarding VAS server-id** *number* **VLAN**

Configuring the Health Check

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

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

- VAS Traffic Forwarding mode is enabled.
- Pseudo IP addresses 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).

Health Check Options

The following options are available:

- **number**—The ID number of the VAS server for which to enable or disable the health check
- **Enable/disable**—Enable or disable VAS server health check
  - Default—Enable
- **UDP ports**—Configure the UDP ports for the health check traffic:
  - **source portnumber**—Source port number for health check.
  - **destination portnumber**—Destination port number for health check.
  - Default—<63140,63141>used for Server 0 through <63154,63155> used for Server 7.

Enabling VAS Server Health Check

To enable VAS server health check, enter the **VAS-traffic-forwarding VAS server-id** *number* **health-check** command at the SCE interface configuration mode.

Example:

```
SCE(config if)# VAS-traffic-forwarding VAS server-id 2 health-check
```

Disabling VAS Server Health Check

To disable VAS server health check, enter the **no VAS-traffic-forwarding VAS server-id** *number* **health-check** command at the SCE interface configuration mode.

Example:

```
SCE(config if)# no VAS-traffic-forwarding VAS server-id 2 health-check
```

Defining the UDP Ports for Health Check Traffic

To define the UDP ports for health check traffic, enter the **VAS-traffic-forwarding VAS server-id** *number* **health-check UDP ports source** *portnumber* **destination** *portnumber* command at the SCE interface configuration mode.

Example:

```
SCE(config if)# VAS-traffic-forwarding VAS server-id 2 health-check UDP ports source
portnumber destination portnumber
```

Removing the UDP Ports Configuration

To remove the UDP ports configuration, enter the **no VAS-traffic-forwarding VAS server-id** *number* **health-check UDP ports** command at the SCE interface configuration mode.

Example:

```
SCE(config if)# no VAS-traffic-forwarding VAS server-id number health-check UDP ports
```

You can also use the default form of the command to remove the UDP port configuration.

Example:

```
SCE(config if)# VAS-traffic-forwarding VAS server-id  number health-check UDP ports
```

Configuring Pseudo IP Addresses for the Health Check Packets

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

This command is a ROOT level command and is available under the GBE configuration interface mode. Configure those interfaces that connect the SCE platform to the VAS servers. The following are the default 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 SCE platform uses the pseudo IP address as follows:

- Pseudo IP address configured for the subscriber-side interface:
  - Source IP address for health check packets going upstream direction.
  - Destination IP address for health check packets going downstream direction.
- Pseudo IP address configured for the network-side interface:
  - Source IP address for health check packets going downstream direction.
  - Destination IP address for health check packets going upstream direction.

Options for Configuring Pseudo IP Addresses for Health Check Packets

The following options are available:

- **ip-address**—Configures the IP address for the health check packets. You can configure any IP address as long as it is not possible to be found in the network traffic, such as a private IP address.

- Default—no IP address
- **mask** (Optional)—Defines the range of IP addresses the SCE platform can use. Note that the SCE platform is not required to be 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.)

Defining the Pseudo IP Address

To define the pseudo IP address, enter the **pseudo-ip** *ip-address [mask]* command at the SCE interface configuration mode.

Example:

```
SCE(config if)# pseudo-ip ip-address [mask]
```

Deleting the Pseudo IP Address

To delete the pseudo IP address, enter the **no pseudo-ip** *ip-address [mask]* command at the SCE interface configuration mode.

Example:

```
SCE(config if)# no pseudo-ip ip-address [mask]
```

Configuring a VAS Server Group

You can define up to eight VAS server groups. Each VAS server group has the following parameters:

- Server Group ID
- A list of VAS servers attached to this group.
- Failure detection—Minimum number of active servers required for this group in order for the group to be considered as Active. If the number of active servers goes below this minimum, the group is said to be in a Failure state.
- Failure action—Action performed on all new data flows that has to be mapped to this server group while it is in Failure state.

  Options:
  - block
  - pass

You can 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. This section consists of these topics:

Options for Configuring a VAS Server Group

The following options are available:

- **group-number**—The ID number of the VAS server group (0-7).
- **id-number**—The ID number of the VAS server:
    - SCE8000—0-63
    - SCE 2000—0-7

Adding a VAS Server to a Specified VAS Server Group

To add a VAS server to a VAS server group, enter the **VAS-traffic-forwarding VAS server-group** *group-number* **server-id** *id-number* command at the SCE interface configuration mode.

Removing a VAS Server from a Specified VAS Server Group

To remove a VAS server from a VAS server group, enter the **no VAS-traffic-forwarding VAS server-group** *group-number* **server-id** *id-number* command at the SCE interface configuration mode.

Removing All VAS Servers from a Specified VAS Server Group

To remove all VAS servers from a specified VAS server group and set all group parameters to their default values, enter the **no VAS-traffic-forwarding VAS server-group** *group-number* command at the SCE interface configuration mode.

Configuring VAS Server Group Failure Parameters

This section explains how 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 is said to be in a Failure state.
- Failure action—The action taken on all new flows mapped to this server group while it is in Failure state:
    - Block—The SCE platform blocks all new flows assigned to the failed VAS server group.
    - Pass—The SCE platform considers all new flows assigned to the failed VAS server group as regular nonVAS flows and processes these flows without VAS service.

Options for Configuring VAS Server Group Failure Parameters

The following options are available:

- **group-number**—The ID number of the VAS server group.
- minimum-active-servers **min-number**—The minimum number of active servers required for the specified server group.
  - Default—1
- **failure action**—The action taken all new flows for the specified server group while it is in Failure state. Values are:
  - **block**
  - **pass** (default)

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

To configure the minimum number of active servers, enter the **VAS-traffic-forwarding VAS server-group** *group-number* **failure minimum-active-servers** *min-number* command at the SCE interface configuration mode.

Resetting the Minimum Number of Active Servers for a Specified VAS Server Group to the Default

To reset the minimum number of active servers, enter the **default VAS-traffic-forwarding VAS server-group** *group-number* **failure minimum-active-servers** *min-number* command at the SCE interface configuration mode.

Configuring the Failure Action for a Specified VAS Server Group

To configure the failure action for a specified VAS server group, enter the **VAS-traffic-forwarding VAS server-group** *group-number* **failure action {block | pass}** command at the SCE interface configuration mode.

Configuring the Failure Action for a Specified VAS Server Group to the Default

To revert the failure action configuration for the specified VAS server group to the default value (pass), enter the **default VAS-traffic-forwarding VAS server-group** *group-number* **failure action** command at the SCE interface configuration mode.