

InterNiche Command Reference Manual

Interniche Legacy Document

Version 1.00

Date: 11-May-2017 17:37

All rights reserved. This document and the associated software are the sole property of HCC Embedded. Reproduction or duplication by any means of any portion of this document without the prior written consent of HCC Embedded is expressly forbidden.

HCC Embedded reserves the right to make changes to this document and to the related software at any time and without notice. The information in this document has been carefully checked for its accuracy; however, HCC Embedded makes no warranty relating to the correctness of this document.

Table of Contents

CryptoEngine	6
ce netstat	7
DHCP Client	8
dhcp lease	9
dhcp netstat	10
DHCP Server	11
dhs_addrpool	12
dhs_client	13
dhs_enable	14
dhs_ifcfg	15
dhs_netstat	16
DHCPV6	17
dhcpv6 lease	18
dhcpv6 netstat	19
DNS CLIENT	20
dnsc ddnsupdt	21
dnsc dnscstats	22
dnsc getaddrinfo	23
dnsc getnameinfo	25
dnsc nslookup	26
dnsc setdnssrv	27
FTP Client	28
FTP client commands	30
HTTP Server	33
http config	34
http htdump	35
http netstat	36
IPSec and IKE	37
ike commands	38
ike debug	39
ike flush	40
ike netstat	41
ike reload	42
ike remote	43
ipsec policy	46
IPSec	48
ipsec addsa	49
ipsec delsa	54
ipsec flush	55
ipsec netstat	56
IPv6	57
ipv6 rt6add	58

ipv6 rt6del	59
ipv6 rt6list	60
ipv6 rt6man	61
ipv6 rt6prfx	62
Multicast	63
igmp add	64
igmp cfg	66
igmp drop	67
igmp mode	69
igmp netstat	70
igmp sock	71
mld	73
NAT	77
nat natset	78
nat natxip	80
nat netstat	81
PPP	82
modem config	83
modem dialer	84
modem netstat	85
ppp config	86
ppp netstat	88
ppp pdebug	90
ppp plink	91
ppp plnkcfg	92
RIP	94
rip config	95
rip netstat	96
rip ripauth	97
rip riprefuse	98
rip riproute	99
SNMPv1/v2c	101
snmp community	102
snmp config	104
snmp mib	106
snmp netstat	107
snmp target	108
snmp trap	109
SNMPv3	110
snmpv3 access	111
snmpv3 authoid	113
snmpv3 context	114
snmpv3 group	115
snmpv3 mibview	116
snmpv3 notify	117
snmpv3 tables	118

snmpv3 taddr	119
snmpv3 tparam	120
snmpv3 username	121
snmpv3 v3test	123
SNTPv4	124
sntp netstat	125
sntp sntpcfg	126
sntp sntplog	128
sntp sntpsync	129
sntp sntp term	130
sntp sntp time	131
SSH	132
ssh cfgfwds	133
ssh config	134
ssh memstat	135
ssh netstat	136
ssh nosecurity	137
Syslog	138
syslog netstat	139
syslog sendtest	140
syslog server	141
syslog syslog	142
System	143
chainbuff cbadd	144
chainbuff cbdel	145
cli call	146
cli config	147
cli echo	148
cli help	149
cli sleep	150
net arp	151
net buffers	152
net bufstat	153
net debug	154
net dtrap	155
net dyniface	156
net gratarp	157
net halt	158
net iface	159
net linkstats	160
net mbufs	161
net netstat	162
net ping	164
net queues	166
net route	167
net setip	168

net status	170
net tcpecho	171
net tesvr	173
net udpecho	174
net uesvr	176
net user	177
TFTP	179
tftp get	180
tftp netstat	181
tftp put	182
tftp tfsrv	183
Telnet	184
telnet exit	185
telnet logout	186
telnet netstat	187
Virtual File System	188
vfs attribute	189
vfs delete	190
vfs directory	191
vfs read	192

1 CryptoEngine

[ce netstat - display CryptoEngine statistics and status](#)

1.1 ce netstat

Command Name

`ce netstat - display CryptoEngine statistics and status`

Syntax

`ce netstat`

Parameters

None

Description

This command displays status information for the CryptoEngine module.

Location

This command is provided by the `CryptoEngine` module when `USE_CRYPTOEING` is defined.

2 DHCP Client

- [lease](#) - Request the DHCP client to obtain/renew/release a lease
- [dhcp netstat](#) - display DHCP client, UPNP, AUTO-IP statistics and status

2.1 dhcp lease

Command Name

`lease` - Request the DHCP client to obtain/renew/release a lease

Syntax

```
lease -i UINT [-d | -l STRING]
```

Parameters

<code>-i I</code>	Network interface number, 1 based
<code>-d I</code>	Disable DHCP client
<code>-l I</code>	Enable DHCP client and perform a lease function

Description

This command is used to enable or disable DHCP client functions for the specified network interface. The supported DHCP functions are:

- `new` - request a new IP address from the DHCP server
- `renew` - renew an IP address lease
- `release` - release an IP address back to the DHCP server

Notes/Status

- The `-i` parameter is required
- `UPnP` requires that `DHCP_CLIENT` be defined.
- `AutoIP` requires that `USE_UPNP` be defined.

Location

This command is provided by `NET` when `DHCP_CLIENT` is defined.

This command includes support for `UPnP` when `USE_UPNP` is defined.

This command includes support for `AutoIP` when `USE_AUTOIP` is defined.

2.2 dhcp netstat

dhcp netstat

Command Name

`dhcp netstat` - display DHCP client, UPNP, AUTO-IP statistics and status

Syntax

`dhcp netstat`

Parameters

None

Description

This command displays statistics associated with the DHCP client module and also UPNP & AUTO-IP modules.

Note:

To display UPNP status and statistics `USE_UPNP` has to be defined.

To display AUTO-IP status and statistics `USE_AUTOIP` has to be defined.

When `DHCP_CLIENT` is defined `USE_UPNP` is required to be defined.

Location

This command is provided by the `DHCP` module when `DHCP_CLIENT` is defined.

3 DHCP Server

- [dhs_addrpool](#) - configure an address pool
- [dhs_client](#) - configure parameters to be given to a specific DHCP client
- [dhs_enable](#) - enable/disable DHCP server
- [dhs_ifcfg](#) - configure default parameters to be delivered with addresses on this interface
- [dhs_netstat](#) - display DHCP Server statistics and parameters

3.1 dhs_addrpool

Command Name

`dhs_addrpool` - configure an address pool

Syntax

```
dhs_addrpool [-i <iface>] {-l <low addr> -h <high addr> -s <subnetmask>}
```

Parameters

	Command without address parameters displays the current address pools for all or the specified interface
<code>-i</code>	Command applies to the specified interface
<code>-l</code>	lowest IP address in pool
<code>-h</code>	highest IP address in pool
<code>-s</code>	Subnet mask in IP addr format (dotted notation)

Description

This command is used to configure an address pool

Notes/Status

- In order to configure an address pool, the '`-l`', '`-h`' and '`-s`' options must all be used.
- If the '`-i`' option is used, then the addresses in the pool will be given only to clients on the specified interface. The specified interface must already have a default configuration
- If the '`-i`' option is not used, then at least one interface must already have a default configuration

Location

This command is provided by the `DHCP Server` module when `DHCP_SERVER` is defined.

