BFD Commands

Note
All commands applicable for the Cisco NCS 5500 Series Router are also supported on the Cisco NCS 540 Series Router that is introduced from Cisco IOS XR Release 6.3.2. References to earlier releases in Command History tables apply to only the Cisco NCS 5500 Series Router.

Note
Starting with Cisco IOS XR Release 6.6.25, all commands applicable for the Cisco NCS 5500 Series Router are also supported on the Cisco NCS 560 Series Routers.

Starting with Cisco IOS XR Release 6.3.2, all commands applicable for the Cisco NCS 5500 Series Router are also supported on the Cisco NCS 540 Series Router.

References to releases before Cisco IOS XR Release 6.3.2 apply to only the Cisco NCS 5500 Series Router.

Cisco IOS XR Software Release 7.0.1 specific updates are not applicable for the following variants of Cisco NCS 540 Series Routers:
- N540-28Z4C-SYS-A
- N540-28Z4C-SYS-D
- N540X-16Z4G8Q2C-A
- N540X-16Z4G8Q2C-D
- N540-12Z20G-SYS-A
- N540-12Z20G-SYS-D
- N540X-12Z16G-SYS-A
- N540X-12Z16G-SYS-D

This module describes the commands used to configure and monitor the Bidirectional Forwarding (BFD) protocol on Cisco NCS 5500 Series Routers.
For detailed information about BFD concepts, configuration tasks, and examples, see the Implementing BFD on Routing Command Reference for Cisco NCS 5500 Series Routers module in the Routing Configuration Guide for Cisco NCS 5500 Series Routers.

- bfd fast-detect, on page 3
- bfd minimum-interval, on page 5
- bfd multipath include location, on page 7
- bfd multiplier, on page 8
- hw-module profile offload, on page 10
- router pim, on page 11
- show bfd session, on page 12
**bfd fast-detect**

To enable Bidirectional Forwarding Detection (BFD) to detect failures in the path between adjacent forwarding engines, use the `bfd fast-detect` command in the appropriate configuration mode. To return the software to the default state in which BFD is not enabled, use the `no` form of this command.

```
bfd fast-detect [{disable | ipv4}]
no bfd fast-detect
```

**Syntax Description**

<table>
<thead>
<tr>
<th>Syntax</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><code>disable</code></td>
<td>Disables the detection of failures in the path between adjacent forwarding engines for a specified entity, such as a BGP neighbor or OSPF interface.</td>
</tr>
<tr>
<td><code>ipv4</code></td>
<td>Enables Intermediate System-to-Intermediate System (IS-IS) BFD detection of failures in the path between adjacent forwarding engines.</td>
</tr>
</tbody>
</table>

**Note** The `ipv4` keyword is available in IS-IS router configuration mode only.

**Command Default**

BFD detection of failures in the path between adjacent forwarding engines is disabled.

**Command Modes**

Neighbor configuration

Session group configuration

Neighbor group configuration

Interface configuration

Interface configuration

Router configuration

Area configuration

Area interface configuration

Interface configuration

**Command History**

<table>
<thead>
<tr>
<th>Release</th>
<th>Modification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Release 6.1x</td>
<td>This command was introduced.</td>
</tr>
</tbody>
</table>

**Usage Guidelines**

**Note**

BFD can support multihop for internal and external BGP peers.

Use the `bfd fast-detect` command to provide protocol- and media-independent, short-duration failure detection of the path between adjacent forwarding engines, including the interfaces and data links.

BFD must be configured on directly connected neighbors for a BFD session to be established between the neighbors.
In OSPF and OSPF3 environments, the setting of the `bfd fast-detect` command is inherited from the highest-level configuration mode in which the command was configured. From the lowest to the highest configuration modes, the inheritance rules are as follows:

- If you enable BFD in area interface configuration mode, it is enabled on the specified interface only.
- If you enable BFD in area configuration mode, it is enabled on all interfaces in the specified area.
- If you enable BFD in router configuration mode, it is enabled on all areas and all associated interfaces in the specified routing process.

