

---

# Protocol "D"

TCP/IP Protocol for controlling the dynamic routing engine

Fred Gleason

## Table of Contents

|                              |    |
|------------------------------|----|
| Overview .....               | 2  |
| Connection Management .....  | 2  |
| Exit .....                   | 2  |
| Ping .....                   | 2  |
| Alarms .....                 | 2  |
| List Clips .....             | 2  |
| List Silences .....          | 3  |
| List Tether .....            | 3  |
| Subscribe Clips .....        | 4  |
| Subscribe Silences .....     | 4  |
| Subscribe Tether .....       | 5  |
| Information .....            | 5  |
| List Destinations .....      | 5  |
| List GPIs .....              | 5  |
| List GPOs .....              | 6  |
| List Nodes .....             | 6  |
| List Sources .....           | 7  |
| Subscribe Destinations ..... | 8  |
| Subscribe GPIs .....         | 8  |
| Subscribe GPOs .....         | 8  |
| Subscribe Nodes .....        | 9  |
| Subscribe Sources .....      | 9  |
| Commands .....               | 9  |
| Clear Audio Crosspoint ..... | 10 |
| Clear GPIO Crosspoint .....  | 10 |
| Set Audio Crosspoint .....   | 10 |
| Set GPIO Crosspoint .....    | 10 |
| Set GPO State .....          | 11 |
| Set Virtual GPI State .....  | 11 |

## Overview

Messages to the DRouter dynamic routing service are by means of a TCP SOCK\_STREAM connection to TCP port 23883 on the host server.

Messages have the following general syntax:

*cmd-code* [*arg*] [. . .]**CR/LF**

*cmd-code*                      A single word, containing no whitespace, case-insensitive.

*arg*                              Zero or more arguments, delimited by a **TAB** character (ASCII 9).

**CR/LF**                              The ASCII character **CR** (13) followed by **LF** (10).

## Connection Management

Messages for managing connections to the service.

### Exit

**Exit**

Drop the TCP connection and end the session.

### Ping

**Ping**

Causes the remote end to return a PONG message.

## Alarms

Messages for receiving alarms and querying alarm states.

### List Clips

**ListClips**

Return a list of records delineating the currently available CLIP alarms, including current state.

|                  |  |
|------------------|--|
| <i>CLIP</i>      | The string CLIP  |
| <i>host-addr</i> | The IPv4 address of the parent node, in dotted-quad notation.                      |
| <i>slot</i>      | The slot position number of the destination on the parent node (zero-based).       |
| <i>type</i>      | The type of signal. Valid types are INPUT or OUTOUT.                               |
| <i>chan</i>      | The audio channel. Valid types are LEFT or RIGHT.                                  |
| <i>state</i>     | The alarm state. 1 means the alarm is active, whereas 0 means that it is inactive. |

## List Silences

### ListSilences

Return a list of records delineating the currently available SILENCE alarms, including current state.

|                  |  |
|------------------|--|
| <i>CLIP</i>      | The string SILENCE   |
| <i>host-addr</i> | The IPv4 address of the parent node, in dotted-quad notation.                      |
| <i>slot</i>      | The slot position number of the destination on the parent node (zero-based).       |
| <i>type</i>      | The type of signal. Valid types are INPUT or OUTOUT.                               |
| <i>chan</i>      | The audio channel. Valid types are LEFT or RIGHT.                                  |
| <i>state</i>     | The alarm state. 1 means the alarm is active, whereas 0 means that it is inactive. |

## List Tether

### ListTether

Return a record delinieating the current state of the tethering system, terminated by CR/LF. The record contains the following fields, delimited by TAB (ASCII 9):

|        |  |
|--------|--|
| TETHER | The string TETHER.   |
| Y N    | Indicates if the local <b>drouterd</b> (8) instance is (Y) or is not (N) active. |

## Note

If tethering has been disabled in **drouter.conf(5)**, then this command will always return Y.

