

# Asynchronous Serial Traffic Over UDP

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## Feature Overview

The Asynchronous Serial Traffic Over User Datagram Protocol (UDP) feature provides the ability to encapsulate asynchronous data into UDP packets, and then unreliably transmit this data without needing to establish a connection with a receiving device.

You load the data you want to transmit through an asynchronous port, and then transmit it, optionally, as a multicast or a broadcast. The receiving device(s) can then receive the data whenever it wants. If the receiver ends reception, the transmission is unaffected.

This process is referred to as UDP Telnet (UDPTN), although it does not—and cannot—use the Telnet protocol. UDPTN is similar to Telnet in that both are used to transmit data, but UDPTN is unique in that it does not require that a connection be established with a receiving device.

## Benefits

The Asynchronous Serial Traffic Over UDP feature provides a low bandwidth, low maintenance method to unreliably deliver data. This delivery is similar to a radio broadcast: It does not require that you establish a connection to a destination; rather, it transmits the data to whomever wants to receive it. The receivers are free to begin or end their reception without interrupting the transmission.

This feature is particularly useful for broadcast, multicast, and unstable point-to-point connections.

Asynchronous Serial Traffic Over UDP is a low-bandwidth solution for delivering streaming information for which lost packets are not critical. Such applications include stock quotes, newswires, console monitoring, and multi-user chat features.

## Restrictions

- This feature may not work as expected when there are multiple users on the same port number in a non-multicast environment.
- The same port must be used for both receiving and transmitting.

## Related Documents

For information on IP multicasting, see the “Configuring IP Multicast Routing” chapter of the *Network Protocols Configuration Guide, Part 1*.

## Supported Platforms

- Cisco 1005
- Cisco 1600 series
- Cisco 2500 series
- Cisco 2600 series
- Cisco 3600 series
- Cisco 4000-M series (Cisco 4000-M, 4500-M, 4700-M)
- Cisco AS5200
- Cisco AS5300
- Cisco AS5800

## Supported Standards, MIBs, and RFCs

### MIBs

No new or modified MIBs are supported by this feature.

For descriptions of supported MIBs and how to use MIBs, see the Cisco MIB web site on CCO at <http://www.cisco.com/public/sw-center/netmgmt/cmtk/mibs.shtml>.

### RFCs

No new or modified RFCs are supported by this feature.

### Standards

No new or modified Standards are supported by this feature.

## Prerequisites

### Multicast UDPTN

You must configure multicast for the entire network that will receive and/or propagate the multicasts.

### Broadcast UDPTN

You must configure broadcast flooding on the routers between network segments.

## Configuration Tasks

See the following sections for configuration tasks for the Asynchronous Serial Traffic Over UDP feature.

- Configuring a Line for UDPTN (Required)
- Enabling UDPTN (Required)

## Configuring a Line for UDPTN

Enter the following configuration on the line that will be used to transmit and/or receive.

Step	Command	Purpose
1	Router(config)# <b>line</b> <i>line-number</i>	Enters line configuration mode.
2	Router(config-line)# <b>transport output udptn</b>	Enables the line to transport UDP packets.
3	Router(config-line)# <b>dispatch-timeout 1000</b>	Transmits packets every 1000 milliseconds.
4	Router(config-line)# <b>dispatch-character 13</b>	Transmits packets after every new line.
5	Router(config-line)# <b>no session-timeout</b>	Disables timeout connection closing.

## Enabling UDPTN

There are two methods of enabling UDPTN. You can either manually enable UDPTN when you want to begin transmission and/or reception, or you can configure the router to automatically enable UDPTN when a connection is made to the line.

### Manually Enabling UDPTN

Enter the following EXEC command when you want to begin UDPTN transmission and/or reception.

Command	Purpose
Router# <b>udptn</b> <i>ip-address</i> [ <i>port</i> ] [/transmit] [/receive]	Enables UDPTN to the specified IP address (optionally, using the specified port). Use the <b>/transmit</b> or <b>/receive</b> keywords if the router will only be transmitting or receiving UDPTN.

### Automatically Enabling UDPTN

Enter the following configuration to automatically enable UDPTN when a connection is made to the line.

Command	Purpose
Router(config)# <b>line</b> <i>line-number</i>	Enters line configuration mode.
Router(config-line)# <b>autocommand udptn</b> <i>ip-address</i> [ <i>port</i> ] [/transmit] [/receive]	Enables UDPTN automatically when a connection is made to the line (optionally, using the specified port). Use the <b>/transmit</b> or <b>/receive</b> keywords if the router will only be transmitting or receiving UDPTN.

## Verifying UDPTN Traffic

- Step 1** Enable UDPTN debugging by using the **debug udptn** EXEC command.
- Step 2** Enable UDPTN by using the **udptn ip-address** EXEC command.
- Step 3** Observe the debug output.

