Configuring the Cisco DSP SPA for the ASR 1000 Series Aggregation Services Routers

This chapter provides information about configuring the DSP SPA for ASR 1000 Series on the Cisco ASR 1000 Series Aggregation Services Routers, also referred to in this document as the SPA-DSP. This chapter includes the following sections:

For information about SPA-DSP hardware details, refer the *Cisco ASR 1000 SIP and SPA Hardware Installation Guide*, managing your system images and configuration files, refer to the *Cisco IOS XE Configuration Fundamentals Configuration Guide, Release 2* and *Cisco IOS Configuration Fundamentals Command Reference* publications that correspond to your Cisco IOS XE software release.

Voice Transcoding Overview

This section provides a high-level overview of how the voice transcoding functionality is configured. After you insert the SPA-DSP in the SIP, the SPA-DSP is activated, and you can identify the status of the SPA-DSP, by executing the **show platform** command. If the SPA-DSP is operational and working fine, the **show platform** command output will display OK in the Status for SPA-DSP. Before you configure the voice transcoding functionality, you must enable the SPA-DSP. After you enable the voice card and set the SPA-DSP in DSP farm mode using the **dsp services dspfarm** command, you can create the DSP-farm service profiles.

DSP Farm Profiles

DSP-farm profiles are created to allocate DSP-farm resources. DSP-farm profiles can only be created after you set the DSP SPA in DSP farm mode. Under the profile, you select the service type (transcode), associate an application (SBC), and specify service-specific parameters such as codecs and maximum number of sessions. A DSP-farm profile allows you to group DSP resources based on the service type. Applications associated with the profile, such as SBC, can use the resources allocated under the profile. You can configure multiple profiles for the same service. The profile ID and service type uniquely identify a profile, allowing the profile to uniquely map to a SBC application. After creating the profile, you need to attach the profile to an application and enable the DSP farm profile.

The SPA-DSP and SBC application work in conjunction to provide voice transcoding and transrating functionalities. After the DSP-farm profiles are created, each profile is uniquely attached to a unique SBC identifier. The SBC configuration of Call-admission-control (CAC) and DTMF internetworking has been explained in the *Cisco Unified Border Element (SP Edition) Configuration Guide: Unified Model*.

Configuration Tasks

Perform this procedure to enable a SPA-DSP and define a DSP farm profile. Additionally, you can enable or disable local voice activity detection (vad) irrespective of external configuration.

Prerequisites

Complete the following prerequisites to successfully enable the SPA-DSP and to set DSP SPA in DSP Farm mode on Cisco ASR 1000 Series Router:

- Requires Cisco IOS XE Software Release 3.2 or a later release installed on Cisco ASR 1000 Series Router
- DSP SPA installed and in operational state.

Configuring a DSP Farm Profile

Execute the following steps to enable the SPA-DSP and set DSP SPA in DSP farm mode.

SUMMARY STEPS

1. **enable**
2. **configure terminal**
3. **voice-card** *slot/sub-slot*
4. **dsp services dspfarm**
5. **exit**
6. **dspfarm profile** *profile-identifier* {**transcoder** [**universal**]}
7. **description** *text*
8. **codec** *codec-type*
9. **maximum sessions** *number*
10. **associate application sbc**
11. **no shutdown**
12. **exit**

DETAILED STEPS

	Command or Action	Purpose
Step 1	**enable** **Example:** `Router> enable`	Enables privileged EXEC mode. • Enter your password if prompted.
Step 2	**configure terminal** **Example:** `Router# configure terminal`	Enters global configuration mode.
Step 3	**voice-card** *slot/subslot* ***Example:*** `Router(config)# voice-card 1/1`	Enters voice card configuration mode for the SPA-DSP on which you want to enable DSP-farm services.
Step 4	**dsp services dspfarm** **Example:** `Router(config-voicecard)# dsp services dspfarm`	Enables DSP-farm services for the SPA-DSP voice card.
Step 5	**exit** **Example:** `Router(config-voicecard)# exit`	Exits voice card configuration mode.
Step 6	**dspfarm profile** *profile-identifier* {**transcode** [**universal**]} **Example:** `Router(config)# dspfarm profile 1 transcode universal`	Enters DSP farm profile configuration mode to define a profile for DSP farm services. **Note** The *profile-identifier* and service type uniquely identify a profile. If the service type and *profile-identifier* pair are not unique, you are prompted to choose a different *profile-identifier*.
Step 7	**description** *text* **Example:** `Router(config-dspfarm-profile)# description low2mediumcomp`	(Optional) Includes a specific description about the Cisco DSP farm profile.

Step 8	**codec** *codec-type*
	
	Example:
	`Router(config-dspfarm-profile)# codec g723r63`
	`Router(config-dspfarm-profile)# codec g723r53`
		Specifies the codecs supported by a DSP farm profile.
		Note By default, the codecs g711ulaw, g711alaw, g729ar8, and g729abr8 are created for each DSP farm profile.

