



Digi Flex

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Making
DEVICE NETWORKING
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Making
DEVICE NETWORKING
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About This Manual

Purpose

The purpose of this reference manual is to provide descriptions of all Digi Flex commands and command fields, which—along with the rest of the Digi Flex library—should enable those responsible for setting up, maintaining, and using Digi Flex to complete these tasks.

Audience

This manual is intended primarily for those who configure and administrator Digi Flex, though some parts of the manual describe commands that users may execute as well.

Scope

This manual provides reference information on commands and command fields. It does not provide task-oriented information, which can be found in the other manuals in the Digi Flex library.

About the Command Line Interface

Introduction

This section discusses the Digi Flex command line interface. It provides information on the following topics:

- The keys you use to navigate along the command line and edit commands
- Digi Flex on-line help
- Tips on abbreviating Digi Flex commands

Navigation and Editing Keys

Use the following keys to navigate along the command line and edit Digi Flex commands:

Action	Keys
Delete the character to the left of the cursor	Back space
Delete the character to the left of the cursor	Ctrl h
Executes the command typed on the command line	Enter

Online Help

On-line help is available for Digi Flex commands. The following describes how to access help:

For information on...	Type
All Digi Flex commands	? (with no additional parameters)
A specific command	The command and then ? Example: dhcp ? Example: term ?

Abbreviating Commands

All Digi Flex commands can be abbreviated. You need only supply a sufficient number of command letters to uniquely identify the command.

Manual Organization and Conventions

Organization of Command Information

Commands are listed in alphabetical order. Each command description contains the following topics:

- Introduction, which describes the
 - Purpose of the command
 - Privileges required to execute the command
 - Related information
- Command Syntax, which describes how you issue the command. Often Command Syntax is divided into separate discussions on how you use the command to accomplish a specific purpose. For example, the syntax discussion on the `set logins` command is divided into separate discussion on
 - Using the command to display the logins table
 - Using the command to configure login parameters
- Command Fields, which provides a description of each command field.
- Command Examples, which are examples of how the command is used.

In addition, when necessary, some command descriptions provide

- Additional information on the purpose of the command or some aspect of the command that cannot adequately be discussed elsewhere. The heading that identifies these discussions starts with the word “About.” For example, the discussion on the `set route` command includes a topic called “About the Route Table.”
- A description of the output that results from issuing the command. These descriptions are provided when the description of output fields is not the same as the description of command (input) fields. The `info` command is a good example.

Syntax Conventions

Presentation of command syntax in this manual follows these conventions:

- Brackets ([]) surround optional material.
- Braces ({}) surround entries that require you to choose one of several options, which are separated by the UNIX pipe (|).
- Non-italicized text indicates literal values, that is, fields or values that must be typed exactly as they appear. `yes` and `no` options are examples of literals.
- Italicized text indicates that a type of information is required in that field. For example, *filename*, means that the name of a file is required in the field.

audit

Use the audit command to create, display, and delete audits.

About the audit Command

The audit command enables you to audit various system activities. It also allows you to determine how much information to collect. The following describes the system components that can be audited and audit levels.

Audit Types

Audit Type	Description
async	Audits asynchronous port activity.
all	Audits all the components in this list
auth	Audits authentication activity.
firewall	Audits firewall activity.
isdn	Audits ISDN activity.
net	Audits network activity.
ppp	Audits PPP negotiation.
printer	Audits the lpd daemon.
sync	Audits synchronous ports.
system	Audits system parameters (DHCP, RADIUS, save,...)

Audit Levels

Type	Description
warning	Displays error messages
notice	Displays messages about the device's activity
info	Displays detailed messages about the device's running processes
debug	Displays all existing messages with maximum detail

Required Privileges

Administrator only.

Related Information

None.

Syntax

```
audit add {buffer | console} level type
audit add {syslog | trap} remote-ip level type
audit delete {buffer | console} level type
audit delete {syslog | trap} remote-ip level type
audit last number
audit start
audit stop
```

```
audit view
```

```
audit show
```

Fields

```
audit add {buffer | console} level type
```

configures the following:

- Whether to store or send audit information to the console
- The level and type of audit. See the discussion above.

```
audit add {syslog | trap} remote-ip level type
```

configures the following:

- Whether to display audit information using the syslog or trap daemon
- The IP address of the system to which audits will be sent
- The level of the audit. See the discussion above.
- The type of system activity to audit. See the discussion above.

```
audit delete {buffer | console} level type
```

deletes audit logs written to the buffer or console

```
audit delete {syslog | trap} remote-ip level type
```

deletes syslog or trap settings on the server identified by its IP address

```
audit start
```

starts an audit

```
audit stop
```

stops an audit

```
audit view
```

displays the results of an audit

```
audit last [nb-line]
```

displays the last so many lines of the audit

```
audit show
```

displays the current audit configuration parameters

Examples

Sending an Audit to the Console

```
audit add console warning printer
```

Sending the Audit to a Remote System

```
audit add syslog 192.168.1.120 warning auth
```

Displaying All Audit Files

```
audit view
```

Displaying the Last 15 Lines of an Audit

```
audit last 15
```

Deleting an Audit

```
audit delete syslog 192.168.1.120 warning auth
```

bridge

Use this command to set up the device server as a bridge to forward frames from its own Ethernet network to a device server on another Ethernet network.

Required Privileges

Administrators only.

Syntax

```
bridge listen listen_UDP_port
bridge remote remote_host_IP
bridge reset
bridge show
bridge trace {off | all | data | no_data | cmd}
```

Fields

`bridge listen listen_udp_port`

sets the UDP port used for the bridging function. The default, 4000, should be changed only if a firewall prevents you from using this port number.

`bridge remote remote_host_ip`

sets the IP address of the remote device server to which frames should be forwarded

`bridge reset`

resets the bridge, which is required whenever you change bridge-related configuration options

`bridge show`

displays the current bridge information

`bridge trace {off | all | data | no_data | cmd}`

does the following:

- off, disables the trace option
- all, enables tracing on all options listed
- data, limits tracing to data only
- no_data, limits tracing to protocol information only
- cmd, enables tracing of commands

Examples

Displays Present Bridge Configuration

```
bridge show
```

Sets Remote IP of Bridge

```
bridge remote 168.192.2.25
```

Turns off Trace Option

```
bridge trace off
```

dhcp

Use this command to define and display DHCP options.

Required Privileges

Administrator only.

Syntax

```
dhcp client mode {dhcp / bootp / none}
dhcp client server server_ip-address
dhcp client show
dhcp client timeout timeout-in-seconds
dhcp relay enable {yes / no}
dhcp relay {server1 / server2} ip-address
dhcp server enable {yes | no}
dhcp server gateway ip-address
dhcp server interface {eth0 | eth1}
dhcp server ipstart ip-address
dhcp server lease time-in-seconds
dhcp server release ip-address
dhcp server show
dhcp server wins ip-address
```

Fields

`dhcp client mode {dhcp / bootp / none}`
determines whether device server operates as a DHCP/bootp client and if it does whether it uses DHCP or bootp

- `dhcp` means that the device server functions as a DHCP client, using a DHCP server to configure its IP address.
- `bootp` means that the device server uses the services of a bootp server to acquire an IP address.
- `none` means that this feature is off and an IP address will be configured using the `ifconfig ip` command.
- The default client mode is `dhcp`.

`dhcp client server ip-address`
configures device server to use the services of a particular DHCP server, identified by its IP address

`dhcp client show`
displays DHCP client parameters

`dhcp client timeout timeout-in-seconds`
configures the time in seconds that the device server waits for a response from the DHCP server before sending another DHCP request

`dhcp relay enable {yes / no}`
determines whether device server relays DHCP requests over its PPP links. The default is `no`, which means it does not relay DHCP requests

over PPP links.

`dhcp relay {server1 / server2} ip-address`
identifies--by IP address--the server or servers to which DHCP requests are relayed

`dhcp server enable {yes | no}`
enables the Digi Flex to relay DHCP requests

`dhcp server gateway ip-address`
default gateway address reports to the DHCP client

`dhcp server interface {eth0 | eth1}`
defines the network port for DHCP

`dhcp server ipstart ip-address`
sets the first IP address the server gives to DHCP clients

`dhcp server lease time-in-seconds`
sets lease time before releasing an IP address to a DHCP client

`dhcp server release ip-address`
releases an IP address that's being used

`dhcp server show`
displays the current DHCP server settings.

`dhcp server wins ip-address`
wins server IP address reports to DHCP client

Examples

Enabling device server to Function as a DHCP Client

In this example, device server is configured as a DHCP client.

```
dhcp client mode dhcp
```

Configuring a Particular DHCP Server

In this example, device server is configured to use a particular DHCP server.

```
dhcp client server 192.168.1.1
```

Configuring the DHCP Relay Function

In this example, device server is configured as a DHCP relay.

```
dhcp relay enable yes
```

dialer

Use this command to create a dialer form.

Required Privileges

Administrator only.