# Subscribe Clips

## SubscribeClips

Return a list of CLIPADD records delinieating the currently active clip alarms, each record terminated by CR/LF (see the description of the CLIP message in the section called “List Clips” for a breakdown of the supplied fields). Whenever a new clip alarm is added, a corresponding CLIPADD record will be sent, while changes to an existing clip alarm will cause a CLIP record to be sent. Removal of an alarm from the system will generate a corresponding CLIPDEL record, containing the following fields:

|                  |  |
|------------------|--|
| CLIPDEL          | The string CLIPDEL.  |
| <i>host-addr</i> | The IPv4 address of the parent node, in dotted-quad notation.                |
| <i>slot</i>      | The slot position number of the destination on the parent node (zero-based). |
| <i>type</i>      | The type of signal. Valid types are INPUT or OUTOUT.                         |
| <i>chan</i>      | The audio channel. Valid types are LEFT or RIGHT.                            |

# Subscribe Silences

## SubscribeSilences

Return a list of SILENCEADD records delinieating the currently active silence alarms, each record terminated by CR/LF (see the description of the SILENCE message in the section called “List Silences” for a breakdown of the supplied fields). Whenever a new silence alarm is added, a corresponding SILENCEADD record will be sent, while changes to an existing silence alarm will cause a SILENCE record to be sent. Removal of an alarm from the system will generate a corresponding SILENCEDEL record, containing the following fields:

|                  |  |
|------------------|--|
| SILENCEDEL       | The string SILENCEDEL.   |
| <i>host-addr</i> | The IPv4 address of the parent node, in dotted-quad notation.                |
| <i>slot</i>      | The slot position number of the destination on the parent node (zero-based). |
| <i>type</i>      | The type of signal. Valid types are INPUT or OUTOUT.                         |
| <i>chan</i>      | The audio channel. Valid types are LEFT or RIGHT.                            |

## Subscribe Tether

### SubscribeTether

Return a record delinieating the current state of the tethering system, terminated by CR/LF (see the description of the `ListTether` message in the section the section called “List Tether” for a breakdown of the supplied fields). Whenever the state of the tethering system changes, a corresponding TETHER message will be sent.

## Information

Messages for enumerating resources and getting system information.

## List Destinations

### ListDestinations

Return a list of records delinieating the currently available destinations, terminated by CR/LF. Each record contains the following fields, delimited by TAB (ASCII 9):

|                          |   |
|--------------------------|---|
| <code>DST</code>         | The string <code>DST</code> .   |
| <code>host-addr</code>   | The IPv4 address of the parent node, in dotted-quad notation.   |
| <code>slot</code>        | The slot position number of the destination on the parent node (zero-based).  |
| <code>host-name</code>   | The host name of the parent node. Depending upon system configuration, this could be the name as programmed in the node or the name as reported via a DNS PTR lookup.   |
| <code>stream-addr</code> | The IPv4 address of the stream configured to be received, in dotted-quad notation. A value of <code>239.192.0.0</code> indicates that no stream is currently configured to be received --i.e. the destination is muted. |
| <code>dest-name</code>   | The name of the destination.  |
| <code>channels</code>    | The number of channels capable of being received by this destination. Possible values include 1, 2 or 8.  |

## List GPIs

### ListGpis

Return a list of records delinieating the currently available GPIs, terminated by CR/LF. Each record contains the following fields, delimited by TAB (ASCII 9):

|                  |   |
|------------------|---|
| <i>GPI</i>       | The string GPI.   |
| <i>host-addr</i> | The IPv4 address of the parent node, in dotted-quad notation.   |
| <i>slot</i>      | The slot position number of the GPI on the parent node (zero-based).  |
| <i>host-name</i> | The host name of the parent node. Depending upon system configuration, this could be the name as programmed in the node or the name as reported via a DNS PTR lookup. |
| <i>code</i>      | A string representing the state of the GPI lines, in the format <code>xxxxxx</code> .   |

## List GPOs

### ListGpos

Return a list of records delinieating the currently available GPOs, terminated by CR/LF. Each record contains the following fields, delimited by TAB (ASCII 9):

|                      |   |
|----------------------|---|
| <i>GPO</i>           | The string GPO.   |
| <i>host-addr</i>     | The IPv4 address of the parent node, in dotted-quad notation.   |
| <i>slot</i>          | The slot position number of the GPO on the parent node (zero-based).  |
| <i>host-name</i>     | The host name of the parent node. Depending upon system configuration, this could be the name as programmed in the node or the name as reported via a DNS PTR lookup. |
| <i>code</i>          | A string representing the state of the GPO lines, in the format <code>xxxxxx</code> .   |
| <i>name</i>          | The name of the GPO entry.  |
| <i>src-host-addr</i> | The IPv4 address of the source GPI node, in dotted-quad notation.   |
| <i>src-slot</i>      | The slot position number of the source GPI on the source node (zero-based).   |