In OSPF environments, the `disable` option enables you to override the inheritance rules described previously. For example, if you enable BFD in an OSPF area, BFD is enabled on all interfaces in that area. If you do not want BFD running on one of the interfaces in that area, you must specify the `bfd fast-detect disable` command for that interface only.

To disable BFD or return the software to the default state in which BFD is not enabled in IS-IS router configuration mode, you must enter the `no bfd fast-detect` command.

<table>
<thead>
<tr>
<th>Task</th>
<th>ID</th>
<th>Operations</th>
</tr>
</thead>
<tbody>
<tr>
<td>bgp</td>
<td></td>
<td>read, write</td>
</tr>
<tr>
<td>isis</td>
<td></td>
<td>read, write</td>
</tr>
<tr>
<td>ospf</td>
<td></td>
<td>read, write</td>
</tr>
</tbody>
</table>

**Examples**

The following example shows how to configure BFD on a BGP router:

```
RP/0/RP0/CPU0:router(config)# route-policy pass-all
RP/0/RP0/CPU0:router(config-rpl)# pass
RP/0/RP0/CPU0:router(config-rpl)# end-policy
RP/0/RP0/CPU0:router(config-rpl)# end
RP/0/RP0/CPU0:router(config)# configure
RP/0/RP0/CPU0:router(config)# router bgp 65000
RP/0/RP0/CPU0:router(config-bgp)# bfd minimum-interval 3
RP/0/RP0/CPU0:router(config-bgp)# address-family ipv4 unicast
RP/0/RP0/CPU0:router(config-bgp#af)# exit
RP/0/RP0/CPU0:router(config-bgp)# neighbor 192.168.70.24
RP/0/RP0/CPU0:router(config-bgp-nbr)# remote-as 2
RP/0/RP0/CPU0:router(config-bgp-nbr)# address-family ipv4 unicast
RP/0/RP0/CPU0:router(config-bgp-nbr)# bfd fast-detect
RP/0/RP0/CPU0:router(config-bgp-nbr)# route-policy pass-all in
RP/0/RP0/CPU0:router(config-bgp-nbr)# route-policy pass-all out
```
**bfd minimum-interval**

To specify the minimum control packet interval for BFD sessions for the corresponding BFD configuration scope, use the `bfd minimum-interval` command in the appropriate configuration mode. To return the router to the default setting, use the `no` form of this command.

```
bfd minimum-interval milliseconds
no bfd minimum-interval [milliseconds]
```

**Syntax Description**
- `milliseconds` Interval between sending BFD hello packets to the neighbor. The range is 300 to 30000 milliseconds.

**Command Modes**
- Router configuration
- Interface configuration
- Router configuration
- Area configuration
- Area interface configuration
- Interface configuration

**Command History**

<table>
<thead>
<tr>
<th>Release</th>
<th>Modification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Release 6.1x</td>
<td>This command was introduced.</td>
</tr>
</tbody>
</table>

**Usage Guidelines**

In OSPF environments, the setting of the `bfd minimum-interval` command is inherited from the highest-level configuration mode in which the command was configured. From the lowest to the highest configuration modes, the inheritance rules are as follows:

- If you configure the minimum interval in area interface configuration mode, the updated interval affects the BFD sessions on the specified interface only.
- If you configure the minimum interval in area configuration mode, the updated interval affects the BFD sessions on all interfaces in the specified area.
- If you configure the minimum interval in router configuration mode, the updated interval affects the BFD sessions in all areas and all associated interfaces in the specified routing process.

If desired, you can override these inheritance rules by explicitly configuring the `bfd minimum-interval` command for a specific area interface or area.

---

**Note**

When multiple applications share the same BFD session, the application with the most aggressive timer wins locally. Then, the result is negotiated with the peer router.