Related Information

See the following commands:

- "ppp" on page 39

Syntax

```
dialer add name
dialer comment name "comment"
dialer delete name
dialer dest name destination-ip
dialer mask name mask
dialer phonenb name phone number
dialer permanent name {yes | no}
dialer ppp name ppp name
dialer script name "script string"
dialer show name
```

Fields

dialer add *name*

adds a dialer form to the configuration and assigns the name specified

dialer comment *name* "*comment*"

adds a comment to a dialer form

dialer delete *name*

deletes a particular dialer form, which is identified by its name

dialer dest *name* *destination-ip*

specifies the IP address of a remote system. The device server uses this information to select an appropriate dialer form when making outbound calls on PPP links.

dialer mask *name* *mask*

is the subnet mask to use on this PPP subnet

dialer phonenb *name* *phone number*

adds a phone number to be dialed to this dialer form

dialer ppp *name* *ppp name*

links a PPP form to this dialer form

dialer permanent *name* {yes | no}

determines whether to set the associated link in a permanently active state. Specifying yes means that the link will always be active and not require dialing. Use this setting when you use a cross over serial cable instead of a modem. The default is no, which means that a number must be dialed before the link becomes active.

dialer script *name* “*script string*”

defines a dialer script for a username and password (dialout only)

dialer show [*name*]

indicates that the device server is to display one of the following:

- A list of all dialer forms (if no name is specified)
- Attributes of a particular dialer form, which is identified by its name

Examples

Creating a Dialer Form

This example creates a dialer form:

```
dialer add out
```

Deleting a Dialer Form

This example deletes a dialer form:

```
dialer delete out
```

Displaying a Dialer Form

This example displays a dialer form:

```
dialer show out
```

Adding Comments to a Dialer Form

This example adds comments to a dialer form:

```
dialer comment out "Destination is New York office"
```

Choosing a Dialer Form Based on an IP Address

In this example, the device server uses the first command to choose an appropriate dialer form to make an outbound PPP call to the destination identified by this IP address. The second command specifies an appropriate subnet mask for the PPP subnetwork.

```
dialer dest out 192.168.1.0
```

```
dialer mask out 255.255.255.0
```

Linking a PPP Form to a Dialer Form

In this example, a PPP form is linked to a dialer form:

```
dialer ppp out dial-out
```

Specifying a Phone Number on the Dialer Form

In this example, a telephone number is specified for this dialer form.

```
dialer phonenb out 0251454556
```

domain

This command enables the Administrator to:

- Maintain a host table of name-to-IP address mappings
- Configure the device server to use the services of a DNS server

Required Privileges

Administrator only.

About DNS and the Host Table

When the device server has to map a name to an IP address, it first consults its internal host table. If it does not find a matching entry, it queries the primary DNS server. If the primary server does not respond, it queries the secondary DNS server.

Syntax

```
domain add host-name ip-address
domain delete host-name
domain hostname digi-device-host-name
domain {server1 | server2} ip-address
domain show
domain suffix domain-suffix
```

Fields

domain add *host-name ip-address*

adds a name-to-IP address entry to the device server-maintained host table. The host table is searched first for a matching entry before DNS servers are queried.

domain delete *host-name*

removes a name from the host table

domain hostname *digi-device-host-name*

assigns a DNS name to the device server, which is then maintained in the host table

domain {server1 | server2} *ip-address*

configures the addresses of a primary and secondary DNS server. The primary DNS server is queried before the secondary server. The secondary server is only queried if there is no response from the primary server.

domain show

displays DNS settings

domain suffix *domain-suffix*

configures the suffix for the device server's domain

Examples

Adding an Entry to the Host Table

In this example, a host named myhost is added to the host table:

```
domain add myhost 166.7.13.25
```

Deleting an Entry in the Host Table

In this example, an entry is deleted from the host table:

```
domain delete myhost
```

Displaying DNS Parameters

In this example, DNS parameters are displayed:

```
domain show
```

Assigning a Name to the device server

In this example the device server is assigned a DNS name:

```
domain hostname flex1
```

Configuring DNS Servers

In this example, the device server is configured to use the services of two DNS servers:

```
domain server1 166.72.4.10
```

```
domain server2 166.72.5.10
```

exit

Use this command to close a shell.

Required Privileges

None.

Related Information

See "logout" on page 20.

Syntax

```
exit
```

Example

```
exit
```

help

Use this command to

- Display a list of commands
- Display a list of options for a particular command

Required Privileges

None.

Syntax

```
help [command]
```

Field

```
help [command]
```

displays a list of commands or the options for a particular command

Example

Displaying a List of Commands

In this example, a list of commands is displayed:

```
help
```

Displaying a List of Options for the ifconfig Command

In this example, a list of options for the ifconfig command is displayed:

```
help ifconfig
```

ifconfig

Use the ifconfig command to configure and display network interface parameters.

Required Privileges

Administrator only.

Related Documentation

None

Syntax

```
ifconfig broadcast eth0 broadcast-address
```

```
ifconfig ip eth0 ip-address
```

```
ifconfig mtu eth0 mtu-size
```

```
ifconfig netmask eth0 mask
```

```
ifconfig show
```

Fields

ifconfig broadcast eth0 *broadcast-address*

configures the broadcast address used on the Ethernet network to which the device server's is connected. Use eth0 to designate the Ethernet interface. Specify the broadcast address used on the network. The usual broadcast address on a class C network is the network ID part of the IP address occupying the first 3 octets and 255 occupying the last octet.

Example:

```
ifconfig broadcast eth0 191.10.10.255
```

ifconfig ip eth0 *ip-address*

configures the IP address for the device server's Ethernet interface. Use eth0 to designate the Ethernet interface.

ifconfig mtu eth0 *mtu-size*

configures the maximum transfer unit (frame size) that the device server will use on its Ethernet interface. The default is 1500 and the range is 1 to 1500. Use eth0 to designate the Ethernet interface.

ifconfig netmask eth0 *mask*

configures the subnet mask for this subnetwork. Use eth0 to designate the Ethernet interface.

Example:

```
ifconfig netmask eth0 192.10.10.255
```

ifconfig show

displays network-related parameters

Examples

Display Network-Related Parameters

In this example, network-related parameters are displayed:

```
ifconfig show
```

Configuring an IP Address and Mask for the Ethernet Interface

In this example, an IP address and subnet mask are configured for the Ethernet interface:

```
ifconfig ip eth0 193.72.12.6  
ifconfig netmask eth0 255.255.255.0
```

Configuring an MTU

In this example, an MTU is set for the Ethernet network:

```
ifconfig mtu eth0 1500
```

lock

Use this command to lock the current telnet session.

Required Privileges

All users.

Syntax

```
lock
```

Example

```
lock
```

logout

Use this command to exit from the device shell.

Required Privileges

None.

Related Information

See "exit" on page 16.

Syntax

```
logout
```

Example

In this example, a user logs out.

```
logout
```

modem

Use this command to create a modem form.

Required Privileges

Administrator only.

Related Information

See the following commands:

- "test" on page 71

Syntax

```
modem add name
modem comment name "comment"
modem delete name
modem dial name dial-string
modem init name init-string
modem show name
```

Fields

modem add *name*

adds a modem form to the configuration

modem comment *name* "*comment*"

adds a comment to a particular modem form, which is identified by its name

modem delete *name*

deletes a modem form from the configuration

modem dial *name* *dial-string*

specifies a dial string to add to a modem form, which will be used to dial outbound calls

modem init *name* *init-string*

specifies an initialization string for a modem form, which the device server uses to initialize a modem connected to one of its serial ports or an embedded modem

modem show [*name*]

displays one of the following:

- A list of all modem forms (when no modem form name is supplied)
- Parameters associated with a particular modem form (when a modem form name is supplied)

Examples

Creating a Modem Form

In this example, a modem form named md56k is added to the configuration:

```
modem add mod56k
```

Display a List of Modem Forms

In this example, a list of modem forms is displayed:

```
modem show
```

Displaying Parameters Associated with a Particular Modem Form

In this example, all parameters of the mod56k modem form are displayed:

```
modem show mod56k
```

Deleting a Modem Form from the Configuration

In this example, a modem form named mod56k is deleted from the configuration:

```
modem delete mod56k
```

Adding Comments to a Modem Form

In this example, comments are added to a modem form:

```
modem comment mod56k "modem 56000 bps"
```

Configuring an Initialization String

In this example, a modem initialization string is defined:

```
modem init mod56k at&k3%c3
```

Configuring a Dial String

In this example, a dial string is configured:

```
modem dial mod56k atx3dt
```

module

Use the module command to insert, remove, and reset device server firmware modules.

Required Privileges

Administrator only.

Related Information

None.

Syntax

```
module insert module-name server-ip-address path
```

```
module remove module-name
```

```
module reset module-name
```

Fields

module insert *module-name* *server-ip-address* *path*
inserts a new firmware module.

- *module-name* is the name of the module
- *server-ip-address* is the IP address of the TFTP server on which the module resides
- *path* is the path to the module

module remove *module-name*
removes the module specified

module reset *module-name*
resets the module specified

Examples

Inserting a New Module

```
module insert modbus 192.1.10.12 modbus-2r3.mod
```

Removing a Module

```
module remove mod1.bin
```

Resetting a Module

```
module reset mod1.bin
```

mux

Use this command to configure device server for mux mode.

About Mux Mode

Mux mode enables direct communication between serial devices connected to different device server units from across a TCP/IP network. In other words, the network connection is simply an extension of a serial cable. The communicating serial devices are not aware of the intervening network. In mux mode, the transport service used is TCP.

Required Privileges

Administrator only.

Related Information

See "serial_ppp" on page 59 and "mux_dg" on page 28.

