



IPv6 Support on the DBE

The data border element (DBE) now supports internet protocol version 6 (IPv6), the designated successor to IPv4 for general use on the Internet. IPv6 significantly increases the number of addresses available for networked devices compared to IPv4, and enables each mobile electronic device to have its own address.

Feature History for DBE IPv6 Support

Release	Modification
Release 3.5.0	This command was first introduced on the Cisco CRS-1.
Release 3.6.0	No modification.

Contents

This module contains the following sections:

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Restrictions for IPv6 Support on the DBE

- No support for IPv4 pinhole and IPv6 pinhole within the same context.
- In the carrier routing system, only the twice-NAPT feature is supported.
- No support for IPv6 signaling addresses for communicating with the system border element (SBE). Communication with the controlling SBE is conducted over IPv4 only.
- SBE does not support IPv6 whether in a distributed or unified architecture. Therefore, a third-party SBE is needed to control a standalone DBE.
- No support for global unicast IPv6 addresses.
- No support for IPv6 addresses that do not use the default zone.

- No support for using the IPv6 Flow Label to classify packets. Instead, it continues to use the transport protocol type (UDP or TCP), and local and remote ports, as was the case with IPv4. The Flow Label is always set to 0 on outgoing packets.
- No support for address forwarding between IPv4 and IPv6 endpoints. For example, DBE treats 6-4 addresses (addresses prefixed with 2002::/16) as ordinary global unicast native IPv6 addresses.
- No support for ISATAP link-local addresses.

Information About DBE IPv6 Support

The DBE supports the following:

- IPv6 pinholes through the DBE both for media endpoints and signaling pinholes after the support for signaling pinholes has been added.
- Forwarding media from one IPv6 endpoint to another IPv6 endpoint.
- Configuration of IPv6 media addresses and media address pools.
- Simultaneously supports IPv4 and IPv6 endpoints. However the DBE does not support interworking between IPv4 and IPv6 endpoints. IPv4 endpoints may only forward media to other IPv4 endpoints. Similarly, IPv6 endpoints may only forward media to other IPv6 endpoints.
- The existing CLI show commands display IP addresses as IPv6 addresses where appropriate.

Configuring IPv6 Media Addresses

Existing commands for configuring media addresses and media address pools for IPv4 are now updated to allow configuration of IPv6 addresses.

For restrictions to configuration of IPv6 addresses, see [“Restrictions for IPv6 Support on the DBE” section on page SBC-351](#).

Updated commands include the following:

```
show services sbc service-name dbe addresses
show services sbc service-name dbe media-flow-stats
show services sbc service-name dbe signaling-flow-stats
```

IPv6 addresses appear as eight sets of four hexadecimal characters regardless of the form in which they were originally configured, for example:

```
xxxx : xxxx : xxxx : xxxx : xxxx : xxxx : xxxx : xxxx
```

A media address can be configured as 2000::0001, but it appears after a displayed by **show services sbc dbe addresses** command as follows:

```
2000:0000:0000:0000:0000:0000:0000:0001
```

SUMMARY STEPS

1. **configure**
2. **sbc service-name**
3. **dbe**

4. **media-address ipv6** *ipv6 media address* [**vrf** *vrf-name*] **pool ipv6** *starting IPv6 address ending IPv6 address*
5. **port-range** *min-port max-port* [*class-of-service*]
6. **commit**
7. **end**
8. **show services sbc** *service-name* **dbe addresses**
9. **show services sbc** *service-name* **dbe media-flow-stats** [**vrf** *vrf-name* [**ipv4** *ipv4 media address* | **ipv6** *ipv6 media address* [**port** *port number*]]]
10. **show services sbc** *service-name* **dbe signaling-flow-stats** [**vrf** *vrf-name* [**ipv4** *ipv4 media address* | **port** *port number*]]]