The following debug output shows a UDPTN session being successfully established and then disconnected.

```
Router# debug udptn
Router# udptn 172.16.1.1
Trying 172.16.1.1 ... Open

*Mar 1 00:10:15.191:udptn0:adding multicast group.
*Mar 1 00:10:15.195:udptn0:open to 172.16.1.1:57 Loopback0jjaassdd
*Mar 1 00:10:18.083:udptn0:output packet w 1 bytes
*Mar 1 00:10:18.087:udptn0:Input packet w 1 bytes
Router# disconnect
Closing connection to 172.16.1.1 [confirm] y
Router#
*Mar 1 00:11:03.139:udptn0:removing multicast group.
```

- Step 4** While the **udptn** command is enabled, enter the **show ip socket** command to verify that the socket being used for UDPTN opened correctly.

```
Router# show ip socket
Proto Remote Port Local Port In Out Stat TTY OutputIF
17 --listen-- 172.21.14.90 67 0 0 89 0
17 0.0.0.0 520 172.21.14.90 520 0 0 1 0
17 1.1.1.2 57 1.1.1.1 57 0 0 48 0
17 224.1.1.1 57 1.2.2.2 57 0 0 48 0 Loopback0
```

## Configuration Examples

This section provides the following configuration examples:

- Point-to-Point UDPTN
- Multicast UDPTN
- Broadcast UDPTN

### Point-to-Point UDPTN

These configurations are for two routers in mobile, unstable environments that wish to establish a bidirectional asynchronous tunnel. Because there is no way to ensure that both routers will be up and running when one of the routers wants to establish a tunnel, they can not use connection-dependent protocols like Telnet or LAT. They instead use the following UDPTN configurations.

Notice that each router is configured to transmit to and receive from the other's IP address. Because both routers will be transmitting and receiving, they do not use the **/transmit** or **/receive** keywords with the **udptn** command.

**Router A**

```

interface ethernet 0
 ip address 10.54.46.1 255.255.255.192
 !
line 5
 no session-timeout
 transport output udptn
 dispatch-timeout 10000
 dispatch-character 13
 modem in
 autocommand udptn 10.54.46.2

```

**Router B**

```

interface ethernet 0
 ip address 10.54.46.2 255.255.255.192
 !
line 10
 no session-timeout
 transport output udptn
 dispatch-timeout 10000
 dispatch-character 13
 modem in
 autocommand udptn 10.54.46.1

```

**Multicast UDPTN**

These configurations are for multicast UDPTN. The router that is multicasting does not require a multicast configuration—it simply transmits to the multicast IP address.

**Router that is Multicasting**

```

ip multicast-routing
interface ethernet 0
 ip address 10.1.1.1 255.255.255.0
 ip pim dense-mode
 !
line 5
 no session-timeout
 transport output udptn
 dispatch-timeout 10000
 dispatch-character 13
 modem in
 autocommand udptn 172.1.1.1 /transmit

```

**Receiving Routers**

```

ip multicast-routing
interface ethernet 0
 ip address 10.99.98.97 255.255.255.192
 ip pim dense-mode
 !
line 0 16
 transport output udptn telnet lat rlogin
 autocommand udptn 172.1.1.1 /receive

```

# Broadcast UDPTN

These configurations are for broadcast UDPTN. This is the simplest method to transmit to multiple receivers. The broadcasting router transmits to the broadcast IP address, and any router that wants to receive the transmission simply connects to the broadcast IP address by using the **udptn** command.

### Router that is Broadcasting

```
interface ethernet 0
  ip address 10.1.1.1 255.255.255.0
  !
line 5
  no session-timeout
  transport output udptn
  dispatch-timeout 10000
  dispatch-character 13
  modem in
  autocommand udptn 255.255.255.255 /transmit
```

### Receiving Routers

```
interface ethernet 0
  ip address 10.99.98.97 255.255.255.192
  !
line 0 16
  transport output udptn telnet lat rlogin
  autocommand udptn 255.255.255.255 /receive
```

## Command Reference

This section documents new or modified commands. All other commands used with this feature are documented in the Cisco IOS Release 12.0 command reference publications.

- **transport output**
- **udptn**

## transport output

To determine the protocols that can be used for outgoing connections from a line, use the **transport output** line configuration command.