Syntax

```
mux add remote-ip-address remote-port ports
mux dataonly {yes | no} ports
mux delete remote-ip-address remote-port ports
mux disable remote-ip-address remote-port ports
mux enable remote-ip-address remote-port ports
mux ioflow ports
mux keepalive integer ports
mux redirects {none | dtr | rts | dtr_rts} ports
mux redirdcd {none | dtr | rts | dtr_rts} ports
mux redirdsr {none | dtr | rts | dtr_rts} ports
mux remote ports
mux show ports
mux sync {yes | no} ports
mux timeout milliseconds remote-ip-address remote-port ports
```

Fields

mux add *remote-ip-address remote-port ports*

specifies the remote mux port at the other end of this connection, that is, the port on the remote device server

- *remote-ip-address* is the IP address of the other device server.
- *remote-port* is the number of the port on the other device server.
- *port* is the port on this device server that this command configures

mux dataonly {yes | no} *port*

determines whether to send only raw data on this mux connection. Raw data is data without any control information.

port is the port on this device to which this command applies.

mux delete *remote-ip-address remote-port ports*

deletes the remote mux port

- *remote-ip-address* is the IP address of the remote device server.
- *remote-port* is the number of the port on the other device server.
- *port* is the port on this device server that this command configures

mux disable remote-ip-address remote-port ports
disables the mux port of a remote device

- *remote-ip-address* is the IP address of the remote device server.
- *remote-port* is the number of the port on the other device server.
- *port* is the port on this device server that this command configures

mux enable remote-ip-address remote-port ports
enables the mux port of a remote device

- *remote-ip-address* is the IP address of the remote device server.
- *remote-port* is the number of the port on the other device server.
- *port* is the port on this device server that this command configures

mux ioflow port
displays the input/output data on the specified port

mux keepalive milliseconds port
is the time in milliseconds the Digi Flex will wait on an idle mux session before closing the port. The range is 0 to 65535 and the default is 0.

mux redirects {none | dtr | rts | dtr_rts} port
redirects the CTS signal on the port specified to the cable pin that normally carries the DTR, RTS, or both DTR and RTS signals.

mux redirdcd {none | dtr | rts | dtr_rts} ports
redirects the DCD signal on the port specified to the cable pin that normally carries the DTR, RTS, or both DTR and RTS signals

mux redirdsr {none | dtr | rts | dtr_rts} ports
redirects the DSR signal on the port specified to the cable pin that normally carries the DTR, RTS, or both DTR and RTS signals

mux remote port
displays the remote port(s) information

mux show port
shows the mux configuration for the port specified

mux sync {yes | no} port
determines whether communication is synchronized between the two mux ports, one on this device and the other on the remote device configures the following.

port is the port on this device to which this command applies.

mux timeout milliseconds remote-ip-address remote-port ports
sets the Digi Flex timeout for a response from a remote device

- *remote-ip-address* is the IP address of the remote device server.
- *remote-port* is the number of the port on the other device server.
- *port* is the port on this device server that this command configures

Examples

Adding a Mux Port on a Remote Device

```
mux add 192.168.54.2 2 2
```

Displaying Input and Output on a Mux Port

```
mux ioflow 1
```

Showing the Mux Configuration for a Port

```
mux show 2
```

Disabling a Remote Mux Port

```
mux disable 192.1.2.3 2 2
```

Enabling a Remote Mux Port

```
mux enable 192.1.2.3 1 2
```

If this option is enabled (yes), you must define signals redirection rules.

To redirect DCD signal on DTR signal, enter :

```
mux dcdredirect dtr 1
```

```
mux dcdredirect rts 1
```

To redirect DCD signal on both DTR and RTS signals, enter:

```
mux dcdredirect dtr_rts 1
```

To stop redirection of DCD signal, use the following command :

```
mux dcdredirect none 1
```

To redirect DSR signal on DTR signal, enter :

```
mux dsrdredirect dtr 1
```

To redirect DSR signal on RTS signal, use the following command :

```
mux dsrdredirect rts 1
```

To redirect DSR signal on both DTR and RTS signals, enter:

```
mux dsrdredirect dtr_rts 1
```

To stop redirection of DSR signal, enter:

```
mux dsrdredirect none 1
```

To redirect CTS signal on DTR signal, enter:

```
mux ctsredirect dtr 1
```

To redirect CTS signal on RTS signal, use the following command :

```
mux ctsredirect rts 1
```

To redirect CTS signal on both DTR and RTS, enter:

```
mux ctsredirect dtr_rts 1
```

To stop redirection of CTS signal, enter:

```
mux ctsredirect none 1
```

The following command enables you to setup a remote Digi IP address.
Example with remote Digi device *192.168.2.1* :

```
mux ip 192.168.2.1
```

The mux port command enables you to setup a port number with a remote Digi device. Example if port number 2 of the remote device must receive the connection enter:

```
mux port 2 1
```

To show the mux options for port 1, enter the following command:

```
mux show 1
```

To set RTS signal on, enter:

```
mux defaultrts yes 1
```

To set DTR signal on, enter:

```
mux defaultdtr yes 1
```

The following command enables you to trace in audit all data that forwards to a mux port:

```
mux debug yes 1
```

WARNING: when this option is enabled, audit size increases very fast. Be careful when you use this command.

Options of TCP mux mode:

Flush = yes. This option flushes buffers when you close a mux port.

Flush = no. This option waits for the I/O buffers to empty before closing a port.

Example:

```
mux flush yes 1
```

To check every 30 seconds if 'raw' server is 'alive', enter:

```
mux keepalive 30 1
```

This test increase network traffic. You should disable this option (0 seconds) if network link between 'mux' client and 'raw' server is not permanent.

Options of UDP mux mode:

To define a delay of 100 micro-seconds between data reception from remote equipment and data transmission to the serial port, enter:

```
mux delay 100 1
```

This delay allows the user to cancel latency generated by the TCP/IP network and to copy as best as possible the initial delay between each character or signal state.

This delay can be used during all communication or can be triggered by a signal state. In this case, this delay is not applied when there is no more data being sent to the port.

Each signal state is represented by an integer.

Permanent 0

DTR_ON 1

DTR_OFF 16

RTS_ON 2

RTS_OFF 32

DTR_ON & RTS_ON 3

DTR_ON & RTS_OFF 17

DTR_OFF & RTS_ON 18

DTR_OFF & RTS_OFF 48

To define RTS_ON state as trigger for mux delay, enter the following command :

```
mux trigger 2 1
```

To come back to a permanent delay, type :

```
mux trigger 0 1
```

mux_dg

Use this command to configure device server for mux_dg mode.

About Mux_dg Mode

Mux_dg mode enables direct communication between serial devices connected to different device server units from across a TCP/IP network using a UDP transport service. In other words, the network is simply an extension of a serial cable. The communicating serial devices are not aware of the intervening network.

This mode has been designed to work with client/server or master/slave protocols. Do not use this mode for data transfer. Use MUX TCP or RAWTCP mode for data transfer.

Required Privileges

Administrators only.

Related Information

See "mux" on page 24.

Syntax

```
mux_dg add remote-ip-address remote-port {all | ports}  
mux_dg delay delay-in-microseconds {all | port}  
mux_dg delete remote-ip-address remote-port {all | ports}  
mux_dg disable remote-ip-address remote-port {all | ports}  
mux_dg enable remote-ip-address remote-port {all | ports}  
mux_dg remote {all | ports}  
mux_dg show {all | ports}  
mux_dg sync {yes | no} {all | ports}  
mux_dg trigger {0|1|16|2|32|3|17|18|48} {all | ports}
```

Fields

`mux_dg add remote-ip-address remote-port {all | ports}`

specifies the remote mux_dg port at the other end of this connection, that is, the port on the remote device server

- *remote-ip-address* is the IP address of the other device server.
- *remote-port* is the number of the port on the other device server.
- *port* is the port on this device server that this command configures

`mux_dg delay delay-in-microseconds port`

sets the compulsory delay between input and output of the peer to peer link. The default value is 30 000 µs and has been optimized for working with most configurations. The range is 0 to 999 999 µs.

The compulsory delay allows the Digi Flex to avoid “holes” inside frames (holes due to network errors). The “holes” can disrupt the operation of industrial equipment.

`mux_dg delete remote-ip-address remote-port {all | ports}`

deletes the remote mux_dg port

- *remote-ip-address* is the IP address of the remote device server.
- *remote-port* is the number of the port on the other device server.
- *port* is the port on this device server that this command configures

`mux_dg disable remote-ip-address remote-port {all | ports}`

disables the mux_dg port of a remote device

- *remote-ip-address* is the IP address of the remote device server.
- *remote-port* is the number of the port on the other device server.
- *port* is the port on this device server that this command configures

`mux_dg enable remote-ip-address remote-port {all | ports}`

enables the mux_dg port of a remote device

- *remote-ip-address* is the IP address of the remote device server.
- *remote-port* is the number of the port on the other device server.
- *port* is the port on this device server that this command configures

`mux_dg remote {all | ports}`

displays the remote port(s) information

`mux_dg show {all | ports}`

shows the mux configuration for the port specified

`mux_dg sync {yes | no} {all | port}`

determines whether communication is synchronized between the two mux ports, one on this device and the other on the remote device configures the following.

port is the port on this device to which this command applies.

`mux_dg trigger {0|1|16|2|32|3|17|18|48} {all | ports}`

is used only when synchronization is used (see the sync field). This field determines the signal that begins the mux delay, which is defined on the delay field. Use the following table for information on specifying the

trigger.