DETAILED STEPS

	Command or Action	Purpose
Step 1	configure Example: RP/0/0/CPU0:router# configure	Enables the global configuration mode.
Step 2	sbc <i>service-name</i> Example: RP/0/0/CPU0:router(config)# sbc mysbc	Enters the mode of an SBC service. Use the <i>service-name</i> argument to define the name of the SBC.
Step 3	dbe Example: RP/0/0/CPU0:router(config-sbc)# dbe	Enters the mode of the data border element (DBE) function of the SBC.
Step 4	media-address ipv6 <i>IPv6 media address</i> [vrf <i>vrf-name</i>] pool ipv6 <i>starting IPv6 address ending IPv6 address</i> Example: RP/0/RP0/CPU0:SBC-CRS-16(config-sbc-dbe)# media-address pool ipv6 2001::1 2001:5	Creates an IPv6 address range within a DBE media address pool. The no version of this command deletes an IPv6 address range. <ul style="list-style-type: none"> • ipv6 media-address —Appears as 8 sets of 4 hexadecimal characters. • (Optional) vrf-name parameter—<i>Configures a media address pool through a virtual router.</i> • starting IPv6 address—starting IPv6 media address displayed in the form of eight sets of four hexadecimal characters. Any valid IPv6 global unicast address. • ending IPv6 address—ending IPv6 media address. Note The ending address must be numerically higher than the starting address.

	Command or Action	Purpose
Step 5	<p>port-range <i>min-port max-port [class-of-service]</i></p> <p>Example: RP/0/0/CPU0:router(config-sbc-dbe-media-address-pool-ip v6)# port range 10000 20000 voice</p>	<p>Creates a port range associated with the media address or range of addresses. Default range is 16384-32767. The port-range command now includes the signaling service class.</p> <ul style="list-style-type: none"> min-port—Starting port number of the range. Minimum value = 10000 and must always be less than the port value. max-port—Ending port number of the range must be greater than the min-port number. Maximum value = 65535. (Optional) class-of-service—Class of service affinity for the port range. Options are <i>any</i>, <i>voice</i>, <i>video</i>, <i>signaling</i>. Default is <i>any</i>. <p>Note If the MGC does <i>not</i> specify that a local address or port is for a signaling pinhole, the DBE selects one from a port range that it identifies by the signaling class of service. If the MGC provides an address or port, it must fall within a port range identified by the signaling class of service.</p>
Step 6	<p>commit</p> <p>Example: RP/0/0/CPU0:router(config-sbc-db-media-address-pool-ipv6)# commit</p>	<p>The commit command saves the configuration changes to the running configuration file while remaining within the configuration session.</p>
Step 7	<p>end</p> <p>Example: RP/0/0/CPU0:router(config-sbc-dbe-media-address-pool-ip 6)# end</p>	<p>Exits the current configuration mode.</p>
Step 8	<p>show services sbc service-name dbe addresses vrf <i>vrf-name</i></p> <p>Example: RP/0/0/CPU0:router# show services sbc service-name dbe addresses vrf <i>vrf-name</i></p> <pre>SBC Service mySbc H.248 control address:10.0.0.1 Media Address VRF 2000:0000:1000:1000:2000:3000:0000 Global 2000:0000:3333:4444:5555:6666:7777:8888 vpn3</pre>	<p>Lists the addresses configured on the DBE.</p> <ul style="list-style-type: none"> vrf-name—(Optional) Only displays media flows to or from this VPN.

	Command or Action	Purpose
Step 9	<pre>show services sbc service-name dbe media-flow-stats [vrf vrf-name [ipv4 ipv4 media address ipv6 ipv6 media address [port port number]]] Example: RP/0/0/CPU0:router# show services sbc mysbc dbe media-flow-stats vrf vpn3 ipv4 10.1.1.1 port 24000</pre>	<p>Displays the statistics about one or more media flows collected on the DBE.</p> <ul style="list-style-type: none"> • service-name— SBC service name. • vrf-name—(Optional) Only displays media flows to/from this VPN. • (Optional) ipv4 media address ipv6 media address—Only displays media flows to/from this IPv4/IPv6 media address. • (Optional) port-number—Only displays media flows to/from this port.
Step 10	<pre>show services sbc service-name dbe signaling-flow-stats [vrf vrf-name [ipv4 ipv4 media address ipv6 ipv6 media address [port port number]]] Example: RP/0/RP0/CPU0:router# show services sbc mysbc dbe signaling-flow-stats vrf media-address ipv6 2001::3000</pre>	<p>Lists the statistics about one or more signaling flows collected on the DBE. The example below shows the reported fields.</p> <ul style="list-style-type: none"> • service-name—The SBC service name • (Optional) vrf-name—Only display media flows to/from this VPN • (Optional) ipv4 media address ipv6 media address—Only displays media flows to/from this IPv4/IPv6 media address • (Optional) port-number—Only display media flows to/from this port