3.2 dhs_client

Command Name

`dhs_client` - Configure parameters to be given to a specific DHCP client

Syntax

```
dhs_client -c <Client ID> [-a <IP addr>] [-i <iface>] [-d <DNS addr>] [-g <gw addr>] [-h <host name>] [-l <lease>] [-s <subnetmask>]
```

Parameters

<code>-c</code>	string: usually the MAC address (include colons) of the client to be given these parameters
<code>-a</code>	IP address to be given to this client
<code>-i</code>	Interface number. Start with the default parameters for this interface. These may be modified by the other parameters
<code>-d</code>	IP address of DNS server
<code>-g</code>	IP address of gateway
<code>-h</code>	Host name to be given to this client
<code>-l</code>	Integer: lease in seconds
<code>-s</code>	Subnet mask in IP addr format (dotted notation)

Description

This command is used to configure the parameters be given to a specific DHCP client when it makes a DHCP Request. A client configuration is saved both in an in-RAM client table and in a client table saved in persistent storage

Notes/Status

- The '`-c`' parameter is required.

Location

This command is provided by the `DHCP Server` module when `DHCP_SERVER` is defined.

3.3 dhs_enable

Command Name

`dhs_enable - Enable/Disable DHCP Server`

Syntax

`dhs_enable -d | -e`

Parameters

<code>-d</code>	Disable the DHCP Server
<code>-e</code>	Enable the DHCP Server

Description

This command is used to enable/disable the DHCP Server.

Notes/Status

- The DHCP Server cannot be enabled until at least one interface has been give default parameters and at least one address pool has been configured. Be default, it will be enabled as soon as this condition is met

Location

This command is provided by the `DHCP Server` module when `DHCP_SERVER` is defined.

3.4 dhs_ifcfg

Command Name

`dhs_ifcfg` - configure default parameters to be delivered with addresses on this interface

Syntax

```
dhs_ifcfg {-i <iface> [-d <dns addr>]
           [-e <yes/no>] [-g <gwaddr>]
           [-l <lease name>] [-n <domain name>]
           [-o <mask>] [-s <subnetmask>]}
```

Parameters

	dhs_ifcfg without parameters displays the current default parameters for all interfaces
-i	Interface number
-d	IP address of DNS server
-e	string: enable "yes" or "no"
-g	IP address of gateway
-l	Default lease in seconds
-n	Domain name
-o	hexidecimal integer. Mask of acceptable options
-s	Subnet mask in IP addr format (dotted notation)

Description

This command is used to configure the default parameters that will be included with each DHCP address given out on this interface.

Notes/Status

- The file "dhs_port.h" contains system defaults for all parameters except '-i'.
- At least one interface must be configured before the DHCP server will be enabled. The minimum command is `dhs_ifcfg -i <iface>`
- At least one address pool must also be configured before the DHCP Server will be enabled.

This command is provided by the `DHCP Server` module when `DHCP_SERVER` is defined.

3.5 dhs_netstat

Command Name

`dhs_netstat` - Display DHCP Server statistics and parameters

Syntax

```
dhs_netstat [-d] [-e <index>] [-l] [-p]
```

Parameters

	Command without parameters displays statistics for the DHCP Server
-d	List default parameters for all interfaces
-e	Integer index of client entry. List parameters to be given to the specified client
-l	List addresses that have been assigned
-p	Display free address pools

Description

This command is used to display DHCP Server statistics or to display the specified parameter list[s].

Notes/Status

- The index needed with the '-e' option can be obtained from the list provided by a previous `dhs_netstat` command that used '-l' option.

Location

This command is provided by the `DHCP Server` module when `DHCP_SERVER` is defined.

4 DHCPV6

- [Lease](#) - request the DHCPv6 client to obtain/renew/confirm/release a lease
- [dhcpv6 netstat](#) - display DHCPv6 client statistics

4.1 dhcpv6 lease

Command Name

Lease - Request the DHCPv6 client to obtain/renew/confirm/release a lease

Syntax

```
lease [-i UINT ] [-d | -l STRING]
```

Parameters

-i	Network interface number, 1 based. This is optional with interface 1 the default.
-d	Disable DHCPv6 client. Releases all DHCPv6 leased addresses back to the server removing them from the interface. Prevents DHCPv6 from requesting an address because of a router advertisement.
-l	Enable DHCPv6 client and perform a lease function.

Description

This command is used to enable or disable DHCPv6 client functions for the specified interface. This supported DHCPv6 functions are:

- New - request a new IPv6 address for the DHCPv6 server
- Renew - renew an IPv6 address lease
- Confirm - confirm all IPv6 leased address; for example, can be used after disconnecting and reconnecting to the network.
- Release - release all IPv6 leased addresses back to the DHCPv6 server

Location

This command is provided by the `DHCPv6` module when `DHCPv6_CLIENT` is defined.

4.2 dhcpv6 netstat

Command Name

```
dhcpv6 netstat - display DHCPv6 client statistics
```

Syntax

```
dhcpv6 netstat
```

Parameters

None

Description

This command displays statistics associated with the DHCPv6 client. It show the number of messages sent and received by type.

Location

This command is provided by the `DHCPv6` module when `DHCPv6_CLIENT` is defined.

5 DNS CLIENT

- [ddnsupdt](#) - Do Dynamic DNS update
- [dncstats](#) - Display DNS client statistics
- [getaddrinfo](#) - Get list of IP addresses and/or port numbers for a hostname and service name
- [getnameinfo](#) - Convert a socket address structure to a hostname and service name
- [nslookup](#) - Find the IP address of a domain name
- [setdnssrv](#) - Add, delete, or display IP addresses from the table of DNS name servers

5.1 dnsc ddnsupdt

Command Name

`ddnsupdt` - Do Dynamic DNS update.

Syntax

```
ddnsupdt -a -o NAME -e IPADDRESS [-t TTL]
```

```
ddnsupdt -d -o NAME -e IPADDRESS
```

```
ddnsupdt -d -o NAME -v (4 | 6)
```

Parameters

<code>-a</code>	add operation
<code>-o</code>	name and domain for update
<code>-e</code>	IPv4 or IPv6 address
<code>-t</code>	Optional - time to live number
<code>-d</code>	delete operation
<code>-v</code>	address record type to delete; either 4 for "A" or 6 for "AAAA"

Description

Do Dynamic DNS update

When deleting a record one may specify either a specific address record by using `-e <ip address>` or all records for the given name of type "A" or type "AAAA" by specifying `-v 4` or `-v 6`.

For example: `"ddnsupdt -d -o example.com -e 1.2.3.4"` will delete the "A" record for the name example in the domain com with the address 1.2.3.4

For example: `"ddnsupdt -d -o example.com -v 4"` will delete all "A" records for the name example in the domain com

`"ddnsupdt -a -o example.com -e 1.2.3.4 -t 600"` will add an "A" record for the name example in the domain com with the address 1.2.3.4 and a TTL of 600. If this "A" record already exists then the TTL will be modified to 600.

Location

This is provided by the `DNS` module when `DNS_CLIENT` and `DNS_CLIENT_UPDT` are defined.

5.2 dnsc dnscstats

Command Name

dnscstats - Display DNS client statistics.