If you specify...	Then, the delay period...
0	Is permanent.
1	Begins when DTR is raised
16	Begins when DTR is lowered
2	Begins when RTS is raised
32	Begins when RTS is lowered
3	Begins when DTR and RTS are raised.
17	Begins when DTR is raised and RTS is lowered
18	Begins when DTR is lowered and RTS is raised
48	Begins when DTR and RTS are lowered

Examples

Adding a Mux_dg Port on a Remote Device

```
mux_dg add 192.168.54.2 2 2
```

Displaying Input and Output on a Mux_dg Port

```
mux_dg ioflow 1
```

Showing the Mux_dg Configuration for a Port

```
mux_dg show 2
```

Disabling a Remote Mux_dg Port

```
mux_dg disable 192.1.2.3 2 2
```

Enabling a Remote Mux Port

```
mux_dg enable 192.1.2.3 2 2
```

netstat

Use this command to display network-related statistics.

Required Privileges

Administrator only.

Related Information

None

Syntax

```
netstat all
netstat icmp
netstat ip
netstat tcp
netstat udp
```

Fields

```
netstat all
    displays statistics related to ICMP, IP, UDP, and TCP
netstat icmp
    displays statistics related to ICMP
netstat ip
    displays IP-related statistics
netstat tcp
    displays TCP-related statistics
netstat udp
    displays UDP-related statistics
```

Examples

Displaying All Network-Related Statistics

In this example, statistics related to ICMP, IP, TCP, and UDP are displayed.

```
netstat all
```

Displaying ICMP-Related Statistics

In this example, ICMP-related statistics are displayed:

```
netstat icmp
```

netstat icmp

```
inerrors
```

Number of ICMP messages with specific errors (bad length...).

indestunreachs
number of icmp "destination unreachable" messages received.

intimeexcds
number of icmp "time exceeded" messages received.

inparamprobs
number of icmp "parameter problem" messages received.

insrcquenchs
number of icmp "source quench" messages received.

inredirects
number of icmp redirect "messages" received.

inechos
number of icmp "echo request" messages received.

inechoreps
number of icmp "echo reply" messages received.

intimestamps
number of icmp "timestamp request" messages received.

intimestampreps
number of icmp "timestamp reply" messages received.

inaddrmasks
number of icmp "address mask request" messages received.

inaddrmaskreps
number of icmp "address mask reply" messages received.

outmsgs
number of icmp send messages attempted to send.

outerrors
number of icmp cannot be sent due to icmp internal problems.

outdestunreachs
number of icmp "destination unreachable" messages sent.

outtimeexcds
number of icmp "exceed time" messages sent.

outparmprobs
number of icmp "parameter problem" messages sent.

outsrcquenchs
number of icmp "source quench" messages sent.

outredirects
number of icmp "redirection" messages sent.

outechos
number of icmp "echo" messages sent.

outechoreps
number of icmp "echo reply" messages sent.

outtimestamps
number of icmp "timestamp request" messages sent.

ourtimestampreps
number of icmp "timestamp reply" messages sent.

outaddrmasks
number of icmp "address mask request" messages sent.

outaddrmaskreps
number of icmp " address mask reply" messages sent.

netstat ip Output

This command displays the network IP status.

DefaultTTL (Time-To-Live)

Default Time To Live

InReceives

Number of received datagrams (included defects datagrams)

InHdrErrors

Number of datagrams received with no IP header

InAddrErrors

Number of datagrams received with no valid destination address

ForwDatagrams

Number of datagrams received and discarded with wrong IP address

InUnknownProtos

Number of datagrams received and discarded due to unknown protocol

InDiscards

Number of datagrams received and discarded for unknown reasons

InDelivers

Number of datagrams received successfully and delivered to IP
user-protocols

(ICMP,TCP,...).

OutRequests

Number of datagrams supplied to IP protocol from high level
protocols (ICMP,TCP,...)

OutDiscards

Number of datagrams transmitted and discarded for unknown reasons

ReasmTimeouts

Maximum time allocated to receive fragments before reassemble

ReasmReqds

Number of IP fragments unable to reassemble

ReasmOKs

Number of IP fragments reassembled with success

ReasmFails

Number of errors detected by the IP reassemble algorithm

FragOKs

Number of IP fragments reassembled with success

FragFails

Number of IP fragments that have been discarded because they needed to be defragmented at this entity, but could not be done.

FragCreates

Number of IP fragments that have been generated as a result of fragmentation at this entity.

NETSTAT UDP

This command displays the network UDP status.

Required Privileges

All users.

Syntax

NETSTAT UDP

Examples

netstat udp

Udp:

InDatagrams 13 NoPorts 13 InErrors 0

OutDatagrams 26

InDatagrams

Number of datagrams received and transmitted to the high level protocol.

NoPorts

Number of datagrams received without any application on the destination port.

InErrors

Number of datagrams received, but not delivered for reasons other than the lack of an application at the destination port.

OutDatagrams

Number of UDP datagrams sent.

NETSTAT TCP

This command displays the network TCP status.

Required Privileges

All users.

Syntax

Enter the following command to display the network TCP status:

NETSTAT TCP

Tcp:

RtoAlgorithm 1 RtoMin 0 RtoMax 0

MaxConn 0 ActiveOpens 3 PassiveOpens 0

AttemptFails 0 EstabResets 0 CurrEstab 3

InSegs 2079 OutSegs 2271 RetransSegs 0

RtoAlgorithm

Algorithm used.

1 : Retransmit time-other

2 : Constant

3 : MIL-STD-1778

4 : Van Jacobson

RtoMin

Minimum delay for retransmission

RtoMax

Maximum delay for retransmission

MaxConn

Maximum connections

Active opens

Number of TCP connections opened.

PassiveOpen

s Number of TCP connections closed.

AttempFails

Number of time, TCP connections failed.

EstabResets

Number of active reset.

CurrEstabs

Number of active connections

InSegs

Number of defective segments received, included defect segments.

OutSegs

Number of segments received, excluded retransmit segments

RetransSegs

Number of segments retransmitted.

NETSTAT ALL

This command displays all network statistics.

Required Privileges

All users.

Syntax

NETSTAT ALL

Examples

This command displays all network statistics. It is an equivalent for all preceding netstat commands.

```
netstat all
```

passwd

Use this command to change your own password.

About the passwd Command

When you enter the password command you will be prompted to enter a new password and then re-enter it. A save command must be issued to save the password to flash memory.

Required Privileges

None.

Related Information

None.

Syntax

```
passwd
```

Example

In this example the user enters the passwd command and then is prompted to enter a new password and then confirm the password.

```
passwd
```

ping

Use this command, which requests ICMP echo replies from a network device--to determine whether a device is active and reachable.

Required Privileges

None.

Related Information

See "traceroute" on page 74.

Syntax

```
ping {domain-name | ip-address}
```

Field

```
ping {domain-name | ip-address}
```

tells the device server to send an ICMP echo reply to the device identified by either its DNS name or IP address

Examples

Using a DNS Name

In this example, a DNS name is used to specify the device to which to send the ping:

```
ping stambrose
```

Using an IP address

In this example, an IP address is used to specify the device to which to send the ping:

```
ping 200.1.1.28
```

ppp

Use this command to configure PPP forms.

Required Privileges

Administrator only.

Related Information

See the following command:

- "dialer" on page 12
- "serial_ppp" on page 59
- "serial_ppp" on page 59
- "user" on page 75

Syntax

```
ppp add name
ppp asyncmap name asyncmap
ppp authname name authentication-name
ppp comment name "comment"
ppp comp name {none | bsd}
ppp delete name
ppp local name local-ip-address
ppp mask name mask
ppp mru name max-receive-unit
ppp mtu name max-transmit-unit
ppp password name password
ppp proxy name {yes | no}
ppp remote name remote-ip-address
ppp route name {yes | no | default}
ppp security name {none | pap | chap}
ppp show [name]
```

Fields

ppp add *name*
creates a PPP form with the name specified

ppp asyncmap *name asyncmap*
is a mask for PPP connections that defines which of the 32 asynchronous control characters to transpose. These characters, in the range 0x00 to 0x1f are used by some devices to implement software flow control. These devices may misinterpret PPP transmission of control characters and close the link. This mask tells PPP which characters to transpose.

The default is FFFF, which means transpose all 32 control characters. Any combination is valid. The following are the most likely masks that you will want to use:

- FFFFFFFF, which means transpose all control characters
- 00000000, which means transpose none
- 000A0000, which means transpose Ctrl-Q and Ctrl-S

`ppp authname name authentication-name`

is the name to use in replies to PAP and CHAP authentication requests

`ppp comment name "comment"`

are comments to add to this PPP form. Be sure to enclose comments in quotation marks.

`ppp comp name {none | bsd}`

determines whether to implement BSD compression on the PPP link. The default is none.

`ppp delete name`

deletes a PPP form, identified by its name

`ppp local name local-ip-address`

is the IP address on this side of the PPP link. Use one of the following:

- 255.255.255.255 if you want the remote machine to provide an IP address for the local PPP interface
- 0.0.0.0 if you want to use the address provided for the Ethernet interface
- A standard IP address (in dotted decimal format)

`ppp mask name mask`

is the mask to use on the PPP subnet

`ppp mru name max-receive-unit`

is the maximum receive unit (frame size in bytes) for the PPP link defined by this PPP form. The default is 1500 bytes and the range is 1500 bytes or less.

`ppp mtu name max-transmit-unit`

is the maximum transmission unit (frame size in bytes) for the PPP link defined by this PPP form. The default is 1500 bytes and the range is 1500 bytes or less.