	Command or Action	Purpose
Step 9	**maximum sessions** *number* **Example:** `Router(config-dspfarm-profile)# maximum sessions 4`	Specifies the maximum number of sessions that are supported by the profile. • *number*—Range is determined by the available registered DSP resources. Default is 0. **Note** By default, the maximum sessions are counted from the subslot where the SPA-DSP is available. If there are more than one SPA-DSPs and the maximum sessions exceed the session limit per SPA-DSP, the remaining sessions are managed by the second SPA-DSP.
Step 10	**associate application sbc** **Example:** `Router(config-dspfarm-profile)# associate application sbc`	Associates the SBC application to the DSP farm profile.
Step 11	**no shutdown** **Example:** `Router(config-dspfarm-profile)# no shutdown`	Enables the profile, allocates DSP farm resources, and associates the application.
Step 12	**exit** **Example:** `Router(config-dspfarm-profile)# exit`	Exits DSP farm profile configuration mode.

What to Do Next

For more information related to associating an SBC to a DSP farm profile, see the "Cisco Unified Border Element (SP Edition) - SPA DSP Services" chapter in "*Cisco Unified Border Element (SP Edition) Configuration Guide: Unified Model*":

http://www.cisco.com/en/US/docs/routers/asr1000/configuration/guide/sbcu/sbc_spadsp.html

For SBC configuration information (Call-admission-control [CAC] and DTMF internetworking) too, see the *Cisco Unified Border Element (SP Edition) Configuration Guide: Unified Model*.

Enabling or Disabling Voice Activity Detection (VAD)

Execute the following steps to enable or disable local VAD settings irrespective of external VAD settings.

SUMMARY STEPS

1. **enable**
2. **configure terminal**
3. **dspfarm profile** *profile-identifier*
4. **vad on override**
5. **do show running-config**

DETAILED STEPS

	Command or Action	Purpose
Step 1	**enable** **Example:** `Router> enable`	Enables privileged EXEC mode. • Enter your password if prompted.
Step 2	**configure terminal** **Example:** `Router# configure terminal`	Enters global configuration mode.
Step 3	**dspfarm profile** *profile-identifier* **Example:** `Router(config)# dspfarm profile 1`	Enters DSP farm profile configuration mode to enable or disable voice activity detection settings (VAD).
Step 4	**vad on override** **Example:** `Router(config-dspfarm-profile)# vad on override`	Enables the voice activity detection (VAD) feature locally and overrides the external VAD settings.

Step 5	**do show running-config**
	
	Example:
	`Router(config-dspfarm-profile)# do show running-config`
	
	`!!!`
	`dspfarm profile 1 transcode`
	` codec g711ulaw`
	` codec g711alaw`
	` codec g729ar8`
	` codec g729abr8`
	` maximum sessions 588`
	` associate application SBC`
	` **vad on override**`
	`!`
		Displays the local VAD settings which will override the external VAD settings for the current DSP farm profile.

Change in Command Output During Call Recovery

In Cisco IOS XE Release 3.3.0s, the **show voice dsp group all** command output that is displayed when a SPA-DSP undergoes call recovery is enhanced. The command output is seen only during the call recovery process, which lasts for a few milliseconds. The additional information that is included in the command output pertains to: HA State : DSP_HA_STATE_PENDING1. The additional information is displayed when a SPA-DSP undergoes call recovery.

The following sample output shows how HA State: DSP_HA_STATE_PENDING1 is added. The additional command output is seen only in Cisco IOS XE Release 3.3.0S and later releases:

```
Router# show voice dsp group all
Show DSP group all

DSP groups on slot 0 bay 0:
dsp 1:
  State: UP
  HA State : DSP_HA_STATE_PENDING1
  Max signal/voice channel: 43/43
  Max credits: 645
  num_of_sig_chnls_allocated: 43
  Transcoding channels allocated: 43
  Group: FLEX_GROUP_XCODE, complexity: LOW
    Shared credits: 0, reserved credits: 645
    Transcoding channels allocated: 24
    Credits used (rounded-up): 360
```

Configuring the RTCP on the SPA-DSP

This section provides details of the procedure to enable the generation and termination of the RTCP on the SPA-DSP. From the Cisco IOS XE Release 3.4.0S onwards, the SPA-DSP can terminate and generate the RTCP data.