Syntax

```
dnscstats [-c ]
```

Parameters

-c	Display the DNS client cache
----	------------------------------

Description

Display DNS client statistics. If `-c` is specified it will also display the DNS client cache

Sample output when the `-c` options was specified:

```
DNS Servers:68.87.76.178, 65.106.1.196, 0.0.0.0
Number entries in DNS Client cache: 2
protocol/implementation runtime errors: 0
requests sent: 2
updates sent: 0
replies received: 2
usable replies: 2
total retries: 0
timeouts: 0
```

DNS cache:

```
name: www.something.com
111.222.333.444
  Age: 8 seconds, Expires: 82103 seconds
  trys: 1, ID:4661, rcode:0, err:0
name: www.something.com
  2001:1111:2222:3333::2
  Age 84 seconds, Expires 77261 seconds
  trys: 1, ID:4660, rcode:0, err:0
```

Location

This is provided by the NET module when `DNS_CLIENT`, `DNS_CLIENT`, and `NET_STATS` are defined.

5.3 dnsc getaddrinfo

Command Name

getaddrinfo - Get list of IP addresses and/or port numbers for a hostname and service name

Syntax

```
getaddrinfo [-a <host>] [-s <service>] [-f <flags>] [-p <protocol>] [-t <socktype>] [-v <version>]
```

Parameters

-a	STRING: Either a domain name or, when used with the AI_NUMERICHOST flag, an IP address
-s	STRING: Either a service name or, when used with the AI_NUMERICSERV flag, a port number
-f	STRING: Hexidecimal string representing an OR of desired "AI_" flags (see dns.h)
-p	STRING: "TCP" or "UDP". The returned port number must be valid for this protocol
-t	INT: 1 = SOCK_STREAM, 2 = SOCK_DGRAM. The returned port number must be valid for this socket type
-v	INT: 4 = IPv4, 6 = IPv6. Restrict responses to these address types

Description

This command is intended as an example/test for calls to the getaddrinfo() API. The getaddrinfo() function is defined in RFC 3493. It returns a list of IP addresses and/or port numbers for the specified hostname and/or service name. Getaddrinfo() is a replacement for gethostbyname(). It is thread-safe and provides more capabilities and flexibility.

Notes/Status

- Either `-a` or `-s` or both must be specified.
- The determination of port number for the `-s` parameter is based on the `servtoportlist[]` in `dnsclnt.c`. The default array is limited in size. Additional entries should be added as needed for a specific implementation.
- For the `-f` option, the hexadecimal string must be an OR of one of the "AI_" flags defined in `dns.h`. Note that these are not the same as the "NI_" flags defined for `getnameinfo`. The meaning of each flag is defined in RFC 3493. The hexadecimal number may be optionally preceded by a "0x" and it may optionally have a leading zero, e.g., `0x03`, `0x3`, or `3` are all valid
- The `-p` and `-t` parameters apply only to the service name returned. If both are used, they must correspond, e.g., an error will be returned if a protocol of TCP and a sock type of `SOCK_DGRAM` are specified.
- The `getaddrinfo()` function returns a pointer to an array of `addrinfo` structures (defined in `dns.h`), with one structure for each address returned. Normally after a return from `getaddrinfo()`, the calling application would use the information in the structures as needed and then call `freeaddrinfo()` to free the array of structures. For this command, the information in the returned structures is displayed by the `dump_addrinfo()` function and then the array of structures is freed via `freeaddrinfo()`
- The `AI_V4MAPPED` flag is not currently supported.
- The `getaddrinfo()` command does not currently support `IP_V6` scope IDs other than "1"

Location

This command is provided by the `NET` module when `DNS_CLIENT`, `DNSC_MENUS` and `DNSC_GETADDRINFO` are defined.

5.4 dnsc getnameinfo

Command Name

getnameinfo - Convert a socket address structure to a hostname and service name

Syntax

```
getnameinfo [-a <IP addr>] [-p <portnumber>] [-f <flags>]
```

Parameters

-a	IPv4/6 address of host whose domain name should be returned
-p	port number for the service whose name should be returned
-f	STRING: Hexidecimal string representing an OR of desired NI_ flags (see dns.h)

Description

This command is intended as an example/test for calls to the getnameinfo() API. (See getnameinfo() in the NicheStack Reference manual.) The getnameinfo() function is defined in RFC 3493. It converts a sockaddr structure to a pair of host name and service strings. It is the converse of the getaddrinfo function.

Notes/Status

- Either `-a` or `-p` or both must be specified.
- The determination of service name for the port number specified by the `-p` parameter is based on the `servtoportlist[]` array that is defined in `dnscnt.c`. The default array is limited in size. Additional entries should be added as needed for a specific implementation.
- For the `-f` option, the hexadecimal string must be an OR of one of the "NI_" flags defined in `dns.h`. Note that these are not the same as the "AI_" flags defined for `getaddrinfo`. The meaning of each flag is defined in RFC 3493. The hexadecimal number may be optionally preceded by a "0x" and it may optionally have a leading zero, e.g., `0x03`, `0x3`, or `3` are all valid

Location

This command is provided by the `NET` module when `DNS_CLIENT`, `DNDC_MENU` and `DNDC_GETADDRINFO` are defined.

5.5 dnsc nslookup

Command Name

nslookup - Find the IP address of a domain name

Syntax

```
nslookup -a STRING [ -r | -t | -y ]
```

Parameters

-a	STRING: Either a domain name or, when used with -r, an IP address
-r	Perform a reverse nslookup of the domain name (IP4 only)
-t	Display the TXT records of the domain name
-y	Display the IPv6 records of the domain name

Description

This command calls DNS servers or relies on the stack's cache to retrieve the IP address records or TXT records for a domain name, such as "www.iniche.com." If no record type is specified, the `A` records (IPv4 addresses) are displayed. If '-y' is specified, the `AAAA` records (IPv6 addresses) are displayed. If '-t' is specified, the TXT records are displayed. If '-r' is specified, a reverse nslookup of an IPv4 address is performed.

Notes/Status

- '-r', '-t', '-y' are mutually exclusive.
- The `setdnssrv` command can be used to initialize the DNS Server addresses used in the DNS query.
- The newer commands `getaddrinfo` and `getnameinfo` provide additional options for specifying exactly which set of records to return

Location

This command is provided by the DNS module when `DNS_CLIENT` and `DNS_MENUS` are defined.

5.6 dnsc setdnssrv

Command Name

setdnssrv - Add, delete, or display IP addresses from the table of DNS name servers.

Syntax

```
setdnssrv
```

```
setdnssrv -a <ip4 addr> [-i <server index>]
```

```
setdnssrv -d -i <server index>
```

Parameters

-a	Argument of type IPv4 address, indicating address of a DNS nameserver to add
-d	No parameters
-i	Argument of type number (1 - n), indicating index of a nameserver to add or delete

Description

Add, delete, or display IP addresses from the table of DNS name servers

Notes/Status

- '-a' and '-d' arguments are mutually exclusive.
- The '-i' argument is required with '-d'
- Command without arguments displays the current state of the DNS server table

Sample output, when there is already a nameserver at index 1:

```
-> setdnssrv -i 2 -a 10.0.0.1
DNS servers: 10.0.0.226 10.0.0.1
```

Notes/Status

Location

This command is provided by the `dns` module when `DNS_CLIENT` and `DNS_MENUS` are defined.

6 FTP Client

[FTP client commands - Collection of FTP client menus](#)

6.1 FTP client commands

Command Name

FTP client commands - Collection of FTP client menus

Description

For reasons explained in the Notes section, FTP client commands exist as individual menus, rather than members of an overall FTP client menu. For this reason, it is often necessary to type FTP in front of the command name in order to disambiguate it from another command, e.g., you must type "FTP put", rather than simply "put".