**transport output {all | lat | mop | nasi | none | pad | rlogin | telnet | udptn | v120}**

### Syntax Description

<b>all</b>	Selects all protocols.
<b>lat</b>	Selects the digital LAT protocol, which is the protocol used most often to connect routers to digital hosts.
<b>mop</b>	Selects Maintenance Operation Protocol (MOP).
<b>nasi</b>	Select NetWare Access Server Interface (NASI) as the output transport protocol.
<b>none</b>	Prevents any protocol selection on the line. The system normally assumes that any unrecognized command is a host name. If the protocol is set to <b>none</b> , the system no longer makes that assumption. No connection will be attempted if the command is not recognized.
<b>pad</b>	Selects X.3 PAD, used most often to connect routers to X.25 hosts.
<b>rlogin</b>	Selects the UNIX rlogin protocol for TCP connections. The rlogin setting is a special case of a Telnet connection. If an rlogin attempt to a particular host has failed, the failure will be tracked, and subsequent connection attempts will use a Telnet connection instead.
<b>telnet</b>	Selects the TCP/IP Telnet protocol. It allows a user at one site to establish a TCP connection to a login server at another site.
<b>udptn</b>	Selects User Datagram Protocol (UDP) Telnet (UDPTN) connections.
<b>v120</b>	Select the V.120 protocol for outgoing asynchronous over ISDN connections.

### Default

**Telnet**

### Command Mode

Line configuration

## Command History

Release	Modification
10.0	This command was introduced.
10.2	Keywords <b>all</b> , <b>lat</b> , <b>pad</b> , and <b>rlogin</b> added.
11.1	Keywords <b>mop</b> , <b>nasi</b> , and <b>v120</b> added.
12.0(5)T	Keyword <b>udptn</b> added.

## Usage Guidelines

You can specify one protocol, multiple protocols, all protocols, or no protocols. To specify multiple protocols, enter the keyword for each protocol, separated by a space.

Any settings made with the **transport output** command override settings made with the **transport preferred** command.

## Example

The following example enables UDPTN on the line:

```
transport output udptn
```

## Related Commands

Command	Description
<b>terminal transport preferred</b>	Specifies the protocol to use for the current session when a command does not specify a protocol.
<b>transport input</b>	Defines which protocols is used to connect to the line.
<b>transport preferred</b>	Specifies the protocol that is used if the user does not specify a protocol when initiating a connection.

## udptn

To transmit or receive asynchronous serial traffic by using UDPTN, use the **udptn** EXEC command.

```
udptn ip-address [port] [/transmit] [/receive]
```

### Syntax Description

<i>ip-address</i>	IP address
<i>port</i>	(Optional) UDP port that is to be used to transmit or receive.
<b>/transmit</b>	(Optional) Transmits asynchronous data as UDP packets, but silently discards any packets that are received from the network.
<b>/receive</b>	(Optional) Receives UDP packets from the network and sends them to the asynchronous line, but silently discards any other traffic received from the network.

### Defaults

Disabled

The default UDP port is 57.

### Command Modes

EXEC

### Command History

Release	Modification
12.0(5)T	This command was introduced.

### Usage Guidelines

Before you can transmit or receive asynchronous serial traffic, you must enable the **transport output** command on the line that will be transmitting or receiving.

To end the UDPTN session, use the **disconnect** EXEC command.



**Caution** Because of its ability to send raw UDP datagrams that might conflict with other protocols, UDPTN has an implicit access list that only allows UDPTN connections to UDP port 57 or UDP ports greater than 1024.

You can configure an access list to permit more or fewer ports, but Cisco suggests that you not modify this restriction if you do not fully understand the resulting security implications.

UDPTN connections will generate AAA accounting records if the **aaa accounting connection** command is enabled. The start of the session will be recorded, and the number of packets and bytes received and transmitted will be recorded at the end of the session.

## Examples

The following example enables the router to transmit UDP packets to IP address 175.49.49.49:

```
udptn 175.49.49.49 /transmit
```

## Related Commands

Command	Description
<b>transport output</b>	Defines the protocol that can be used for outgoing connections from a line.

## Debug Commands

This section documents new **debug** commands. All other commands used with this feature are documented in the Cisco IOS Release 12.0 command reference publications.

**debug udptn**

## debug udptn

To display debug messages for UDPTN events, use the **debug udptn** privileged EXEC command. Use the **no** form of this command to disable debugging output.

**[no] debug udptn**

### Defaults

Disabled

### Command History

Release	Modification
12.0(5)T	This command was introduced.

### Examples

```
Router# debug udptn
Router# udptn 172.16.1.1
Trying 172.16.1.1 ... Open

*Mar  1 00:10:15.191:udptn0:adding multicast group.
*Mar  1 00:10:15.195:udptn0:open to 172.16.1.1:57 Loopback0jjaassdd
*Mar  1 00:10:18.083:udptn0:output packet w 1 bytes
*Mar  1 00:10:18.087:udptn0:Input packet w 1 bytes
Router# disconnect
Closing connection to 172.16.1.1 [confirm] y
Router#
*Mar  1 00:11:03.139:udptn0:removing multicast group.
```

### Related Commands

Command	Description
<b>transport output</b>	Defines the protocol that can be used for outgoing connections from a line.
<b>udptn</b>	Enables transmission and/or reception of UDP packets.