Keep the following router-specific rules in mind when configuring the minimum BFD interval:
• The maximum rate in packets-per-second (pps) for BFD sessions is linecard-dependent. If you have multiple linecards supporting BFD, then the maximum rate for BFD sessions per system is the supported linecard rate multiplied by the number of linecards.

• If a session is running in asynchronous mode without echo, then PPS used for this session is \((1000 \div \text{asynchronous interval in milliseconds})\).

• If a session is running in asynchronous mode with echo, then PPS used for this session is \((1000 \div \text{echo interval in milliseconds})\).

This is calculated as: \(1000 \div \text{value of the bfd minimum-interval command}\).

• The table below defines the maximum number of BFD sessions that is allowed per line card.

<table>
<thead>
<tr>
<th>Timer Value</th>
<th>Maximum Number of Sessions Supported in a line card.</th>
<th>Maximum Number of Sessions Supported in a system.</th>
</tr>
</thead>
<tbody>
<tr>
<td>300 ms</td>
<td>250</td>
<td>500</td>
</tr>
<tr>
<td>1 second</td>
<td>250</td>
<td>500</td>
</tr>
<tr>
<td>2 seconds</td>
<td>250</td>
<td>500</td>
</tr>
</tbody>
</table>

**Table 1: Supported Scale**

<table>
<thead>
<tr>
<th>Task ID</th>
<th>Task ID</th>
<th>Operations</th>
</tr>
</thead>
<tbody>
<tr>
<td>bgp</td>
<td></td>
<td>read, write</td>
</tr>
<tr>
<td>isis</td>
<td></td>
<td>read, write</td>
</tr>
<tr>
<td>ospf</td>
<td></td>
<td>read, write</td>
</tr>
</tbody>
</table>

**Examples**

The following example shows how to set the BFD minimum interval for a BGP routing process:

```
RP/0/RP0/CPU0:router(config)# router bgp 6500
RP/0/RP0/CPU0:router(config-bgp)# bfd minimum-interval 300
```
**bfd multipath include location**

To include specific linecards to host BFD multiple path sessions, use the `bfd multipath include location` command in the XR configuration mode. To remove the configuration, use the `no` form of this command.

```
bfdd multipath include location node-id
no bfd multipath include location node-id
```

**Syntax Description**

| location node-id | Configures BFD multipath on the specified location. The `node-id` variable is mentioned in the `rack/slot/module` notation. |

**Command Default**

No default behavior or values

**Command Modes**

XR Config mode

**Command History**

<table>
<thead>
<tr>
<th>Release</th>
<th>Modification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Release 6.3x</td>
<td>This command was introduced.</td>
</tr>
</tbody>
</table>

**Task ID**

<table>
<thead>
<tr>
<th>Task ID</th>
<th>Operation</th>
</tr>
</thead>
<tbody>
<tr>
<td>bgp</td>
<td>read, write</td>
</tr>
<tr>
<td>ospf</td>
<td>read, write</td>
</tr>
<tr>
<td>isis</td>
<td>read, write</td>
</tr>
</tbody>
</table>

**Example**

This example shows how to run the `bfd multipath include location` command on a specific location:

```
RP/0/RP0/CPU0:router# configure
RP/0/RP0/CPU0:router(config)# bfd multipath include location 0/5/CPU0
```
bdf multiplier

To set the Bidirectional Forwarding Detection (BFD) multiplier, use the `bdf multiplier` command in the appropriate configuration mode. To return the router to the default setting, use the `no` form of this command.

```
bfd multiplier multiplier
no bfd multiplier [multiplier]
```

**Syntax Description**
- `multiplier` Number of times a packet is missed before BFD declares the neighbor down. The ranges are as follows:
  - BGP—2 to 16
  - IS-IS—2 to 50

**Command Default**
The default multiplier is 3.

**Command Modes**
- Router configuration
- Interface configuration
- Router configuration
- Area configuration
- Area interface configuration
- Interface configuration