Syntax

open	open an FTP connection to an FTP server
------	---

open -a <ipaddr> -u <username> [-p <password>]
--

ascii	Use ASCII transfer mode
-------	-------------------------

ascii - No parameters

binary	Use binary transfer mode
--------	--------------------------

binary - No parameters

cd	Change directory on the server
----	--------------------------------

cd -d <directory path>

get	GET a file (transfer file from server directory)
-----	--

get -f <file name> [-d <destination name>]
--

hash	Enable/disable hash mark printing
------	-----------------------------------

hash -d -e

ls	List files in the server directory
----	------------------------------------

ls - No parameters

pasv	Set FTP server to passive mode
------	--------------------------------

pasv	- No parameters
------	-----------------

put	Put a file (transfer file to server directory)
-----	--

put	-f <file name> [-d <destination name>]
-----	--

pwd	Print the working directory
-----	-----------------------------

pwd	- No parameters
-----	-----------------

quit	Close the FTP session and connection
------	--------------------------------------

quit	- No parameters
------	-----------------

verbose	Enable/disable verbose mode
---------	-----------------------------

verbose	-d -e
---------	---------

state	Display FTP client state
-------	--------------------------

state	- No parameters
-------	-----------------

log	Enable/disable logging
-----	------------------------

log	-d -e
-----	---------

Parameters

-a	Argument of type <i>IPADDR</i> specifying the IP address of the server. IP4 addresses use dotted notation. IP6 addresses use colon notation
----	---

-d	hash, verbose, and log commands: disable - no argument get and put commands: name to be given to the file on the destination server - Argument of type <i>STRING</i>
----	---

-e	hash, verbose, and log commands: enable - no argument
----	---

-f	get and put commands - Argument of type <i>STRING</i> specifying an absolute path to the file
----	---

-p	Argument of type <i>STRING</i> specifying a password
----	--

-u	Argument of type <i>STRING</i> specifying a username
----	--

Notes/Status

- The NicheStack CLI interface requires all command options to use the format `-X <XXX>`. Because each FTP client command is identified by a multi-character name, each requires a separate menu.
- All FTP client commands except "open" require an existing FTP connection to the FTP server.
- The log command is available only if `FC_LOG` is defined.

Location

These commands are provided by the `FTP module` module when `FTP_CLIENT` is defined.

7 HTTP Server

- [http config](#) - display or modify http server configuration
- [http ht dump](#) - dump contents of httpd structure(s)
- [http netstat](#) - display HTTP Server statistics and status

7.1 http config

Command Name

`http config` - display or modify http server configuration

Syntax

```
http config [-d | -e] [-i <timeout>] [-m <numbytes>] [-n <timeout>] [-p
<http_root_path>][-r <numbytes>] [-t <numbytes>] [-w <webpage>]
```

Parameters

(none)	Command without arguments displays the current state of http configuration parameters
-d	Disables the HTTP Server.
-e	Enables the HTTP Server.
-i	Integer: idle timeout in seconds for persistent connections
-m	Max bytes HTTP will transmit without yielding
-n	Integer: idle timeout in seconds for non-persistent connections
-p	Argument of type <code>string</code> sets the HTTP root path.
-r	HTTP Receive buffer size in bytes. Range: 512-16384 bytes
-t	HTTP Transmit buffer size in bytes. Range: 512-16384 bytes
-w	Argument of type <code>string</code> sets the default web page.

Description

This command displays or sets http configuration parameters

Notes/Status

- An attempt to re-enable the HTTP Server (`-e` option) within 15 seconds of disabling it, may not be successive. Repeating the command after a few seconds should succeed.
- The `-i` option is only available if `HT_PERSISTENT` is defined. Normally it will be defined.
- For the `-i` and `-n` options, an argument of '0' represents an infinite timeout.

Location

This command is provided by the `httpsvr` module when `HTTPSVR` is defined.

7.2 http htdump

Command Name

htdump - dump contents of httpd structure(s)

Syntax

htdump [-a] [-f] [-r] [-s] [-u] [-w]

Parameters

	Command without arguments dumps all fields for all active httpd structures.
-a	Dump all active httpd structures.
-f	Dump all form information.
-r	Dump content of request(httpdinfo structure)(s).
-s	Dump content of httpsockinfo structure(s).
-u	Dump content of uploadfile structure(s).
-w	Dump http structure for the calling web application.

Description

This command dumps all or the requested field(s) from the httpd structures of the active http connections. The options may be combined. For example, you can dump the form and request information for each active http connection (-f -r).

Notes/Status

- A struct httpd is allocated when a connection is made to the HTTP server and freed when the connection is closed. A struct httpd has pointers to several substructures that are allocated as needed.
- The -w option can only be used when htdump is called from a web application.
- Unless the -w option is specified, the information will be displayed for all active connections.

Location

This command is provided by the `httpsvr` module when `HTTPSVR` is defined.

7.3 http netstat

Command Name

`http netstat - display HTTP Server statistics and status`

Syntax

`http netstat`

Parameters

This command takes no arguments

Description

This command displays status information for the `httpsvr` module.

Location

This command is provided by the `httpsvr` module when `HTTPSVR` is defined.

8 IPsec and IKE

- [ike commands](#) - print the configuration in the form of command lines
- [ike debug](#) - enable IKE debug logging and tracing
- [ike flush](#) - flush IKE SAs and remote configuration database
- [ike netstat](#) - display IKE sessions and remote configuration database
- [ike reload](#) - reloads configuration and restarts ike
- [ike remote](#) - add, delete, and view IKE remote peer configuration information
- [ipsec policy](#) - add, delete, and view IKE and IPSEC policy database information

8.1 ike commands

Command Name

`ike commands` - print the configuration in the form of command lines

Syntax

```
ike commands [-f filename]
```

Parameters

<code>-f</code>	filename for output
-----------------	---------------------

Description

This command prints the running configuration of "ike remote" and "ipsec policy" configuration commands. The commands will be formatted so that they could be used as input at startup, for example using the `IKE_SCRIPT_FILE` defined in `ipport.h`, `ike_rc` by default.

Notes/Status

- `#define IKE_DUMP_CMD_FILE "ike_dump_cmds.txt"`

Location

This command is provided by the `IKEv2` module when `IKEv2` is defined.

8.2 ike debug

Command Name

ike debug - enable IKE debug logging and tracing

Syntax

```
ike debug [-t] [-d]
```

Parameters

-t	turn on ike debug tracing
-d	turn on ike debugging

Description

This command enables or disables IKE related debugging output. If no parameters are provided debugging is turned off.

Notes/Status

- The image must be built with `IKE_DEBUG_TRACE` enabled in `ipport.h` for "-t" to be available.
- The image must be built with `IKE_DEBUG` enabled in `ipport.h` for "-d" to be available.

Location

This command is provided by the `IKEv2` module when `IKEv2` is defined.

8.3 ike flush

Command Name

ike flush - flush IKE SAs and remote configuration database

Syntax

```
ike flush {-p <1 | 2 | 3>} {-r [-n <name of remote peer>]}
```

Parameters

-p	flush all IKEv1 Phase 1 (-p 1) or Phase 2 (-p2) SAs or all IKEv2 SAs (-p 3).
-r	flush contents of IKE remote configuration database.
-n	name of remote peer as it appears in the remote peer database

Description

This command flushes IKEv1 Phase 1 and Phase 2 SAs and IKEv2 SAs, and remote configuration database.