`ppp password name password`

the password used to reply to PAP or CHAP requests

`ppp proxy name {yes | no}`

configures the device server performs Proxy ARP services for the device at the other end of the PPP link defined by this form

`ppp remote name remote-ip-address`

is the IP address of the system at the other end of the PPP link defined by this form. Use one of the following:

- 255.255.255.255 if you want the remote machine to provide an IP address for the remote PPP interface
- A standard IP address (in dotted decimal format)

`ppp route name {yes | no | default}`

creates a route after a connection is established

`ppp security name {none | pap | chap | papcrypt}`

determines the type of security to use on the PPP link defined by this PPP form.

- none means do not enable PAP or CHAP authentication
- pap means enable PAP authentication
- chap means enable CHAP authentication
- papcrypt means encrypted PAP authentication

`ppp show [name]`

displays one of the following:

- A list of PPP forms (if no name is specified)
- Parameters on a particular PPP form (if a name is specified)

Examples

Adding a PPP Form to the Configuration

In this example, a PPP form is added to the configuration:

```
ppp add ppp-out
```

Deleting a PPP Form from the Configuration

In this example, a PPP form is deleted from the configuration:

```
ppp delete ppp-out
```

Displaying a List of PPP Forms

In this example, a list of PPP forms is displayed.

```
ppp show
```

Adding a Comment to a PPP Form

In this example, a comment is added to a PPP form.

```
ppp comment name "This form is for outbound calls"
```

Displaying a Form Parameters

In this example, parameters for a form are displayed.

```
ppp show dial-out
```

Configuring PAP and CHAP Authentication

In this example, PAP and CHAP authentication are configured.

```
ppp security dial-out pap
```

```
ppp security dial-out chap
```

Configuring a Local IP Address

In this example, a local IP address, is configured for the serial port interface defined in this PPP form.

```
ppp local dial-out 192.168.1.50
```

Configuring a Remote IP Address

In this example, an IP address for the system at the other end of the PPP link is configured:

```
ppp remote dial-out 192.168.1.60
```

Configuring a Subnet Mask

In this example, a subnet mask is configured for the PPP subnet.

```
ppp mask dial-out 255.255.255.0
```

Configuring Proxy ARP

In this example, the device server provides Proxy ARP services for the remote PPP system.

```
ppp proxy dial-out yes
```

printer

Use this command to manage the printing properties.

Note: Some printers do not manage the line feed correctly. In this case, the documents will be printed with a “stairs effect.” To resolve this problem, enable the line feed management for the device with the nlmap option.

Required Privileges

None

Related Documentation

See "serial_ppp" on page 59.

Syntax

```
printer name printer-name ports
printer nlmap {yes | no} ports
printer show ports
```

Fields

printer name *printer-name* *ports*
assigns a name to the printer connected to the port specified

printer nlmap {yes | no}
turns line feed management on or off

printer show *ports*
displays the settings for the printer that is connected to the port specified

Examples

Assigning a Name to a Printer

```
printer name marketing-print 2
```

Turning Line Feed Management On

```
printer nlmap yes 2
```

Displaying Printer Settings

```
printer show 1
```

raw

Use this command to setup the advanced parameters of the raw mode.

Required Privileges

Administrators only.

Related Information

See "rawtcp" on page 45

Syntax

```
raw redircts {none | dtr | rts | dtr_rts} {all | ports}
raw redirdcd {none | dtr | rts | dtr_rts} {all | ports}
raw redirdsr {none | dtr | rts | dtr_rts} {all | ports}
raw rflowctrl {yes | no} {all | ports}
raw show {all | ports}
```

Fields

`raw redircts {none | dtr | rts | dtr_rts} {all | ports}`

ties the CTS signal to the signal or signals specified, so that when the CTS signal changes states, so does the other signal

`raw redirdcd {none | dtr | rts | dtr_rts} {all | ports}`

ties the DCD signal to the signal or signals specified, so that when the DCD signal changes states, so does the other signal

`raw redirdsr {none | dtr | rts | dtr_rts} {all | ports}`

ties the DSR signal to the signal or signals specified, so that when the DSR signal changes states, so does the other signal

`raw rflowctrl {yes | no} {all | ports}`

enables or disables flow control for a specified port

`raw show {all | ports}`

displays raw information on the specified port(s)

Examples

Displaying Raw Information on Port 2

```
raw show 2
```

Tying DSR to RTS

```
raw redirdsr rts 2
```

Disabling Flow Control on Port 2

```
raw rflowctrl no 2
```

rawtcp

Use this command to establish raw TCP connections.

Required Privileges

Administrators only.

Related Information

None.

Syntax

```
rawtcp cer {yes | no} {all | ports}
rawtcp cervalue hexadecimal_num {all | ports}
rawtcp inputdelay delay_in_milli-seconds {all | ports}
rawtcp inputframesize {1..16384} {all | ports}
rawtcp listenport integer {all | ports}
rawtcp nodelay {yes | no} {all | ports}
rawtcp outputdelay delay_in_milli-seconds {all | ports}
rawtcp outputframesize {1..16384} {all | ports}
rawtcp remote {all | ports}
rawtcp remotehost ip_address:tcp_port {all | ports}
rawtcp retry delay_in_milli-seconds {all | ports}
rawtcp show {all | ports}
rawtcp sorcvbuf {1..16384} {all | ports}
rawtcp sosnddelay delay_in_milli-seconds {all | ports}
rawtcp tcp {both|client|server} {all | ports}
```

Fields

rawtcp cer {yes | no} {all | ports}

enables or disables detection of the character that defines the end of a block of serial data

rawtcp cervalue hexadecimal_num {all | ports}

configures the end of block character (in hexadecimal), which the device server uses to determine the end of a block of serial data

rawtcp inputdelay delay_in_milli-seconds {all | ports}

configures the period in milliseconds to hold raw data before sending it to the device connected to the serial port. The default range is 0 and the range is 0 to 999,999.

rawtcp inputframesize {1..16384} ports

configures the maximum size of a block of serial data that will be passed to the device on the serial port specified. The default is 256 bytes.

rawtcp listenport integer ports

sets the TCP port number that the device server uses for raw data.

rawtcp nodelay {yes | no} ports

data is transmitted immediately (no delay).

`rawtcp outputdelay delay_in_milli-seconds ports`
configures the period in milliseconds to hold raw data before sending it to network. The default is 0 and the range is 0 to 999,999.

`rawtcp outputframesize {1..16384} ports`
configures the maximum frame size.

`rawtcp remote ports`
displays a list of remote rawtcp ports

`rawtcp remotehost ip_address:tcp_port ports`
configures the IP address and TCP port number to identify a remote host and a TCP port, which will be used to establish an automatic raw connection

`rawtcp retry delay_in_milli-seconds ports`
configures the maximum number of time to attempt to connect to a host before determining that the host is unreachable. The default is 5 and the range is 1 to 999.

`rawtcp show ports`
displays rawtcp information for the ports specified

`rawtcp sorcvbuf {1..16384} ports`
sets the size of the socket receiver buffer. The connection is closed when the data limit is reached.

`rawtcp sosnddelay delay_in_milli-seconds ports`
sets a delay for a frame broadcast to the remote host. If a response doesn't arrive in a given time, the connection is closed

`rawtcp tcp {both|client|server} ports`
configures the rawtcp mode for the port, client, server, or both

Examples

Display Rawtcp Port Information

```
rawtcp show 21
```

Set Input Buffer Size on Port 2

```
rawtcp inputframesize 256 2
```

Set Input Frame Delay on Port 2

```
rawtcp inputdelay 25 2
```

realport

Use this command to set RealPort parameters.

Required Privileges

Administrators only.

Related Information

See "test" on page 71.

Syntax

```
realport debug {0 | 1 | 2 | 3}
realport disable
realport enable
realport reset
realport show
realport status
```

Fields

```
realport debug {0 | 1 | 2 | 3}
    sets realport debug levels. The lowest level (0) is the default and it turns
    off debug mode.

realport disable
    disables the realport service

realport enable
    enables the realport service

realport reset
    resets the realport service

realport show
    displays realport port information

realport status
    displays realport status
```

Examples

Displaying RealPort Port Information

```
realport show
```

Enabling RealPort

```
realport enable
```

Displaying RealPort Status

```
realport status
```

Adjusting Debugging Levels

```
realport debug 3
```

reset

Use this command to activate changes in the configuration and restart services.

Required Privileges
Administrator only.

Syntax

```
reset dhcp
reset domain
reset firewall
reset mux_dg
reset net eth0
reset printer
reset serial ports
reset sync ports
```

Fields

reset dhcp
 restarts dhcp and activates any changes

reset domain
 resets DNS configuration to the defaults

reset firewall
 resets the firewall configuration to the defaults

reset mux_dg
 resets mux_dg configuration to the defaults

reset net eth0
 resets the network configuration, which is identified by its network interface name, eth0.

reset printer
 resets the printer configuration to the defaults

reset serial *ports*
 resets the configuration for the port specified to the defaults

Examples

Resetting Port Configuration

```
reset serial 1
```

Resetting the Configuration for the Ethernet Interface

```
reset net eth0
```

rlogin

Use this command to make an rlogin connection to a specified host.

Required Privileges
None.

Related Documentation

See "telnet" on page 67.

Syntax

```
rlogin [user user-name] {domain-name | ip-address}
```

Fields

```
rlogin user user-name {domain-name | ip-address}
```

is the command that initiates an rlogin session with a remote host.

- *user-name* identifies the user. This name is passed to the system to which this rlogin connection is made
- *domain-name* and *ip-address* are alternate ways of identifying the remote system.