**Command History**

<table>
<thead>
<tr>
<th>Release</th>
<th>Modification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Release 6.1x</td>
<td>This command was introduced.</td>
</tr>
</tbody>
</table>

**Usage Guidelines**
In OSPF environments, the setting of the `bdf multiplier` command is inherited from the highest-level configuration mode in which the command was configured. From the lowest to the highest configuration modes, the inheritance rules are as follows:

- If you configure a multiplier in area interface configuration mode, the updated multiplier affects the BFD sessions on the specified interface only.
- If you configure a multiplier in area configuration mode, the updated multiplier affects the BFD sessions on all interfaces in the specified area.
- If you configure a multiplier in router configuration mode, the updated multiplier affects the BFD sessions in all areas and all associated interfaces in the specified routing process.

If desired, you can override these inheritance rules by explicitly configuring the `bdf multiplier` command for a specific area interface or area.

If the multiplier is changed using the `bdf multiplier` command, the new value is used to update all existing BFD sessions for the protocol.
### Task ID

<table>
<thead>
<tr>
<th>Task ID</th>
<th>Operations</th>
</tr>
</thead>
<tbody>
<tr>
<td>bgp</td>
<td>read, write</td>
</tr>
<tr>
<td>isis</td>
<td>read, write</td>
</tr>
<tr>
<td>ospf</td>
<td>read, write</td>
</tr>
</tbody>
</table>

### Examples

The following example shows how to set the BFD multiplier in a BGP routing process:

```plaintext
RP/0/RP0/CPU0:router(config)# router bgp 65000
RP/0/RP0/CPU0:router(config-bgp)# bfd multiplier 3
```
**hw-module profile offload**

To enable the offload of IPv6 BFD to the network processing unit of the line card, use the `hw-module profile offload` command in XR Configuration mode.

**Syntax Description**

<table>
<thead>
<tr>
<th>Syntax Description</th>
<th>1</th>
<th>Indicates the IPv6 BFD and Precision Timing Protocol (PTP) feature.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>2</td>
<td>Indicates the IPv6 BFD and acceleration of route download on the scale line card.</td>
</tr>
<tr>
<td></td>
<td>3</td>
<td>Indicates the acceleration of route download on the scale line card and PTP feature.</td>
</tr>
</tbody>
</table>

**Syntax Description**

This command has no arguments and keywords.

**Command Default**

The default option is 1.

**Command Modes**

XR Configuration

**Command History**

<table>
<thead>
<tr>
<th>Release</th>
<th>Modification</th>
</tr>
</thead>
<tbody>
<tr>
<td>6.6.1</td>
<td>This command was introduced.</td>
</tr>
</tbody>
</table>

**Usage Guidelines**

Reload the router for the `hw-module profile offload` command to take effect.

Though you can configure this command on all NCS 5500 routers, this command takes effect only on NCS5501-SE platform.

**Example**

The following example shows how to offload IPv6 BFD with the PTP feature:

```
Router# configure
Router(config)# hw-module profile offload 1
```
router pim

To enter Protocol Independent Multicast (PIM) configuration mode, use the `router pim` command in XR configuration mode. To return to the default behavior, use the `no` form of this command.

```
router pim [address family ipv4]  
o router pim [address family ipv4]
```

**Syntax Description**
- `address-family` (Optional) Specifies which address prefixes to use.
- `ipv4` (Optional) Specifies IPv4 address prefixes.