Notes/Status

- If no options are given then all SAs for both IKEv1 and IKEv2 are deleted and all remote peer information is deleted.
- The -n option is only intended for use with the -r option.

Location

This command is provided by the `IKEv2` module when `IKEv2` is defined.

8.4 ike netstat

Command Name

ike netstat - display IKE sessions and remote configuration database

Syntax

```
ike netstat [-p <1 | 2 | 3>] [-r [-n <remote name>]]
```

Parameters

-p	display information about IKEv1 Phase 1 or 2 session(s) or -p 3 implies IKEv2 SA.
-r	display contents of IKE remote configuration database.
-n	Name in remote configuration database.

Description

This command displays information about Security Associations, SA(s). IKEv1 Phase 1 session(s), IKEv1 Phase 2 session(s), IKEv2 SA(s), and remote configuration database.

Notes/Status

- When no options are specified, this function displays information about IKEv1 Phase 1 session (s), IKEv1 Phase 2 session(s), IKEv2 SA(s), and remote configuration database. "-p 3" implies IKEv2 SA(s).
- The -n option is only intended for use with the -r option.

Location

This command is provided by the `IKEv2` module when `IKEv2` is defined.

8.5 ike reload

Command Name

`ike reload` - reloads configuration and restarts ike

Syntax

`ike reload`

Parameters

None

Description

This command flushes IKEv1 Phase 1 and Phase 2 SAs and IKEv2 SAs, and remote configuration database. Then it restarts IKE reading the configuration command file.

Notes/Status

The IKE configuration file is defined in `ipport.h`, `IKE_SCRIPT_FILE` as `ike_rc` by default. This file can contain any iniche commands and is executed after IKE starts and after a small delay to allow interfaces to acquire IP addresses.

Location

This command is provided by the `IKEv2` module when `IKEv2` is defined.

8.6 ike remote

Command Name

ike remote - add, delete, and view IKE remote peer configuration information

Syntax

- ike remote {-n -a [-b] [-c] -d -e -f -g [-h] [-i] [-l] -m -n -p -r -s [-u] [-w] -z}
- ike remote {-v [-n <remote name>]}
- ike remote {-x <remote name>}

Parameters

-a	<p>authentication protocol list, ike version 1 supports</p> <ul style="list-style-type: none"> • MD5 • SHA <p>and ike version 2 supports</p> <ul style="list-style-type: none"> • HMAC-MD5 • HMAC-SHA-1 • HMAC-SHA-2-256 • HMAC-SHA-2-384 • HMAC-SHA-2-512
-b	peer's X.509 certificate
-c	local end's X.509 certificate(s) (to be sent to remote peer)
-d	<p>dh group algorithm list</p> <ul style="list-style-type: none"> • MODP768 • MODP1024 • MODP1536 • MODP2048 • MODP3072 • MODP4096 • MODP6144 • MODP8192

-e	<p>encryption protocol list</p> <ul style="list-style-type: none"> • 3DES-CBC • AES128-CBC • AES192-CBC • AES256-CBC • NULL_ENC
-f	identifier (expected from remote peer)
-g	identifier (to be sent to remote peer)
-h	the filename that contains the passphrase for PSK
-i	interval_to_send -- retransmission interval
-l	IKE SA lifetime
-m	<p>auth method algorithm</p> <ul style="list-style-type: none"> • PresharedKey • RSASIG
-n	remote name
-p	<p>prf algorithm list</p> <ul style="list-style-type: none"> • HMAC-MD5 • HMAC-SHA-1 • HMAC-SHA-2-256 • HMAC-SHA-2-384 • HMAC-SHA-2-512
-r	remote endpoint
-u	accept this version (can be configured to accept both ikev1 and ikev2)
-v	view remote -- all policies will be displayed unless used with -n
-w	initiate this version (only one version can be initiated, ikev1 or ikev2)
-x	delete remote with given name or ALLREMOTES
-z	version to configure in this command

Description

This command will add, delete, and view IKE remote peer configuration information. The parameters are used to negotiate the algorithms to be used to establish secure communications for the exchange of IPSEC parameters and algorithms. The algorithms used by IKE could be different than those negotiated for use by IPSEC. In particular the IKEv1 authentication algorithms are more limited than the IKEv2 algorithms.

Notes/Status

- The -x option will delete a given remote or all remotes if "-x ALLREMOTES" is used.
- The -v option will display a given remote or all remotes if no -n parameter is given.
- Deleting a remote peer does not delete any Security Association (SAs) currently in use.
- Here are example CLI commands. These commands could appear together as they represent logically different remotes. The first two examples configure both IKEv1 and IKEv2 to the same remote peer, but only IKEv2 would be initiated to the remote while either IKEv1 or IKEv2 would be accepted. Notice that the algorithm lists can be different. Example 3 and 4 are similar but use IPv6 addresses. The names of the remotes are only used internally and do not reflect DNS name. Each policy command must reference a remote configured with the remote command.

1. IKEv2 [-z 2]: initiate using IKEv2 [-w] and accept, that is respond to, IKEv2 [-u], use presharedkey [-m PSK] with the shared secret "secret" [-h secret]

```
remote -n mongo -z 2 -w -u -a HMAC-MD5 -e 3DES-CBC -d MODP2048,MODP1024
-r 10.0.0.76 -f ipv4:10.0.0.76 -g ipv4:10.0.0.140
```

2. IKEv1 [-z 1]: do not initiate using IKEv1 [there is no -w] and accept, that is respond to, IKEv1 [-u], use presharedkey [-m PSK] with the shared secret "secret" [-h secret]

```
remote -n mongo -z 1 -u -a SHA -e 3DES -d MODP1024 -p MD5 -m PSK
-r 10.0.0.76 -f ipv4:10.0.0.76 -g ipv4:10.0.0.140
```

3. IKEv2 [-z 2]: initiate using IKEv2 [-w] and accept, that is respond to, IKEv2 [-u], use presharedkey [-m PSK] with the shared secret "secret" [-h secret]

```
remote -n mongoV6 -z 2 -w -u -a HMAC-MD5 -e 3DES -d MODP2048,MODP1024
-r fe80::0240:f4ff:feed:8b77 -f ipv6:fe80::0240:f4ff:feed:8b77 -g
```

4. IKEv1 [-z 1]: do not initiate using IKEv1 [there is no -w] and accept, that is respond to, IKEv1 [-u], use presharedkey [-m PSK] with the shared secret "secret" [-h secret]

```
remote -n mongoV6 -z 1 -u -a SHA -e 3DES -d MODP1024 -p MD5 -m PSK
-r fe80::0240:f4ff:feed:8b77 -f ipv6:fe80::0240:f4ff:feed:8b77 -g
```

Location

This command is provided by the IKEv2 module when IKEv2 is defined.

8.7 ipsec policy

Command Name

`ipsec policy` - add, delete, and view IKE and IPSEC policy database information

Syntax

- `ipsec policy {-n -a [-c] -d -e -g [-h] [-k <integer>] [-l] -m -n -p -r -s -t [-y]}`
- `ipsec policy {-v [-n <policy name>]}`
- `ipsec policy {-x <policy name>}`

Parameters

-a	authentication protocol list
-c	enable/disable inclusion of TFC padding in outgoing packets -- optional
-d	destination id
-e	encryption protocol list
-g	remote name
-h	short ICV length (for SHA2-xxx family) -- optional
-k	IPSEC SA lifetime -- default is 3600, applies only when used with IKE
-l	priority (1(highest)...7(lowest)) -- default is 4
-m	IPsec mode (transport or tunnel)
-n	policy name
-p	upper-layer protocol -- one of udp, tcp, icmp, icmp6, or any
-r	remote endpoint
-s	source id string
-t	SA type -- AH, ESP, or AHESP
-v	view policy -- all policies will be displayed unless used with -n
-x	delete policy with given name or ALLPOLICIES
-y	enable transmission of dummy packets -- optional

Description

This command will add, view, and display IKE and IPSEC policy database information.