Examples

Using a DNS Name

```
rlogin user sammy poe
```

Using an IP Address

```
rlogin 192.168.0.1
```

route

Use this command to display and edit the routing table.

Required Privileges

Administrator only.

Related Documentation

None.

Syntax

```
route add host interface ip-address gateway-ip-address
route add net interface {default | ip-address} gateway-ip-address mask
route delete {default | ip-address}
route show
route static
```

Fields

`route add host interface ip-address gateway-ip-address`

adds a static route to the host identified by its IP address:

- *interface* is the network interface. For the Ethernet interface, always use eth0.
- *ip-address* is the IP address of the host that will be reached by this route
- *gateway-ip-address* is the address to which all packets destined for the host are to be forwarded

`route add net interface {default | ip-address} gateway-ip-address mask`

adds a static route to a network

- *interface* is the network interface. For the Ethernet interface always use eth0.
- `{default | ip-address}`: Use a specific network address to define a route to a specific network. To define a default router to which all packets bound for unknown destinations will be forwarded use default.
- *gateway-ip-address* is the IP address of a router (gateway)

`route delete {default | ip-address}`

deletes from the configuration either a route to a specific IP address or the default router

`route show`

displays dynamic routes

`route static`

displays all static routes

Examples

Displaying the Static Routing Table

```
route static
```

Adding a Static Route to Network

```
route add net eth0 192.168.2.0 192.168.1.30 255.255.255.0
```

Adding a Route to a Host

```
route add host eth0 192.168.1.20 255.255.255.255
```

Deleting a Route to a Host

```
route delete 192.168.2.0
```

To define a default route, the target must have a value of *0.0.0.0*. The word *default* is also accepted.

```
route add net eth0 0.0.0.0  
192.168.1.1 0.0.0.0
```

rtelnet

Use this command to configure a new TCP port number for the physical port, which can be used for reverse Telnet connections to the port. The default TCP port numbers are 2001 for port 1 and 2002 for port 2.

Required Privileges
Administrator only.

Syntax

```
rtelnet rtelport tcp-port port  
rtelnet rtelraw {yes | no} port  
rtelnet show {all | ports}
```

Fields

rtelnet rtelport tcp-port port
configures a new TCP port number for the port specified. The default TCP port numbers are 2001 for port 1 and 2002 for port 2.

rtelnet rtelraw (yes | no) port
enables or disables raw connections to the ports specified

rtelnet show {all | ports}
displays the TCP port number for the ports specified

Examples

Changing the TCP Port Number

```
rtelnet rtelport 8001 1
```

Enabling Raw Connections to a Port

```
rtelnet rtelraw yes 1
```

Displaying the Rtelnet Configuration

```
rtelnet show all
```

save

Use this command to save a new configuration to flash memory.

Required Privileges

Administrator only.

Syntax

```
save
```

Example

```
save
```

SERIAL

Use this command to setup and display asynchronous port parameters.

Required Privileges

Administrator only.

Syntax

```
SERIAL AUTOUSER <AUTO-USER NAME | NONE> <ALL | <PORTS LIST>>
```

```
SERIAL CSIZE <5 | 6 | 7 | 8> <ALL | <PORTS LIST>>
```

```
SERIAL ERASE <KEY> <ALL | <PORTS LIST>>
```

```
SERIAL FLOWCTRL <NONE | SOFT | HARD | SOFTHARD> <ALL | <PORTS LIST>>
```

```
SERIAL IOFLOW <ALL | <PORTS LIST>>
```

```
SERIAL LINECTRL <LOCAL | MODEM> <ALL | <PORTS LIST>>
```

```
SERIAL LOCALECHO <YES | NO>
```

```
SERIAL LOCALFLOW <YES | NO>
```

```
SERIAL MODE <MUX | MUX_DG | PPP | PRINTER | RAW | RTELNET | TERM> <ALL | <PORTS LIST>>
```

```
SERIAL MODEM <MODEM NAME | NONE> <ALL | <PORTS LIST>>
```

```
SERIAL NLMAP <YES | NO> <ALL | <PORT LIST>>
```

```
SERIAL PARITY <NONE | EVEN | ODD> <ALL | <PORTS LIST>>
```

```
SERIAL PPP <PPP NAME | NONE> <ALL | <PORTS LIST>>
```

```
SERIAL QUICK <YES | NO> <ALL | <PORTS LIST>>
```

```
SERIAL RTELNET <2001 .. 2016> <ALL | <PORTS LIST>>
```

```
SERIAL CONFIG <ALL | <PORTS LIST>>
```

```
SERIAL SESSION <ALL | <PORTS LIST>>
```

```
SERIAL STATUS <ALL | <PORTS LIST>>
```

```
SERIAL SHOW <ALL | <PORTS LIST>>
```

```
SERIAL SPEED <110 | .. | 115200 | 230400 | 460800> <ALL | <PORTS
```

LIST>>
SERIAL STOPB <1 | 2> <ALL | <PORTS LIST>>
SERIAL <TELINBIN | TELOUTBIN> <YES | NO> <ALL | <PORT LIST>>
SERIAL TERMTYPE <TERMINAL TYPE> <ALL | <PORTS LIST>>
SERIAL TIMEOUT <TIMEOUT IN SECONDS> <ALL | <PORTS LIST>>
SERIAL WELCOME <YES | NO> <ALL | <PORTS LIST>>
SERIAL WELCOMESTR <"WELCOME STRING"> <ALL | <PORTS
LIST>>

serial

Use this command to configure and display serial port settings.

Required Privileges

Administrator only.

Syntax

```
serial config {all | port}
serial connect {all | port
serial csize {5 | 6 | 7 | 8} {all / port}
serial fifo {yes | no} {all | port}
serial flowctrl {soft | hard | softhard | none} {all / port}
serial ioflow {all | port}
serial mode mode {all | port}
serial parity {none | odd | even} {all | port}
serial rs485 {yes | no} {all | port}
serial serial dtr {off | on} {all | port}
serial serial flushon {close | open both | never} {all | port}
serial serial linectl {local | modem} {all | port}
serial serial quick {yes | no} {all | port}
serial serial rts {off | on} {all | port}
serial show {all | port}
serial speed speed {all | port}
serial status {all | port}
serial stopb {1 | 2} {all | port}
serial trace type {all | port}
serial serial timeout milliseconds {all / port}
```

Field

serial config {all | *port*}

displays configuration parameters for the specified ports

serial connect *port*

displays configuration parameters implemented with the serial serial command

serial csize {5 | 6 | 7 | 8} {all | *port*}

configures the bits-per-character setting for the specified ports. Use the setting required by the peripheral connected to the port.

serial fifo {yes | no} {all | *port*}

determines whether to configure additional buffering for the ports specified. The default is on, which means additional buffering is available.

serial flowctrl {soft | hard | softhard | none} {all | *port*}

configures the flow control for the port specified. Use the flow control method required by the peripheral connected to the port.

`serial ioflow {all | port}`

displays statistics on the traffic transmitted and received through the port specified

`serial mode mode {all | port}`

configures the mode for the port, which can be one of the following:

- `term`, if this port is for terminal connections. This includes terminal connections over modems.
- `raw`, if this port is for a raw connection. This mode should also be used on one side of a Mux mode connection that uses TCP.
- `rawtcp`, if this port is for raw TCP connections
- `realport`, if this port will be a RealPort port
- `rtelnet`, if the port will be used for reverse Telnet connections
- `mux`, if the port will be used for a mux mode connection that uses TCP as the transport-layer protocol. The other Digi device in this type of connection should use raw mode.
- `mux_dg`, if the port will be used for a mux mode connection that uses the UDP transport-layer protocol. Both Digi devices must use this mode for this type of connection.
- `ppp`, if the port will be used for PPP connections
- `printer`, if the port will be used for a printer
- `module`, if this port is for Modbus connections

`serial parity {none | even | odd} {all | port}`

is the parity scheme to use on the port specified. Use the scheme required by the peripheral connected to the port. The default is none.

`serial rs485 {yes | no} {all | port}`

determines whether EIA-485 will be the line interface for the port specified. The default is no.

`serial serial dtr {on | off} {all | port}`

determines how the DTR signal is handled on the port specified. Use one of the following settings:

- `on`, which means that the DTR signal is always on. This means that the port is always ready to receive data
- `off`, which means that the DTR signal is always off. This means that this functions as an outbound port only. That is, the device connected to the serial port will not be able to initiate communication with this port.

`serial show {all | port}`

displays configuration settings for the port specified

`serial speed speed {all | port}`

sets the line speed for the port specified. The following are supported line speeds in bits-per-second: 50, 100, 110, 150, 200, 300, 600, 1200, 1800, 2400, 4800, 9600, 19200, 38400, 57600, 115200, 230400, and 460800.

`serial serial flushon {close | open | both | never} {all | port}`
configures if and when buffers are flushed. Use one of the following:

- close, which means flush buffers when closing the port
- open, which means flush buffers when opening the port
- both, which means flush buffers both on opening and closing the port
- never, which means never flush buffers

`serial serial linectl {local | modem} {all | port}`
configures whether device server monitors for the DCD signal.

- local means that the device server will not monitor the DCD signal. This is usually an appropriate setting for all peripherals except modems.
- modem means that the device server will monitor the DCD signal. This is usually an appropriate setting for modems.
- The default setting is local.

`serial serial quick {yes | no} {all | port}`
determines whether the Enter key must be pressed before the specified port opens. Specify yes, if you want the port to open immediately and no if you want the Enter key to be pressed before the port opens.