Displaying IPv6 Media Addresses: Examples

Example 1

The following example shows the reported fields of the new show command for **media-flow-stats**:

```
# show services sbc service-name dbe media-flow-stats vrf vpn3 ipv4 10.1.1.1 port 24000

SBC Service service-name
mediaFlow 1
  FlowPairState Open
  GateAge 15340 ms
  CallPriority Normal
  FlowPairBandwidth 1500
  DtmfPacketsQueued 0
  Side A
    VpnId vpn3
    LocalAddress 10.1.1.1
    LocalPort 24000
    RemoteAddress 192.168.1.1
    RemotePort 32420
    RtpPacketsRcvd 300
    RtpOctetsRcvd 6000
    RtpPacketsSent 100
    RtpOctetsSent 2000
    RtpPacketsDiscarded 0
    RtpOctetsDiscarded 0
    EndPointPacketsSent 300
    EndPointPacketsRcvd 97
```

```

EndPointPacketsLost 1
DtmfInterworking No
MediaFlowing Yes
RouteError No
BillingId 12AB3C4D567124C7124C12DE
Side B
VpnId <none>
LocalAddress 10.1.1.2
LocalPort 24002
RemoteAddress 172.192.2.3
RemotePort 24002
RtpPacketsRcvd 100
RtpOctetsRcvd 2000
RtpPacketsSent 300
RtpOctetsSent 6000
RtpPacketsDiscarded 0
RtpOctetsDiscarded 0
EndPointPacketsSent 100
EndPointPacketsRcvd 300
EndPointPacketsLost 0
DtmfInterworking No
MediaFlowing Yes
RouteError No
BillingId 5DAB3C4D153624C7124E1234

```

If the parameter *Media flowing* equals *Yes* (see the boldfaced type in the example), either media has been observed flowing on the call during the media-timeout period, or the call has failed over within the last media-timeout period, and the SBC has not yet observed whether or not media is flowing.

The statistics beginning with *Rtp* are maintained and collected in real time when the command is issued.

Endpoint statistics (beginning with *EndPoint*) is collected from the RTCP packets transmitted by endpoints, and the statistics are updated when these packets are received.

Not all endpoints report RTCP endpoint statistics. The example does not display all endpoints that report RTCP statistics.

Example 2

The following example shows the reported fields of the new show command for **signaling-flow-stats**:

```
# show services sbc my sbc dbe signaling-flow-stats vrf vpn3 ipv4 10.1.1.1 port 24000
```

```

SBC Service "mySbc"
  signalingFlow 1
    FlowPairState Open
    PinholeAge 15340 ms
    PinholeBandwidth 1500
  Side A
    VpnId vpn3
    LocalAddress 10.1.1.1
    LocalPort 24000
    RemoteAddress 192.168.1.1
    RemotePort 32420
    PacketsRcvd 300
    OctetsRcvd 6000
    PacketsSent 100
    OctetsSent 2000
    PacketsDiscarded 0
    OctetsDiscarded 0
  Side B
    VpnId <none>
    LocalAddress 10.1.1.2
    LocalPort 24002

```

Endpoint statistics (beginning with *EndPoint*) is collected from the RTCP packets transmitted by endpoints, and the statistics is updated when these packets are received.

Not all endpoints report RTCP endpoint statistics. The example does not display all endpoints that report RTCP statistics.

Additional References

The following sections provide references related to DBE IPv6 support.

Related Documents

Related Topic	Document Title
Cisco IOS XR master command reference	Cisco IOS XR Master Commands List
Cisco IOS XR SBC interface configuration commands	<i>Cisco IOS XR Session Border Controller Command Reference</i>
Initial system bootup and configuration information for a router using the Cisco IOS XR Software	<i>Cisco IOS XR Getting Started Guide</i>
Cisco IOS XR command modes	<i>Cisco IOS XR Command Mode Reference</i>

Standards

Standards	Title
No new or modified standards are supported by this feature, and support from existing standards has not been modified by this feature.	—

MIBs

MIBs	MIBs Link
—	To locate and download MIBs using Cisco IOS XR software, use the Cisco MIB Locator found at the following URL and choose a platform under the Cisco Access Products menu: http://cisco.com/public/sw-center/netmgmt/cmtk/mibs.shtml

Technical Assistance

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