Notes/Status

- The -x option will delete a given policy or all policies if "-x ALLPOLICIES" is used.
- The -v option will display a given policy or all policies if no -n parameter is given.
- Higher priority policies (as indicated by the -l option) will be used when the packet matches more than one policy. For example, a policy to match and bypass UDP traffic to port 500 (the IKE port) should typically be given higher priority than a policy to secure UDP traffic to other ports. This allows the IKE protocol which uses port 500 to establish SAs for other UDP traffic. The bypass policy for IKE traffic is installed by default at priority level 2 when IKE is enable.
- Here are example CLI commands; however the commands must be on a single line.

1. ESP-only, transport mode, authentication (SHA1), encryption (3DES), udp protocol, IPv4

```
ipsec policy -n Policy1 -g mongo -c -h -l 4 -p udp -m transport -t ESP
-a HMAC-SHA-1 -e 3DES-CBC -r 10.0.0.76 -s 10.0.0.140 -d 10.0.0.1
```

2. ESP-only, transport mode, authentication (MD5 or SHA1) and encryption (NULL or 3DES or AES128), udp protocol, IPv4

```
ipsec policy -n Policy1 -g mongo -c -h -l 4 -p udp -m transport -t ESP
-a HMAC-MD5,HMAC-SHA-1 -e NULL_ENC,3DES-CBC,AES128-CBC -r 10.0.0.1
```

3. ESP-only, tunnel mode, encryption (3DES) and authentication (MD5), tcp protocol, IPv4

```
policy -n Policy2 -g mongo -t ESP -a HMAC-MD5 -e 3DES-CBC -m transport
```

4. ESP-only, transport mode, encryption (3DES) and authentication (MD5), udp protocol, IPv6

```
policy -n Policy1V6 -g mongoV6 -t ESP -a HMAC-MD5 -e 3DES-CBC -m transport
-s fe80::862b:2bff:fe88:2662 -d fe80::0240:f4ff:feed:8b77
```

5. ESP-only, transport mode, encryption (AES128) and authentication (SHA), tcp protocol, IPv6

```
policy -n Policy2V6 -g mongoV6 -t ESP -a HMAC-SHA-1 -e AES128-CBC -m transport
-s fe80::862b:2bff:fe88:2662 -d fe80::0240:f4ff:feed:8b77
```

Location

This command is provided by the IPsec module when IPSEC and IKEv2 are defined.

9 IPsec

- [ipsec addsa](#) - add IPsec security association
- [ipsec delsa](#) - delete IPsec security association
- [ipsec flush](#) - flush IPsec security association and/or policy database
- [ipsec netstat](#) - display IPsec security association and/or policy database

9.1 ipsec addsa

Command Name

`ipsec addsa - add IPsec security association`

Syntax

`ipsec addsa {-a -b -c} {-e -f -g} {-m -p -r -s -d} {-w -x -y -z}`

Parameters

-a	authentication protocol.
-b	incoming authentication key>
-c	outgoing authentication key.
-e	encryption protocol.
-f	incoming encryption key.
-g	outgoing encryption key.
-m	IPsec mode (transport or tunnel).
-p	protocol number.
-r	remote endpoint.
-s	source id string.
-d	destination id string.
-w	incoming ESP SPI.
-x	outgoing ESP SPI.
-y	incoming AH SPI.
-z	outgoing AH SPI.

Description

This command adds an IPsec security association with the specified parameters.

Notes/Status

9.2 ipsec delsa

Command Name

```
ipsec delsa - delete IPsec security association
```

Syntax

```
ipsec delsa -d -p -s
```

Parameters

-d	destination id string.
-p	protocol number.
-s	source id string.

Description

This command deletes a security association with the specified source id string, destination id string, and protocol number.

Location

This command is provided by the `IPsec` module when `IPsec` is defined.

9.3 ipsec flush

Command Name

`ipsec flush` - flush IPsec security association and/or policy database

Syntax

```
ipsec flush -a -c -p
```

Parameters

-a	flush IPsec security association and security policy databases.
-c	flush IPsec security association database.
-p	flush IPsec security policy database.

Description

This command flushes IPsec security association and/or security policy databases.

Location

This command is provided by the `IPsec` module when `IPsec` is defined.

9.4 ipsec netstat

Command Name

`ipsec netstat` - display IPsec security association and/or policy database

Syntax

```
ipsec netstat -c -p
```

Parameters

-c	display information about IPsec security associations.
-p	display information about IPsec security policies.

Description

This command displays information about IPsec security associations and/or security policies.

Notes/Status

- When no options are specified, this command displays information about IPsec security associations and security policies.

Location

This command is provided by the `IPsec` module when `IPsec` is defined.

10 IPv6

- [rt6add](#) - Create an IPv6 route table entry
- [rt6del](#) - Delete an IPv6 route table entry
- [rt6list](#) - List current IPv6 routes table
- [rt6man](#) - Manage IPv6 router
- [rt6prfx](#) - Set router prefixes

10.1 ipv6 rt6add

Command Name

rt6add - Create an IPv6 route table entry

Syntax

```
rt6add -a <addr>%<scopeid>/<prefixlen> -b <addr>%<scopeid>
```

Parameters

-a	Argument of type IPv6 address, indicating the destination address.
-b	Argument of type IPv6 address, indicating the next hop address.

Description

This command rt6add will create an IPv6 route table entry.

<addr> is a global unicast IPv6 address.

<scopeid> is the scope ID (1, 2, etc) of the interface of the address.

<prefixlen> is the prefix length of the address.

Location

This command is provided by the IPv6 module when IP_V6 is defined.

10.2 ipv6 rt6del

Command Name

rt6del - Delete an IPv6 route table entry

Syntax

```
rt6del -a <addr>%<scopeid>/<prefixlen>
```

Parameters

-a	Argument of type IPv6 address, indicating the address to be deleted.
----	--

Description

This command rt6del will delete an IPv6 route table entry.

<addr> is a global unicast IPv6 address.

<scopeid> is the scope ID (1, 2, etc) of the IF of the address.

<prefixlen> is the prefix length of the address.

Location

This command is provided by the IPv6 module when IP_V6 is defined.

10.3 ipv6 rt6list

Command Name

`rt6list` - List current IPv6 routes table

Syntax

```
rt6list
```

Parameters

none

Description

This command `rt6list` will list current IPv6 routes table.

Location

This command is provided by the `IPv6` module when `IP_V6` is defined.

