



H.248 Border Access Controller Support

H.248 is a media gateway control protocol that enables Switched Circuit Network (SCN) to transmit voice traffic over IP. The H.248 protocol specifies master-slave architecture for decomposed gateways. In master-slave architecture, the Media Gateway Controller (MGC) is the master server and media gateways are the slave clients that behave as simple switches. One MGC can serve multiple media gateways. The H.248 protocol enables the creation, modification, and deletion of media streams across a media gateway, including the capability to negotiate the media formats to be used.

Feature History for H.248 Border Access Controller Support

Release	Modification
Cisco IOS XE Release 3.7	This feature was introduced on the Cisco ASR 1000 Series Routers.

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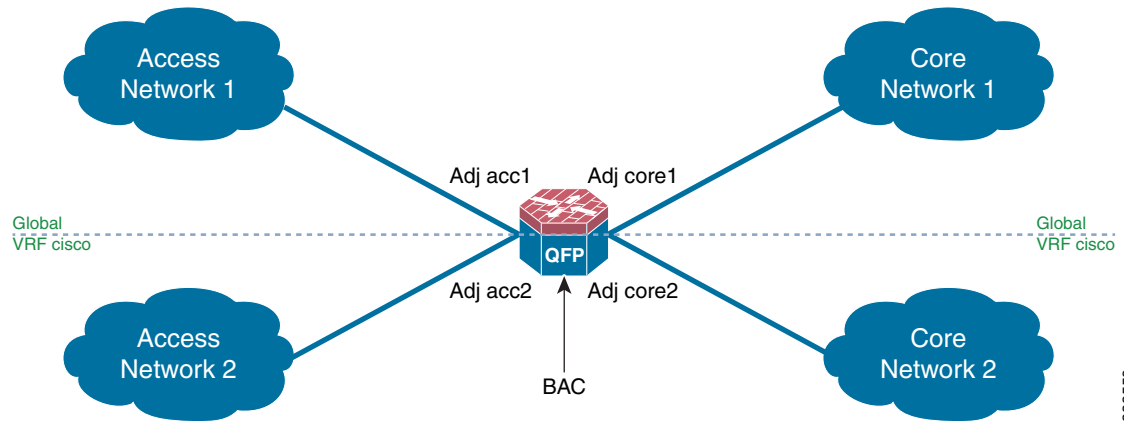
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Support for the H.248 Border Access Controller

The session border controller (SBC) supports the H.248 Border Access Controller (BAC) feature.

This feature protects the core network (with Integrated Access Devices [IADs]) from heartbeat flooding and register flooding. The BAC can terminate heartbeat from the H.248 IADs, initiate heartbeat towards IADs, and limit the register rate from IADs to the core network. The BAC hides the core MGC network topology from the IAD access adjacency, and supports media forwarding. The BAC is placed at the edge of the core network. [Figure 59-1](#) illustrates the H.248 BAC network topology.

Figure 59-1 H.248 BAC Topology

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The H.248 BAC supports the following functionalities:

- Termination of heartbeats from an access adjacency

The BAC has two adjacencies: access adjacency and core adjacency. Only one-to-one mapping is allowed between an access adjacency and a core adjacency. The IADs and the H.248 terminal devices reside on the access adjacency. The Access Gateway Control Function (AGCF) and Media Gateway Control Function (MGCF) reside on the core adjacency. The H.248 terminal devices on the access adjacency periodically send heartbeats to the AGCF through the BAC. To decrease the impact of heartbeats on the performance of core adjacency devices such as AGCF or MGCF, the BAC sends its response to the heartbeats from the access adjacency and does not transit to the core adjacency. Therefore, the BAC can terminate heartbeats from the access adjacency.

- Topology hiding

The BAC can modify the signaling address and the media address of the IADs and the AGCF. If it modifies these addresses, the peer will not know the original IP address of the corresponding IAD.