## List Nodes

### ListNodes

Return a list of records delineating the currently available nodes, terminated by CR/LF. Each record contains the following fields, delimited by TAB (ASCII 9):

|                  |  |
|------------------|--|
| <i>node</i>      | The string NODE.   |
| <i>host-addr</i> | The IPv4 address of the node, in dotted-quad notation.   |
| <i>host-name</i> | The host name of the node. Depending upon system configuration, this could be the name as programmed in the node or the name as reported via a DNS PTR lookup. |
| <i>dev-name</i>  | The LWRP device name.  |
| <i>src-slots</i> | The number of source slot positions.   |
| <i>dst-slots</i> | The number of destination slot positions.  |
| <i>gpi-slots</i> | The number of GPI slot positions.  |
| <i>gpo-slots</i> | The number of GPO slot positions.  |

## List Sources

### ListSources

Return a list of SRC records, delineating the currently available sources, terminated by CR/LF. Each record contains the following fields, delimited by TAB (ASCII 9):

|                       |   |
|-----------------------|---|
| <i>src</i>            | The string SRC.   |
| <i>host-addr</i>      | The IPv4 address of the parent node, in dotted-quad notation.   |
| <i>slot</i>           | The slot position number of the source on the parent node (zero-based).   |
| <i>host-name</i>      | The host name of the parent node. Depending upon system configuration, this could be the name as programmed in the node or the name as reported via a DNS PTR lookup. |
| <i>stream-addr</i>    | The IPv4 stream address in dotted-quad notation.  |
| <i>stream-name</i>    | The name of the stream.   |
| <i>stream-enabled</i> | The current state of the stream. 1 if enabled or 0 if disabled.   |
| <i>channels</i>       | The number of channels being carried by the stream. Possible values include 1, 2 or 8.  |

---

|                   |  |
|-------------------|--|
| <i>block-size</i> | The number of PCM24 frames carried by each RTP packet. Possible values include 12 (Live Stereo), 60 (8 Channel Surround) and 240 (Standard Stereo/Mono). |
|-------------------|--|

## Subscribe Destinations

### SubscribeDestinations

Return a list of DSTADD records delinieating the currently available destinations, each record terminated by CR/LF (see the description of the DST message in the **ListDestinations** command for a breakdown of the supplied fields). Whenever a new destination is added, a corresponding DSTADD record will be sent, while changes to an existing destination will cause a DST record to be sent. Removal of a destination from the system will generate a corresponding DSTDEL record, containing the following fields:

|                  |  |
|------------------|--|
| DSTDEL           | The string DSTDEL.   |
| <i>host-addr</i> | The IPv4 address of the parent node, in dotted-quad notation.                |
| <i>slot</i>      | The slot position number of the destination on the parent node (zero-based). |

## Subscribe GPIs

### SubscribeGpis

Return a list of GPIADD records delinieating the currently available GPIs, each record terminated by CR/LF (see the description of the GPI message in the **ListGpis** command for a breakdown of the supplied fields). Whenever a new GPI is added, a corresponding GPIADD record will be sent, while changes to an existing GPI will cause a GPI record to be sent. Removal of a GPI from the system will generate a corresponding GPIDEL record, containing the following fields:

|                  |  |
|------------------|--|
| GPIDEL           | The string GPIDEL.   |
| <i>host-addr</i> | The IPv4 address of the parent node, in dotted-quad notation.        |
| <i>slot</i>      | The slot position number of the GPI on the parent node (zero-based). |

## Subscribe GPOs

### SubscribeGpos

Return a list of GPOADD records delinieating the currently available GPOs, each record terminated by CR/LF (see the description of the GPO message in the **ListGpos** command for a breakdown of the supplied fields). Whenever a new GPO is added, a corresponding GPOADD record will be sent, while



changes to an existing GPO will cause a GPO record to be sent. Removal of a GPO from the system will generate a corresponding GPODEL record, containing the following fields:

|                  |  |
|------------------|--|
| <i>GPODEL</i>    | The string GPODEL.   |
| <i>host-addr</i> | The IPv4 address of the parent node, in dotted-quad notation.        |
| <i>slot</i>      | The slot position number of the GPO on the parent node (zero-based). |