`serial serial rts {off | on} {all | port}`

- on, which means that the RTS signal is always on. This means that the port is always ready to transmit data
- off, which means that the RTS signal is always off. This means that this functions as an inbound port only.

`serial status {all | port}`
displays status information on the port specified

`serial stopb {1 | 2} {all | port}`
configures the number of stop bits used on the port specified. Use the number required by the peripheral connected to the port.

Examples

Displaying Parameters for All Ports

```
serial config all
```

Displaying Parameters for a Specific Port

```
serial config 2
```

Configuring Character Size for All Ports

```
serial csize 8 all
```

Configuring Character Size for an Individual Port

```
serial csize 8 2
```

Setting Software Flow Control on Port 2

```
serial flowctrl soft 2
```

Setting Line Control Configuration for a Modem

```
serial linectl modem 2
```

Configuring a Terminal

```
serial mode term 2
```

Configuring a PPP Connection

```
serial mode ppp 1
```

Configuring a Reverse Telnet Connection

```
serial mode rtelnet 1
```

Configuring a Printer

```
serial mode printer 2
```

Configuring a Mux Mode UDP Connection

```
serial mode mux_dg 2
```

Configuring a Mux Mode TCP Connection

```
serial mode raw 1
```

Note: The other device in this connection uses mux mode.

Setting Serial Parity to Even on Port 2

```
serial parity even 2
```

serial_ppp

Use the serial_ppp command to associate PPP and modem forms with serial ports and to display port-specific PPP information.

Required Privileges

Administrators only.

Related Information

None.

Syntax

```
serial_ppp autouser user_name {all | ports}  
serial_ppp modem {modem_name | none} {all | ports}  
serial_ppp name ppp_name {all | ports}  
serial_ppp show {all | ports}
```

Fields

```
serial_ppp autouser user_name {all | ports}  
    configures the autouser for the ports specified  
  
serial_ppp modem {modem name | none} {all | ports}  
    assigns a modem form to the ports specified  
  
serial_ppp name {ppp name} ports  
    assigns a PPP form to a port  
  
serial_ppp show {all | ports}  
    displays the PPP configuration for the ports specified
```

Examples

Displaying Port-related PPP Information

```
serial_ppp show all
```

Adds An Autouser for Port 2

```
serial_ppp autouser jberghoff 2
```

serial_realport

Use this command to display ports configured for RealPort.

Required Privileges

Administrators only.

Related Information

See "realport" on page 47.

Syntax

```
serial_realport show {all | ports}
```

Fields

```
serial_realport show {all | ports}  
    displays RealPort-related settings for the ports specified
```

Example: Display RealPort Information for All Ports

```
serial_realport show all
```

show

This command doesn't have much meaning for Flex. It allows you to display the list of separately purchased software modules. Although there are no separately purchased modules, Modbus and only Modbus will show up on this list.

snmp

Use this command to configure the SNMP (Simple Network Management Protocol) agent parameters.

Required Privileges

Administrator only.

Syntax

```
snmp contact administrator-name
snmp location administrator-address
snmp manager ip-address
snmp name product-name
snmp private private-string
snmp public public-string
snmp show
snmp reset
```

Fields

`snmp contact administrator-name`

is an user-defined identifier for the administrator responsible for this device. If this name contains spaces, surround the field in quotation marks.

`snmp location administrator-address`

is an user-defined address for the administrator responsible for this device. If this name contains spaces, surround the field in quotation marks.

`snmp manager ip-address`

is the IP address of the SNMP manager that will work with this agent

`snmp name product-name`

is a user-defined name for this device server. If this name contains spaces, surround the field in quotation marks.

`snmp private private-string`

is the secret (password) required to get MIB values controlled by this agent. The default is private.

`snmp public public-string`

is the secret (password) required for set MIB values controlled by this agent. The default key is public.

`snmp reset`

restarts the snmp service

Examples

Configuring Administrator Information

```
snmp contact "Joe Smith"
snmp location "Paris Office"
```

Configuring an SNMP Manager

```
snmp manager 192.168.1.20
```

Configuring a Private Key

```
snmp private button
```

Configuring a Public Key

```
snmp public button08ssl
```

Use this command to configure device server for secure socket layer (SSL) communication.

Required Privileges

Administrators only.

Related Information

See "snmp public button08ssl" on page 63.

Syntax

```
ssl check {yes | no}  
ssl cipher {none | des40 | des}  
ssl keylen {512 | 1024 | 2048}  
ssl newkey  
ssl show
```

Fields

```
ssl check {yes | no}  
????????????????????????????????  
ssl cipher {none | des40 | des}  
sets the encryption method or disables encryption  
ssl keylen {512 | 1024 | 2048}  
sets the keylength for encryption. The default is 512.  
ssl newkey  
generates a new secure key  
ssl show  
displays the current SSL settings.
```

Examples

Displays Current SSL Settings

```
ssl show
```

Disables SSL Encryption

```
ssl cipher none
```

Generates New Encryption Key

```
ssl new
```

system

Use this command to display and set system parameters.

Required Privileges
Administrator only.

Syntax

```
system config load
system config path storage_path
system config server storage_server_ip_address
system config store
system country country code --> eg: uk, fr, us...
system factory
system language {english | francais}
system monouser
system prompt "prompt string"
system radius account {server_node_name | ip_address}
system radius acctport tcp_port_no._of_accounting_server
system radius acctretries accounting_server_request_retries
system radius accttimeout accounting_server_request_timeout
system radius auth {server_node_name | ip_address}
system radius authport tcp_port_no._of_authentic._server
system radius authretries authentic._server_request_retries
system radius authtimeout authentic._server_request_timeout
system radius secret "key"
system rawtcp tcp_port_number
system reboot
system rip {yes | no}
system show
system update ip_address release_filename
system upgrade {raw | type}
system viewpwd {yes | no}
```

Fields

system config path *storage-path*

is the path and file name of the file that contains the configuration, which can be uploaded and downloaded to and from a server

system config load

downloads the configuration from the server

system config server *storage-server-ip-address*

is the IP address of the server on which the device server configuration is stored

system config store

uploads the configuration to the server

system country *country_code*
enter the country code for US, France, UK, etc.

system factory
restores the configuration to factory defaults

system language
select either English or French

system monouser
used to update firmware, shuts down all other processes for update

system prompt "*prompt string*"
defines a string that will serve as the system prompt

system radius account {*server-node-name* | *ip-address*}
is the DNS name or IP address of a RADIUS accounting server

system radius acctport *acct-tcp port*
is the TCP port to use for communication with the RADIUS accounting server. The default is 1646.

system radius acctretries *accounting-request-retries*
is the number of requests to send to an accounting server before giving up

system radius accttimeout *accounting-request-timeout*
is the time to wait for a response from an accounting server before sending another request

system radius auth {*server-node-name* | *ip-address*}
is the DNS name or IP address of a RADIUS authentication server

system radius authport *auth-tcp-port*
is the TCP port to use for communication with the RADIUS authentication server. The default is 1645.

system radius authretries *authentication-request-retries*
is the number of requests to send to an authentication server before giving up

system radius authtimeout *authentication-request-timeout*
the time for a response from an authentication server before sending another request

system radius secret *key*
is the key or password to use with the RADIUS server

system rawtcp *tcp_port_number*
sets the TCP listening port for the rawtty mode.

system reboot
reboots the system

system rip {*yes* / *no*}
enables or disables dynamic routing using RIP

system show
displays the system parameters

`system update {server-node-name | ip-address} file-name`
is the DNS name or IP address of a server that holds a new firmware file (*file-name*). TFTP must be active on this host in order to download the firmware. Choose only the first file for the update, the second file will load automatically.

`system viewpwd {yes | no}`
enables or disables the display of the password

Examples

Displaying All System Parameters

```
system show
```

Storing a Configuration File on a Server

```
system config path "/etc/digi.cfg"  
system config server 192.168.1.10  
system config store
```

Restoring a Configuration File

```
system config load
```

Configuring a RADIUS Authentication Server

```
system radius auth 192.168.5.10
```

Configuring a RADIUS Accounting Server

```
system radius account 192.168.5.11
```

Configuring a RADIUS Secret (password)

```
system radius secret button
```

Restoring the Factory Default Configuration

```
system factory
```

Enabling Dynamic Routing

```
system rip yes
```

telnet

Use this command to open a Telnet session.

Required Privileges

None

Related Information

None.

Syntax

```
telnet {domain-name / ip-address} tcp_port
```

Fields

{domain-name / ip-address}

is either the DNS name or IP address of the device to which the Telnet connection will be made

tcp-port

is a TCP port that identifies a physical port

Examples

Using a DNS Name

```
telnet poe
```

Using an IP Address

```
telnet 200.1.1.20
```

Telnetting to a Port

```
telnet poe 2002
```

term

Use this command to set up a port for a terminal.

Required Privileges

All users.

Related Information

None.