- Attack detection and protection

The BAC can detect whether a signal message is from a valid or invalid H.248 terminal device. If the signal message is from an invalid H.248 terminal device, it is discarded.

- Media anchoring and forwarding

The BAC can translate a media address according to the required configuration. When H.248 terminal devices reside in the same network, media will not flow through the core network. When media bypass is enabled, media does not anchor on the BAC.

- Signaling trace and debug

The BAC can supply different debug levels for H.248 signaling.

Restrictions for H.248 BAC Support

Following are the restrictions pertaining to the H.248 BAC Support feature:

- Multiple H.248 transactions in one H.248 packet are not supported.
- H.248 signaling interworking with SIP calls or H.323 calls is not supported.
- Multiple streams in local descriptors and remote descriptors are not supported.
- Memory and CPU throttle are not supported.
- Auto media bypass is not supported.
- IPv6 is not supported.
- The BAC cannot operate in the DBE mode.
- The BAC supports only the H.248 text format (long and short) message type, and not the binary format.

Prerequisites for Configuring H.248 BAC Support

The SBC must be activated before configuring the H.248 BAC Support feature.

Perform the following procedure to activate the SBC:

SUMMARY STEPS

1. **configure terminal**
2. **sbc *sbc-name***
3. **sbe**
4. **activate**

DETAILED STEPS

	Command or Action	Purpose
Step 1	configure terminal Example: Router# configure terminal	Enters the global configuration mode.
Step 2	sbc <i>sbc-name</i> Example: Router(config)# sbc <i>mySbc</i>	Creates the SBC service on the Cisco Unified Border Element (SP Edition) and enters the SBC configuration mode.
Step 3	sbe Example: Router(config-sbc)# sbe	Enters the mode of the signaling border element (SBE) function of the SBC.
Step 4	activate Example: Router(config-sbc-sbe)# activate	Activates the SBC service.

Configuring H.248 BAC Support

Perform the following procedure to configure the H.248 BAC Support feature:

SUMMARY STEPS

1. **configure terminal**
2. **sbc h248 bac**
3. **media-address ipv4 *ipv4-address* realm *realm-number* vrf *vrf-name***
4. **port-range *port-range***
5. **adjacency h248 {core *core-adjacency name*}**

6. **control-address ipv4** *ipv4-address* **{port** *port number* **| port-range** *minimum-port number maximum-port number* **}**
7. **remote-address ipv4** *ipv4-address* **port** *port number*
8. **realm** *realm-number*
9. **attach**
10. **exit**
11. **adjacency h248** **{access** *access-adjacency name* **}**
12. **control-address ipv4** *ipv4-address* **{port** *port number* **}**
13. **audit interval** *idle time*
14. **heart-beat terminate** *terminate-interval*
15. **domain-name** *domain-name*
16. **core-adj** *core adjacency-name*
17. **realm** *realm-number*
18. **attach**

DETAILED STEPS

	Command or Action	Purpose
Step 1	configure terminal Example: Router# configure terminal	Enters the global configuration mode.
Step 2	sbc h248 bac Example: Router(config-h248-bac)# sbc h248 bac	Configures the SBC H.248 BAC.
Step 3	media-address ipv4 <i>ipv4-address</i> realm <i>realm-number</i> vrf <i>vrf-name</i> Example: Router(config-h248-bac)# media-address ipv4 8.8.8.8 realm 1	Adds an IPv4 address to the set of addresses that the BAC can use as a local media address.
Step 4	port-range <i>port range</i> Example: Router(config-h248-bac-media-addr)# port-range 20000 30000	Configures the port range of the media address. If you do not specify the port range, the default port range values of 40000 to 65535 is applied.
Step 5	adjacency h248 {core <i>core-adjacency name</i> } Example: Router(config-h248-bac)# adjacency h248 core core1	Configures the H.248 core adjacency and enters into the core adjacency submenu. Note Multiple core adjacencies and access adjacencies can be configured on the BAC. Always configure the core adjacency before configuring its corresponding access adjacency.