## Subscribe Nodes

### SubscribeNodes

Return a list of NODEADD records delineating the currently available nodes, each record terminated by CR/LF. Subsequently, for each newly detected node, a corresponding NODEADD record will be sent, while changes to an existing node will cause a NODE record to be sent. Removal of a node from the system will generate a corresponding NODEDEL record with the following fields:

|                  |  |
|------------------|--|
| <i>NODEDEL</i>   | The string NODEDEL.                                    |
| <i>host-addr</i> | The IPv4 address of the node, in dotted-quad notation. |

## Subscribe Sources

### SubscribeSources

Return a list of SRCADD records delineating the currently available sources, each record terminated by CR/LF (see the description of the SRC message in the **ListSources** command for a breakdown of the supplied fields). Whenever a new source is added, a corresponding SRCADD record will be sent, while changes to an existing source will cause a SRC record to be sent. Removal of a source from the system will generate a corresponding SRCDEL record, containing the following fields:

|                  |   |
|------------------|---|
| <i>SRCDEL</i>    | The string SRCDEL.  |
| <i>host-addr</i> | The IPv4 address of the parent node, in dotted-quad notation.           |
| <i>slot</i>      | The slot position number of the source on the parent node (zero-based). |

## Commands

Messages for changing the state of managed resources.

## Clear Audio Crosspoint

**ClearCrosspoint** *dst-host-addr dst-slot*

Clear the source to be received by an audio destination --i.e. mute the destination.

*dst-host-addr*                      The IPv4 address of the destination node, in dotted-quad notation.

*dst-slot*                              The slot position number of the destination on the parent node (zero-based).

## Clear GPIO Crosspoint

**ClearGpioCrosspoint** *gpo-host-addr gpo-slot*

Clear the source to be received by a GPO.

*gpo-host-addr*                      The IPv4 address of the GPO node, in dotted-quad notation.

*gpo-slot*                              The slot position number of the GPO on the parent node (zero-based).

## Set Audio Crosspoint

**SetCrosspoint** *dst-host-addr dst-slot src-host-addr src-slot*

Set the source to be received by an audio destination.

*dst-host-addr*                      The IPv4 address of the destination node, in dotted-quad notation.

*dst-slot*                              The slot position number of the destination on the parent node (zero-based).

*src-host-addr*                      The IPv4 address of the source node, in dotted-quad notation.

*src-slot*                              The slot position number of the source on the parent node (zero-based).

## Set GPIO Crosspoint

**SetGpioCrosspoint** *gpo-host-addr gpo-slot gpi-host-addr gpi-slot*

Set the source to be received by a GPO.

---

|                      |  |
|----------------------|--|
| <i>gpo-host-addr</i> | The IPv4 address of the GPO node, in dotted-quad notation.           |
| <i>gpo-slot</i>      | The slot position number of the GPO on the parent node (zero-based). |
| <i>gpi-host-addr</i> | The IPv4 address of the GPI node, in dotted-quad notation.           |
| <i>gpi-slot</i>      | The slot position number of the GPI on the parent node (zero-based). |

## Set GPO State

**SetGpoState *gpo-host-addr gpo-slot code***

Set the state of a GPO device.

|                      |   |
|----------------------|---|
| <i>gpo-host-addr</i> | The IPv4 address of the GPO node, in dotted-quad notation.                            |
| <i>gpo-slot</i>      | The slot position number of the GPO on the parent node (zero-based).                  |
| <i>code</i>          | A string representing the state of the GPO lines, in the format <code>xxxxxx</code> . |

## Set Virtual GPI State

**SetGpiState *gpi-host-addr gpi-slot code***

Set the state of a virtual GPI device.

|                      |   |
|----------------------|---|
| <i>gpi-host-addr</i> | The IPv4 address of the virtual GPI node, in dotted-quad notation.                    |
| <i>gpi-slot</i>      | The slot position number of the virtual GPI on the parent node (zero-based).          |
| <i>code</i>          | A string representing the state of the GPI lines, in the format <code>xxxxxx</code> . |