Configuring the RTCP on the SPA-DSP on the Cisco Unified Border Element for the Unified Model

To configure the RTCP on the SPA-DSP on the Cisco Unified Border Element: Unified Model, perform the following steps:

SUMMARY STEPS

1. **enable**
2. **configure terminal**
3. **sbc** *sbc-name*
4. **rtcp-regenerate**

DETAILED STEPS

	Command or Action	Purpose
Step 1	**enable** **Example:** `Router> enable`	Enables the privileged EXEC mode. Enter your password if prompted.
Step 2	**configure terminal** **Example:** `Router# configure terminal`	Enters the global configuration (config) mode.
Step 3	**sbc** *sbc-name* **Example:** `Router(config)# sbc mySBC`	Creates an SBC service on the Cisco Unified Border Element and enters into the SBC configuration mode.
Step 4	**rtcp-regenerate** **Example:** `Router(config-sbc)# rtcp-regenerate`	Enables the generation and termination of the RTCP packets on the SPA-DSP for the Unified Model.

Configuring the RTCP on the SPA-DSP on the Cisco Unified Border Element for the Distributed Model

To configure the RTCP on the SPA-DSP on the Cisco Unified Border Element for the Distributed Model, perform the following steps:

SUMMARY STEPS

1. **enable**
2. **configure terminal**
3. **sbc** *sbc-name* **dbe**
4. **rtcp-regenerate**

DETAILED STEPS

	Command or Action	Purpose
Step 1	**enable** **Example:** `Router> enable`	Enables the privileged EXEC mode. Enter your password if prompted.
Step 2	**configure terminal** **Example:** `Router# configure terminal`	Enters the global configuration (config) mode.
Step 3	**sbc** *sbc-name* **dbe** **Example:** `Router(config)# sbc mySBC dbe`	Creates the Data Border Element (DBE) service on the SBC and enters the SBC-DBE configuration mode (config-sbc-dbe).
Step 4	**rtcp-regenerate** **Example:** `Router(config-sbc-dbe)# rtcp-regenerate`	Enables the generation and termination of the RTCP packets on the SPA-DSP for the Distributed Model.

Configuration Examples for Universal Voice Transcoding

The following example shows how to configure the RTCP on the SPA-DSP:

```
Router# config t
Router(config)# sbc mySBC
Router(config-sbc)# rtcp-regenerate
Router(config-sbc)# exit
Router(config)# exit
Router# show running-configuration
.....
rtcp-regenerate
 media-timeout 0
 associate dspfarm profile 1
 activate
!
```

The following example shows how to configure the Cisco SPA-DSP installed in a Cisco ASR 1000 Series Router:

```
Router# config t
Router(config)# voice-card 1/1
Router(config-voice-card)# dsp services dspfarm
Router(config-voice-card)# exit
Router(config)# dspfarm profile 2 transcode universal
Router(config-dspfarm-profile)# description low2mediumcomp
Router(config-dspfarm-profile)# codec g723r63
Router(config-dspfarm-profile)# codec g723r53
Router(config-dspfarm-profile)# maximum sessions 10
Router(config-dspfarm-profile)# associate application sbc
Router(config-dspfarm-profile)# no shutdown
Router(config-dspfarm-profile)# exit
Router(config)# exit
Router#show running-config
voice-card 1/1
```

```
 dsp services dspfarm
!
!
.....
dspfarm profile 2 transcode universal
 description low2mediumcomp
 codec g711ulaw
 codec g711alaw
 codec g729ar8
 codec g729abr8
 codec g723r63
 codec g723r53
associate application SBC
!
```

Additional References

The following sections provide additional references related to the SPA-DSP and voice transcoding support.

Related Documents

Related Topic	Document Title
SBC configuration	*Cisco Unified Border Element (SP Edition) Configuration Guide: Unified Model*
SPA-DSP hardware information	*Cisco ASR 1000 SIP and SPA Hardware Installation Guide*

Standards

Standard	Title
None	—

MIBs

MIB	MIBs Link
Common MIBs • ENTITY-MIB • ENTITY-SENSOR-MIB **Cisco-Specific Common MIBs** • CISCO-DSP-MGMT-MIB • OLD-CISCO-CHASSIS-MIB • CISCO-ENTITY-FRU-CONTROL-MIB • CISCO-ENTITY-SENSOR-MIB • CISCO-ENTITY-ALARM-MIB • CISCO-ENTITY-VENDORTYPE-OID-MIB	To locate and download MIBs for selected platforms, Cisco IOS releases, and feature sets, use the Cisco MIB Locator: http://www.cisco.com/go/mibs For more information about MIB support on a Cisco ASR 1000 Series Aggregation Services Routers, refer to the *Cisco ASR 1000 Series Aggregation Services Routers MIB Specifications Guide*: http://www.cisco.com/en/US/docs/routers/asr1000/mib/guide/asr1kmib.html

RFCs

RFC	Title
None	—

Technical Assistance

Description	Link
The Cisco Technical Support & Documentation website contains thousands of pages of searchable technical content, including links to products, technologies, solutions, technical tips, tools, and technical documentation. Registered Cisco.com users can log in from this page to access even more content.	http://www.cisco.com/cisco/web/support/index.html