Syntax

```
term autouser user-name {all | ports}
term close session-num {all | ports}
term eof ^key {all | ports}
term erase ^key {all | ports}
term keycode0 ^key {all | ports}
term keycode1 ^key {all | ports}
term keycode2 ^key {all | ports}
term keycode3 ^key {all | ports}
term kill ^key {all | ports}
term localecho {yes | no} {all | ports}
term localflow {yes | no} {all | ports}
term modem {modem-name | none} {all | ports}
term session {all | ports}
term sessionkey {all | ports}
term show {all | ports}
term telinbin {yes | no} {all | ports}
term teloutbin {yes | no} {all | ports}
term termttype {terminal-type} {all | ports}
term welcome {yes | no} {all | ports}
term welcomestr {welcome-string} {all | ports}
```

Field

term autouser *user-name* {all | *ports*}
defines an autouser, which means that anyone using the port will not be required to enter a user ID or password

term close session-num {all | *ports*}
closes an active Telnet session.

term eof ^*key* {all | *ports*}
configures the end of file key for the port or ports specified. The default key is ^D

term erase ^*key* {all | *ports*}
configures the end of file key for the port or ports specified. The default key is ^H

term kill ^*key* {all | *ports*}
configures the kill key for the port or ports specified. The default key is ^C.

term localecho {yes | no} {all | *ports*}
 configures whether device server echos typed characters back to the display. The default is yes, but a Telnet server often changes this parameter.

term localflow {yes | no} {all | *ports*}
 turns local flow control on or off for the ports specified

term modem {*modem-name* | none} {all | *ports*}
 configures a modem form for the ports specified

term session {all | *ports*}
 displays a list of all active terminal sessions

term sessionkey {all | *ports*}
 displays a list of the key sequences configured to initiate multiple terminal sessions

term keycode0 ^*key* {all | *ports*}
 determines the key sequence used to access the first session on a port

term keycode1 ^*key* {all | *ports*}
 determines the key sequence used to access the second session on a port

term keycode2 ^*key* {all | *ports*}
 determines the key sequence used to access the third session on a port

term keycode3 ^*key* {all | *ports*}
 determines the key sequence used to access the fourth session on a port

term show {all | *ports*}
 displays term-related configuration settings for the ports specified

term telinbin {yes | no}{all | *ports*}
 enables or disables data filtering on data reception from a Telnet server. Yes means use filtering (seven bits) and no means do not use data filtering (eight bits). The default is no filtering (8 bits).

term teloutbin {yes | no}{all | *ports*}
 enables or disables data filtering on data reception from a Telnet client. Yes means use filtering (seven bits) and no means do not use data filtering (eight bits). The default is no filtering (8 bits).

term termttype *terminal-type* {all | *ports*}
 configure one of the following terminal types on the ports specified: ansi, vt300, vt320, vt200, vt220,vt100, wyse50, wyse60, wyse100, wyse350, wyse120, wyse 150 et wyse370.

term welcome {yes | no} {all | *ports*}
 determines whether a welcome banner is displayed when a user connects to the port specified. If you use this field, specify a welcome string on the welcomestr field.

term welcomestr *welcome-string* {all | *ports*}
 configures the welcome string to display on the ports specified. This string can be up to 80 characters long. Enclose the string in quotation marks.

Examples

Displaying All Terminal-Related Port Properties

```
show term all
```

Turning Local Echo Off

```
serial term localecho no 2
```

Turning Local Flow Control On

```
serial term localflow yes 2
```

Associating a Modem Form

```
serial modem usrpro56 2
```

Enabling Data Filtering on All Ports

```
term telinbin yes all
```

```
term teloutbin yes all
```

Configuring a Terminal Type

```
term termtype wyse50 2
```

Configuring a Welcome String

```
term welcome no 1
```

```
term welcomestr "Welcome to Digi device server" 1
```

test

Use this command to determine if the terminal is configured properly for the device's port.

About the test Command

This command allows a user to check if the terminal configuration suits the device's port configuration. This test continually displays a list of characters. Use the <CTRL-C> sequence to stop this test.

Required Privileges

None.

Syntax

```
test console
test serial port
```

Fields

test console
displays the complete ASCII character set

test serial
initiates a port test when the loopback plug is in the port

Example

```
test serial 2
```

time

Use this command to display and configure the device server's time and date.

Required Privileges

Administrator only.

Syntax

```
time [mm/dd/yy hh:mm:ss]
time frequency {boot | hour | day | month}
time gmt -12 .. 12
time netbname netbios-server-name
time protocol {daytime | time | netbios | none}
time server ip-address
time show
```

Fields

`time [mm/dd/yy hh:mm:ss]`

does one of the following:

- Without optional fields, the command reports the system time.
- With optional fields, the command sets the time and date.

`time frequency {boot | hour | day | month}`

determines how often the device server queries the time server for an time update

`time gmt -12 .. 12`

is the number of hours between your local time and the Greenwich Mean Time. Countries east of GMT use - and countries west of GMT use + hours.

`time netbname netbios-server-name`

is the name of a Netbios server

`time protocol {daytime | time | netbios | none}`

is the protocol to use to query the time server. Use none if you want to turn this function off. The time protocol uses port 37.

`time server ip-address`

is the IP address of a time server

`time show`

displays system time-related parameters

Examples

Determining the Current System Time and Date

```
time
```

Setting the System Time and Date

```
time 12/25/02 12:00:00
```

Configuring the IP Address of a Time Server

```
time server 192.168.1.120
```

Configuring the Time Protocol

```
time protocol daytime
```

Configuring the Time Difference with Greenwich Mean Time

```
time gmt 6
```

Displaying Time Parameters

```
time show
```

traceroute

Use this command to display the route used by a packet to reach its destination.

Required Privileges

All users.

Related Information

See "ping" on page 38.

Syntax

```
traceroute {domain-name | ip-address}
```

Field

```
traceroute {domain-name | ip-address}
```

is either the DNS name or IP address of the device to which a route will be traced

Examples

Using an IP Address

```
traceroute 192.168.1.100
```

Using a DNS Name

```
traceroute DigiFlex
```

user

Use this command to configure users.

Required Privileges

Administrator only.

Related Information

See the following:

- "ppp" on page 39
- "serial" on page 55
- "telnet" on page 67

Syntax

```
user add user-name password
user audit user-name {yes | no}
user comment user-name "comment"
user callback user-name {none | static | dynamic}
user callbacknb user-name {1 | 2 | 3} callback-phone-number
user delete user-name
user in user-name {yes | no}
user mode user name {shell | telnet}
user out user-name {yes | no}
user netaddr user-name ip-address-for-ppp
user netmask user-name ip-mask-for-ppp
user show [user-name]
user telnetaddr user-name {1 | 2 | 3} ip-address
user telnetport user-name {1 | 2 | 3} tcp-port
user telnetscript user name {1 | 2 | 3} "script"
```

Fields

user add *user-name password*

adds a user to the configuration and assigns the user a password

user audit *user-name* {yes | no}

configures an audit for this user, which means all interactions with the device server are sent to an audit file

`user callback user-name {none | static | dynamic}`
configures the call back feature, which is a security feature. Once an inbound user identifies him- or herself the device server calls the user at one of the telephone numbers specified on the `callbacknb` field.

- `none` disables the feature
- `static` means that the device server will call back the user on the first telephone number specified on the call back list
- `dynamic` means that the device server will call back the user if the incoming call matches one of the telephone numbers on the call back list

`user callbacknb user-name {1 | 2 | 3} callback-phone-number`
are call back numbers. Use 1 to designate the first call back number, 2 the second, and 3 the third. Use this field along with the `user callback` field.

`user comment user-name "comment"`
adds comments to a user form. Enclose comments in quotation marks.

`user delete user-name`
deletes a user from the configuration

`user in user-name {yes | no}`
configures whether the user has permission for inbound calls on the serial ports

`user mode user name {shell | telnet | ssh}`
determines the mode for the user

`user out user-name {yes | no}`
configures whether the user has permission for outbound calls on the serial ports

`user netaddr user-name ip-address-for-ppp`
configures an IP address for a PPP user

`user netmask user-name ip-mask-for-ppp`
configures an address mask for a PPP user

`user show [user-name]`
displays one of the following:

- A list of all users (if the `user-name` option is not specified)
- The attributes of a particular user (if the `user-name` option is specified)

`user telnetaddr user-name {1 | 2 | 3} ip-address`
configures the IP addresses of devices to which the user will be connected automatically. The second and third IP addresses will be tried (in that order) if the user cannot be connected to the first IP address.

`user telnetport user-name {1 | 2 | 3} tcp-port`
is a TCP port to use for automatic connections by this user during a telnet session. Specify a TCP port for each IP address specified in the previous field

`user telnetscript user name {1 | 2 | 3} "script"`
configures scripts that are passed to a system and can be used to log on and access applications. Specify a script for each IP address specified on the `telnetaddr` field.

Examples

Displaying a List of Users

```
user show
```

Creating a User

```
user add paul paswd
```

Deleting a User

```
user delete paul
```

Adding Comment to a User Form

```
user comment paul 'Outbound connections only'
```

Configuring a User for Dial-in Connections

```
user in paul
```

Configuring a User for Dial-out Connections

```
user out paul
```

Activating Dynamic Call Back

```
user callback paul dynamic
```

Configuring the First Number in a Call Back List

```
user callbacknb paul 1 0251323232
```

Configuring the Second Number of a Call Back List

```
user callbacknb paul 2 0251323232
```

Configuring an Audit for a User

```
user audit paul yes
```

Configuring an IP Address and Mask for a User

```
user netaddr paul 192.168.1.50
```

```
user netmask paul 255.255.255.0
```

Configuring an Automatic Telnet Session

```
user telnetaddr 192.168.1.19
```

who

Use this command to displays a list of users presently connected to the device.

Required Privileges

All users.

Related Information

None.

Syntax

```
{who | who am i}
```

Field

```
{who | who am i}
```

displays information about system users.

- who displays a list of all current users
- who am i identifies the issuer of the command

Examples

Displaying a List of All Current Users

```
who
```

Identifying the Issuer of the Command

```
who am i
```