**Command Default**
The default is IPv4 address prefixes.

**Command Modes**
XR Config mode

**Command History**

<table>
<thead>
<tr>
<th>Release</th>
<th>Modifications</th>
</tr>
</thead>
<tbody>
<tr>
<td>Release 6.3x</td>
<td>This command was introduced.</td>
</tr>
</tbody>
</table>

**Task ID**
- `Task ID` `Operations`
  - multicast read, write

**Examples**
This example shows how to enter PIM configuration mode for IPv4 address prefixes:

```
RP/0/RP0/CPU0:router(config)# router pim
RP/0/RP0/CPU0:router(config-pim-default-ipv4)#
```

This example shows how to enter PIM configuration mode for IPv4 address prefixes:

```
RP/0/RP0/CPU0:router(config)# router pim address-family ipv4
RP/0/RP0/CPU0:router(config-pim-default-ipv4)#
```
To display Bidirectional Forwarding Detection (BFD) session information, use the `show bfd session` command in XR Exec mode.

```plaintext
show bfd [{ipv4 | [singlehop | multihop] | [singlehop | multihop] | all}] session [interface type interface-path-id [destination ip-address] [detail]] location node-id
```

<table>
<thead>
<tr>
<th>Syntax Description</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>ipv4</td>
<td>(Optional) Displays BFD over IPv4 information only.</td>
</tr>
<tr>
<td>ipv6</td>
<td>(Optional) Displays BFD over IPv6 information only.</td>
</tr>
<tr>
<td>singlehop</td>
<td>(Optional) Displays BFD singlehop information only.</td>
</tr>
<tr>
<td>multihop</td>
<td>(Optional) Displays BFD multihop information only.</td>
</tr>
<tr>
<td>all</td>
<td>(Optional) Displays both BFD over IPv4 and BFD over IPv6 information.</td>
</tr>
<tr>
<td>interface</td>
<td>(Optional) Specifies the interface for which to show information.</td>
</tr>
<tr>
<td>type</td>
<td>Interface type. For more information, use the question mark (?) online help function.</td>
</tr>
<tr>
<td>interface-path-id</td>
<td>Physical interface or virtual interface.</td>
</tr>
<tr>
<td>destination ip-address</td>
<td>(Optional) Displays the BFD session destined for the specified IP address.</td>
</tr>
<tr>
<td>detail</td>
<td>(Optional) Displays detailed session information, including statistics and number of state transitions.</td>
</tr>
</tbody>
</table>

**Note**

Use the `show interfaces` command to see a list of all interfaces currently configured on the router.

For more information about the syntax for the router, use the question mark (?) online help function.
location node-id

(Optional) Displays BFD sessions hosted from the specified location. The node-id argument is entered in the rack/slot/module notation.

Command Default
The default is the default address family identifier (AFI) that is set by the set default-afi command.

Command Modes
XR Exec mode

Command History

<table>
<thead>
<tr>
<th>Release</th>
<th>Modification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Release 6.1x</td>
<td>This command was introduced.</td>
</tr>
</tbody>
</table>

Usage Guidelines
For the interface-path-id argument, use the following guidelines:

• If specifying a physical interface, the naming notation is rack/slot/module/port. The slash between values is required as part of the notation. An explanation of each component of the naming notation is as follows:
  • rack: Chassis number of the rack.
  • slot: Physical slot number of the line card.
  • module: Module number. A physical layer interface module (PLIM) is always 0.
  • port: Physical port number of the interface.

• If specifying a virtual interface, the number range varies, depending on interface type.

Task ID

<table>
<thead>
<tr>
<th>Task ID</th>
<th>Operations</th>
</tr>
</thead>
<tbody>
<tr>
<td>bgp</td>
<td>read</td>
</tr>
<tr>
<td>ospf</td>
<td>read</td>
</tr>
<tr>
<td>isis</td>
<td>read</td>
</tr>
</tbody>
</table>

Examples
The following example shows the output from the show bfd session command with the detail keyword and IPv4 as the default:

RP/0/RP0/CPU0:router# show bfd session detail
I/f:TenGigE0/2/0/0.6, Location:0/2/CPU0, dest:10.0.6.2, src:10.0.6.1
State:UP for 0d:0h:3m:4s, number of times UP:1
Received parameters:
  Version:1, desired tx interval:2 s, required rx interval:2 s
  Required echo rx interval:1 ms, multiplier:3, diag:None
  My discr:589830, your discr:590028, state UP, D/F/P/C/A:0/0/0/1/0
Transmitted parameters:
  Version:1, desired tx interval:2 s, required rx interval:2 s
  Required echo rx interval:1 ms, multiplier:3, diag:None
  My discr:590028, your discr:589830, state UP, D/F/P/C/A:0/0/0/1/0
Timer Values:
  Local negotiated async tx interval:2 s
Remote negotiated async tx interval: 2 s
Desired echo tx interval: 250 ms, local negotiated echo tx interval: 250 ms
Echo detection time: 750 ms (250 ms * 3), async detection time: 6 s (2 s * 3)

Local Stats:
Intervals between async packets:
  Tx: Number of intervals = 100, min = 952 ms, max = 2001 ms, avg = 1835 ms
  Last packet transmitted 606 ms ago
  Rx: Number of intervals = 100, min = 1665 ms, max = 2001 ms, avg = 1828 ms
  Last packet received 1302 ms ago
Intervals between echo packets:
  Tx: Number of intervals = 100, min = 250 ms, max = 252 ms, avg = 250 ms
  Last packet transmitted 188 ms ago
  Rx: Number of intervals = 100, min = 250 ms, max = 252 ms, avg = 250 ms
  Last packet received 187 ms ago
Latency of echo packets (time between tx and rx):
  Number of packets = 100, min = 1 ms, max = 2 ms, avg = 1 ms

Session owner information:
<table>
<thead>
<tr>
<th>Client</th>
<th>Desired interval</th>
<th>Multiplier</th>
</tr>
</thead>
<tbody>
<tr>
<td>bgp</td>
<td>250 ms</td>
<td>3</td>
</tr>
</tbody>
</table>

The following example shows the output from the `show bfd session` command with the `all` keyword, which displays both IPv4 and IPv6 information:

```
RP/0/RP0/CPU0:router# show bfd all session location 0/1/CPU0
Mon Nov 5 08:51:50.339 UTC
IPv4:
-----
   Interface    Dest Addr   Local det time(int*mult) State
              ------------------ ---------------------------
              | Echo   | Async       |
PO0/1/0/0     10.0.0.2    300ms(100ms*3) 6s(2s*3) UP
```