10.4 ipv6 rt6man

Command Name

rt6man - Manage IPv6 router

Syntax

```
rt6man [-d] [-f] [-g] [-r] [-s] [-m number] [-n number] [-l number] [-t number] [-e number] [-c number] [-p ( L | M | H )] [-v number]
```

Parameters

-c	Argument of type UINT, setting the AdvCurHopLimit
-d	Presence puts in all defaults, before any other args
-e	Argument of type UINT, setting the AdvRetransTimer
-f	Presence turns on forwarding
-g	Presence turns off forwarding
-l	Argument of type UINT, setting the AdvLinkMTU
-m	Argument of type UINT, setting the MaxRtrAdvInterval
-n	Argument of type UINT, setting the MinRtrAdvInterval
-p	Argument of type STRING, sets router preferences (RFC4191) (L M H) (low OR medium OR high)
-r	Presence turns on sending of Router Advertisements
-s	Presence turns off sending of Router Advertisements
-t	Argument of type UINT, setting the AdvReachableTime
-v	Argument of type UINT, setting the AdvDefaultLifetime

Description

This command rt6man sets the basic behavior of the IPv6 static router. Each of the variables MaxRtrAdvInterval, MinRtrAdvInterval, AdvLinkMTU, AdvReachableTime, AdvRetransTimer, AdvCurHopLimit, AdvDefaultLifetime; are explained in detail in RFC4861.

Location

This command is provided by the IPv6 module when IP_V6 is defined.

10.5 ipv6 rt6prfx

Command Name

`rt6prfx` - Set router prefixes

Syntax

`rt6prfx -a <addr>%<scopeid>/<prefixlen> -p <pmtu> -i <valid_time> -l <life_time> [-o]`

Parameters

-a	Argument of type IPv6 address. Adds a prefix to be advertised.
-p	Argument of type UINT. The Path MTU (PMTU) for this link to be sent in the router's advertisements.
-i	Argument of type UINT. Valid lifetime in seconds for the prefix
-l	Argument of type UINT. Preferred Lifetime in seconds for
-o	Presence of this sets the prefix as "off-link", on-link flag is reset. The default is "on-link"

Description

This command `rt6prfx` sets address, PMTU, and lifetimes of a prefix; these are explained in detail in RFC4861.

<addr> is a global unicast IPv6 address.

<scopeid> is the scope ID (1, 2, etc) of the IF of the address.

<prefixlen> is the prefix length of the address.

Notes/Status

- The value for the `-l` option must be less than or equal to the value for the `-r` option.
- Durations greater than `INFINITE_DELAY` (0x7FFFFFFF) will be set to `INFINITE_DELAY`.

Location

This command is provided by the `IPv6` module when `IP_V6` and `IP6_MENUS` are defined.

11 Multicast

- [igmp add](#) - join an IP multicast group
- [igmp cfg](#) - configure IGMPv3 protocol parameters
- [igmp drop](#) - unsubscribe from an IP multicast group
- [igmp mode](#) - specify IGMP version
- [igmp netstat](#) - display IGMP statistics and status
- [igmp sock](#) - create, delete, or display multicast information for a UDP/IPv4 socket
- [mld](#) - Configure the Multicast Listener Discovery protocol (MLD (RFC 2710) and MLDv2 (RFC 3810))

11.1 igmp add

Command Name

igmp add - join an IP multicast group

Syntax

```
igmp add -g <multicast group> -i <interface name or id> -s <socket> [-x] [-y] [-m] [-a] [-o <IPv4 address(es)>]
```

Parameters

-a	Indicates that the addresses specified are allowed (when present), or blocked (when absent).
-g	Multicast group address.
-i	Interface identifier.
-m	Use MCAST_XXX set of socket options for multicast membership changes.
-o	List of allowed or blocked source IPv4 addresses.
-s	Socket identifier.
-x	use setipv4sourcefilter() API to configure multicast membership information.
-y	use setsourcefilter() API to configure multicast membership information.

Description

This command is used to join a IPv4 multicast group on an interface via a (previously created) UDP /IPv4 socket. The source filtering features are only available if IGMPv3 is enabled in the system.

Notes/Status

- The multicast group address must be specified in dotted-decimal notation.
- The interface can be specified either via its name or its (one-based) index.
- The IGMP protocol that will operate on the link must be configured via the "igmp mode" CLI command.
- The socket identifier is obtained from the output of a "igmp sock -c" CLI command.
- The use of the -m, -x, and -y options is optional. In the absence of these options, the membership will be updated via the IP_xxx series of socket options. Only one of the -m, -x, and -y options can be used in one invocation of this command.
- Example invocation sequences:

1. use IP_ADD_MEMBERSHIP to join 224.0.0.77 on interface 1 via socket 0xba02d4

```
igmp add -g 224.0.0.77 -i 1 -s 0xba02d4
```

2. use IP_ADD_SOURCE_MEMBERSHIP to join 224.0.0.77 on interface 1 via socket 0xba02d4, and accept packets from 10.0.0.77

```
igmp add -g 224.0.0.77 -i 1 -s 0xba044c -a -o 10.0.0.77
```

3. use MCAST_JOIN_GROUP to join 224.0.0.77 on interface 1 via socket 0xba044c

```
igmp add -g 224.0.0.77 -i 1 -s 0xba044c -m
```

4. use MCAST_JOIN_SOURCE_GROUP to start accepting packets from 10.0.0.77 and destined to 224.0.0.77 on interface 1

```
igmp add -g 224.0.0.77 -i 1 -s 0xba02d4 -a -o 10.0.0.77 -m
```

5. use MCAST_BLOCK_SOURCE to block reception of packets from 10.0.0.77 and destined to 224.0.0.77 on interface 1 (after joining the group in EXCLUDE(none) mode earlier (e.g., via MCAST_JOIN_GROUP))

```
igmp add -g 224.0.0.77 -i 1 -s 0xba02d4 -o 10.0.0.77 -m
```

6. use setipv4sourcefilter() to join 224.0.0.77 on interface 1, and accept packets from two sources (10.0.0.77 and 10.0.0.88)

```
igmp add -g 224.0.0.77 -i 1 -s 0xba02d4 -a -o "10.0.0.77 10.0.0.88"
```

7. use setsourcefilter() to join 224.0.0.77 on interface 1, and accept packets from two sources (10.0.0.77 and 10.0.0.88)

```
igmp add -g 224.0.0.77 -i 1 -s 0xba02d4 -a -o "10.0.0.77 10.0.0.88"
```

Location

This command is provided by the IGMP module when IP_MULTICAST and at least one of USE_IGMPV1, USE_IGMPV2, or USE_IGMPV3 is defined.

11.2 igmp cfg

Command Name

`igmp cfg - configure IGMPv3 protocol parameters`

Syntax

```
igmp cfg -i <interface name or id> {-r <#transmissions> | -u <#seconds>}
```

Parameters

-r	configure Robustness Variable.
-u	configure Unsolicited Report Interval.

Description

This command is used to configure parameters for the IGMPv3 protocol.

Notes/Status

- The existing implementation does not support the configuration of Robustness Variable and Unsolicited Report Interval for IGMPv2.

Location

This command is provided by the `IGMP` module when `IP_MULTICAST` and `USE_IGMPV3` are defined.

11.3 igmp drop

Command Name

igmp drop - unsubscribe from an IP multicast group

Syntax

```
igmp add -g <multicast group> -i <interface name or id> -s <socket> [-m] [-a] [-o <IPv4 address(es)>]
```

Parameters

-a	Indicates that the addresses specified are allowed (when present), or blocked (when absent).
-g	Multicast group address.
-i	Interface identifier.
-m	Use MCAST_XXX set of socket options for multicast membership changes.
-o	List of allowed or blocked source IPv4 addresses.
-s	Socket identifier.

Description

This command is used to drop out of a IPv4 multicast group on an interface via a UDP/IPv4 socket. The source filtering features are only available if IGMPv3 is enabled in the system.