	Command or Action	Purpose
Step 6	control-address ipv4 <i>ipv4-address</i> {port <i>port number</i> } {port-range <i>minimum-port number</i> <i>maximum-port number</i> Example: Router(config-h248-bac-adj)# control-address ipv4 192.168.102.222 port-range 2944 4000	Configures a local IPv4 H.248 signaling address of the BAC. Note The BAC handles two types of Message Identifiers (MIDs): domain name and IP address. If the MID of an IAD is IP address, only the port-range is configured and not the port .
Step 7	remote-address ipv4 <i>ipv4-address</i> port <i>port number</i> Example: Router(config-h248-bac-adj)# remote-address ipv4 192.168.102.14 port 2944	Configures a remote IPv4 H.248 signaling address of the MGCF and the AGCF.
Step 8	realm <i>realm-number</i> Example: Router(config-h248-bac-adj)# realm 1	Configures an adjacency with the IP realm that belongs to the BAC. A realm group can contain multiple media addresses. When you configure a realm group under an adjacency, the IP address and port for the media stream of this adjacency is allocated from the media addresses in this realm group.
Step 9	attach Example: Router(config-h248-bac-adj)# attach	Sets the BAC adjacency state to <i>Attached</i> .
Step 10	Exit	Exits from the core adjacency submode.
Step 11	adjacency h248 {access <i>access-adjacency name</i> } Example: Router(config-h248-bac)# adjacency h248 access acc1	Configures the H.248 access adjacency and enters the access adjacency submode. Note Always configure the access adjacency after configuring its corresponding core adjacency.
Step 12	control-address ipv4 <i>ipv4-address</i> {port <i>port number</i> } Example: Router(config-h248-bac-adj)# control-address ipv4 172.16.104.14 port 2940	Configures a local IPv4 H.248 signaling address of the BAC.
Step 13	audit {force interval <i>idle time</i> } Example: Router(config-h248-bac-adj)# audit interval 300	Changes the audit interval in the BAC. The default value is 1 minute.
Step 14	heart-beat terminate <i>terminate-interval</i> Example: Router(config-h248-bac-adj)# heart-beat terminate 0	Configures the time interval during which only one heartbeat request from the H.248 terminal device can pass through the BAC and the other heartbeat requests sent during this interval are terminated.

	Command or Action	Purpose
Step 15	domain-name <i>domain-name</i> Example: Router(config-h248-bac-adj)# domain-name cisco	Specifies the domain name of the BAC adjacency that replaces the domain name of the AGCF and the MGCF.
Step 16	core-adj <i>core adjacency-name</i> Example: Router(config-h248-bac-adj)# core-adj core1	Binds the BAC core adjacency with its corresponding BAC access adjacency.
Step 17	realm <i>realm-number</i> Example: Router(config-h248-bac-adj)# realm 1	Configures an adjacency with the IP realm that belongs to the BAC. A realm group can contain multiple media addresses. When you configure a realm group under an adjacency, the IP address and port for media stream of this adjacency is allocated from the media addresses in this realm group.
Step 18	attach Example: Router(config-h248-bac-adj)# attach	Sets the BAC adjacency state to Attached.

Configuration Example for H.248 BAC Support

The following example shows how to configure the H.248 BAC Support feature:

```
sbc h248 bac
media-address ipv4 8.8.8.8 realm 1
port-range 20000 30000
media-address ipv4 9.9.9.9 realm 2
port-range 40000 50000
adjacency h248 core core1
    control-address ipv4 192.168.102.222 port-range 2944 4000
    remote-address ipv4 192.168.102.14 port 2944
    realm 1
    attach
adjacency h248 access acc1
    control-address ipv4 172.16.104.14 port 2940
    audit-interval 300
    heart-beat terminate 0
    domain-name cisco
    core-adj core1
    realm 2
    attach
sbc sbc
sbe
activate
```