**Table 2: show bfd session detail command Field Descriptions**

<table>
<thead>
<tr>
<th>Field</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>I/f</td>
<td>Interface type.</td>
</tr>
<tr>
<td>Location</td>
<td>Location of the node that hosts the local endpoint of the connection, in the rack/slot/module notation</td>
</tr>
<tr>
<td>dest</td>
<td>IP address of the destination endpoint.</td>
</tr>
<tr>
<td>src</td>
<td>IP address of the source endpoint.</td>
</tr>
<tr>
<td>State</td>
<td>Current state of the connection, and the number of days, hours, minutes, and seconds that this connection has been active.</td>
</tr>
<tr>
<td>number of times UP</td>
<td>Number of times this connection has been brought up.</td>
</tr>
<tr>
<td>Field</td>
<td>Description</td>
</tr>
<tr>
<td>-----------------------</td>
<td>-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Received parameters</td>
<td>Provides information on the last transmitted control packet for the session:</td>
</tr>
<tr>
<td></td>
<td>• Version—Version number of the BFD protocol.</td>
</tr>
<tr>
<td></td>
<td>• desired tx interval—Desired transmit interval.</td>
</tr>
<tr>
<td></td>
<td>• required rx interval—Required receive interval.</td>
</tr>
<tr>
<td></td>
<td>• Required echo rx interval—Required echo receive interval.</td>
</tr>
<tr>
<td></td>
<td>• multiplier—Number of times a packets is missed before BFD declares the neighbor down.</td>
</tr>
<tr>
<td></td>
<td>• diag—diagnostic code specifying the peer system's reason for the last transition of the session from Up to some other state.</td>
</tr>
<tr>
<td></td>
<td>• My discr—unique, nonzero discriminator value generated by the transmitting system, used to demultiplex multiple BFD sessions between the same pair of systems.</td>
</tr>
<tr>
<td></td>
<td>• your discr—discriminator received from the corresponding remote system. This field reflects back the received value of My discr, or is zero if that value is unknown.</td>
</tr>
<tr>
<td>Transmitted parameters</td>
<td>Provides information on the last transmitted control packet for the session:</td>
</tr>
<tr>
<td></td>
<td>• Version—Version number of the BFD protocol.</td>
</tr>
<tr>
<td></td>
<td>• desired tx interval—Desired transmit interval.</td>
</tr>
<tr>
<td></td>
<td>• required rx interval—Required receive interval.</td>
</tr>
<tr>
<td></td>
<td>• Required echo rx interval—Required echo receive interval.</td>
</tr>
<tr>
<td></td>
<td>• multiplier—Number of times a packets is missed before BFD declares the neighbor down.</td>
</tr>
<tr>
<td></td>
<td>• diag—diagnostic code specifying the local system's reason for the last transition of the session from Up to some other state.</td>
</tr>
<tr>
<td></td>
<td>• My discr—unique, nonzero discriminator value generated by the transmitting system, used to demultiplex multiple BFD sessions between the same pair of systems.</td>
</tr>
<tr>
<td></td>
<td>• your discr—discriminator received from the corresponding remote system. This field reflects back the received value of My discr, or is zero if that value is unknown.</td>
</tr>
<tr>
<td>Timer Values</td>
<td>Provides information on the timer values used by the local and remote ends, as follows:</td>
</tr>
<tr>
<td></td>
<td>• Local negotiated async tx interval—interval at which control packets are being transmitted by the local end.</td>
</tr>
<tr>
<td></td>
<td>• Remote negotiated async tx interval—interval at which control packets should be transmitted by the remote end.</td>
</tr>
<tr>
<td></td>
<td>• Desired echo tx interval—interval at which the local end would like to transmit echo packets.</td>
</tr>
<tr>
<td></td>
<td>• local negotiated echo tx interval—interval at which echo packets are being transmitted by the local end.</td>
</tr>
<tr>
<td></td>
<td>• Echo detection time—local failure detection time of echo packets. It is the product of the local negotiated echo tx interval and the local multiplier.</td>
</tr>
<tr>
<td></td>
<td>• async detection time—local failure detection time of the asynchronous mode (control packets). It is the product of the remote negotiated async tx interval and the remote multiplier.</td>
</tr>
</tbody>
</table>
### Local Stats
Displays the local transmit and receive statistics,
- **Intervals between async packets**—provides measurements on intervals between control packets (tx and rx):
  - **Number of intervals**—number of sampled intervals between control packets
  - **min**—minimum measured interval between 2 consecutive control packets
  - **max**—maximum measured interval between 2 consecutive control packets
  - **avg**—average measured interval between 2 consecutive control packets
  - **Last packet received/transmitted**—indicates how long ago the last control packet was received/transmitted.
- **Intervals between echo packets**—provides measurements on intervals between echo packets (tx and rx). The measurements have the same meaning as for async packets.
- **Latency of echo packets (time between tx and rx)**—provides measurements on latency of echo packets, i.e. the time between tx and rx of echo packets:
  - **Number of packets**—number of sampled echo packets.
  - **min**—minimum measured latency for echo packets.
  - **max**—maximum measured latency of echo packets.
  - **avg**—average measured latency of echo packets.

### Session owner information
Provides the following information about the session owner.
- **Client**—name of the client application process.
- **Desired interval**—desired interval provided by the client, in milliseconds.
- **Multiplier**—multiplier value provided by the client.