Notes/Status

- The multicast group address must be specified in dotted-decimal notation.
- The interface can be specified either via its name or its (one-based) index.
- The socket identifier is obtained from the output of a "igmp sock -c" CLI command.
- In the absence of the -m option, the membership will be updated via the IP_XXX series of socket options.
- Example invocation sequences:

1. use IP_DROP_MEMBERSHIP to stop receiving packets destined to 224.0.0.77 on interface 1 via socket 0xba02d4

```
igmp drop -g 224.0.0.77 -i 1 -s 0xba02d4
```

2. use IP_DROP_SOURCE_MEMBERSHIP to stop receiving packets from 10.0.0.77 and destined to 224.0.0.77 on interface 1 via socket 0xba02d4

```
igmp drop -g 224.0.0.77 -i 1 -s 0xba02d4 -a -o 10.0.0.77
```

3. use MCAST_LEAVE_GROUP to stop receiving packets destined to 224.0.0.77 on interface 1 via socket 0xba044c

```
igmp drop -g 224.0.0.77 -i 1 -s 0xba044c -m
```

4. use MCAST_LEAVE_SOURCE_GROUP to stop accepting packets from 10.0.0.77 and destined to 224.0.0.77 on interface 1

```
igmp drop -g 224.0.0.77 -i 1 -s 0xba02d4 -a -o 10.0.0.77 -m
```

5. use MCAST_UNBLOCK_SOURCE to unblock reception of packets from 10.0.0.77 and destined to 224.0.0.77 on interface 1

```
igmp drop -g 224.0.0.77 -i 1 -s 0xba02d4 -o 10.0.0.77 -m
```

Location

This command is provided by the IGMP module when IP_MULTICAST and at least one of USE_IGMPV1, USE_IGMPV2, or USE_IGMPV3 is defined.

11.4 igmp mode

Command Name

igmp mode - specify IGMP version

Syntax

```
igmp mode {-i <interface> -v <1 | 2 | 3>}
```

Parameters

-i	Specify interface whose IGMP administrative mode (version) is being set.
-v	Specify IGMP version to run.

Description

This command sets the IGMP administrative mode (version) of a particular interface.

Notes/Status

- The interface can be specified either via its name or its (one-based) index.
- The operational mode of an interface may be lower than its administratively-specified mode.

Location

This command is provided by the `IGMP` module when `IP_MULTICAST` and at least one of `USE_IGMPV1`, `USE_IGMPV2`, or `USE_IGMPV3` is defined.

11.5 igmp netstat

Command Name

```
igmp netstat - display IGMP statistics and status
```

Syntax

```
igmp netstat
```

Parameters

None

Description

This command displays statistics associated with the IGMP module.

Notes/Status

- The statistics are not collected on a per-interface basis.

Location

This command is provided by the IGMP module when `IP_MULTICAST` and at least one of `USE_IGMPV1`, `USE_IGMPV2`, or `USE_IGMPV3` is defined.

11.6 igmp sock

Command Name

igmp sock - create, delete, or display multicast information for a UDP/IPv4 socket

Syntax

```
igmp sock {-c | {{-d | -p} -s <socket>} | {{-x | -y} -g <multicast group> -i <interface name or id> -s <socket>}}
```

Parameters

-c	create a UDP/IPv4 socket.
-d	delete a socket.
-p	print multicast-related information for socket.
-x	use getipv4sourcefilter() API to print multicast membership information.
-y	use getsourcefilter() API to print multicast membership information.

Description

This command is used to create a UDP/IPv4 socket (for use in subsequent multicast operations), delete a socket, or display multicast-related information for a socket.

Notes/Status

- When used with the `-c` option, this command prints out an identifier for the newly created socket. This identifier is used in subsequent "igmp add" and "igmp drop" CLI commands.
- Example invocation sequences:

1. create UDP/IPv4 socket

```
igmp sock -c
```

2. delete UDP/IPv4 socket 0xba02d4

```
igmp sock -d -s 0xba02d4
```

3. print membership information for socket 0xba02d4

```
igmp sock -p -s 0xba02d4
```

4. print membership information (via `getipv4sourcefilter()`) for 224.0.0.77 on interface 1 for socket 0xba02d4

```
igmp sock -p -g 224.0.0.77 -i 1 -s 0xba02d4 -x
```

5. print membership information (via `getsourcefilter()`) for 224.0.0.77 on interface 1 for socket 0xba02d4

```
igmp sock -p -g 224.0.0.77 -i 1 -s 0xba02d4 -y
```

Location

This command is provided by the `IGMP` module when `IP_MULTICAST` and at least one of `USE_IGMPV1`, `USE_IGMPV2`, or `USE_IGMPV3` is defined.

11.7 mld

Command Name

mld - Configure the Multicast Listener Discovery protocol (MLD (RFC 2710) and MLDv2 (RFC 3810))

Syntax

```
mld {-c}
    {-d -s <socket id>}
    {-e -i <interface id> {{-r <# of transmissions>} | {-t 0 | 1} | {-u <time>}}
    {-j -g <IPv6 address%scopeid> -s <socket id> [-m [[-a] -o <IPv6 address>]]}
    {-l -g <IPv6 address%scopeid> -s <socket id> [-m [[-a] -o <IPv6 address>]]}
    {-p -s <socket id> [-y -g <IPv6 address%scopeid>]}
    {-z}
```

Parameters

-a	Indicates that the addresses specified are allowed when present, or blocked when absent (for MLDv2 only).
-c	Create a UDP/IPv6 socket for use in subsequent multicast test operations.
-d	Delete a UDP/IPv6 socket.
-e	Configure MLD version or parameter for the specified interface.
-g	Specify the multicast group address and interface identifier.
-i	Interface identifier.
-j	Add membership in specified multicast group on interface to socket.
-l	Delete membership in specified multicast group on interface from socket.
-m	Add or drop multicast membership via the MCAST_XXX set of socket options when present, or via IPV6_XXX options or setsourcefilter() when absent.
-o	List of allowed or blocked source IPv4 addresses (for MLDv2 only).
-p	Print multicast information for socket.
-r	Robustness Variable (for MLDv2 only).
-s	Socket identifier.
-t	Enable (1) or disable (0) the optimization related to the transmission of the Multicast Listener Done message.
-u	Configure Unsolicited Report Interval (in units of seconds).
-v	MLD version number (1 for MLD, 2 for MLDv2).
-y	use getsourcefilter() to obtain multicast membership information, or use setsourcefilter() to update membership information (for MLDv2 only).
-z	Display MLD statistics.

Description

This command can be used to (1) configure the MLD protocol, (2) display status and statistics information for the protocol, and (3) perform test operations (e.g., add group or leave group) to initiate MLD signaling (e.g., send Multicast Listener Report or Multicast Listener Done message).

Notes/Status

- Example invocation sequences:
 1. configure MLD version number on interface 'nd0' to MLDv2

```
mld -e -i nd0 -v 2
```

2. create UDP/IPv6 socket

```
mld -c
```

3. delete UDP/IPv6 socket

```
mld -d -s 0xba144c
```

4. use IPV6_JOIN_GROUP to join ff02::7777 on interface 1 via socket 0xba144c

```
mld -j -g ff02::7777%1 -s 0xba144c
```

5. use IPV6_LEAVE_GROUP to leave ff02::7777 on interface 1 from socket 0xba144c

```
mld -l -g ff02::7777%1 -s 0xba144c
```

6. use setsourcefilter() to join ff02::7777 on interface 1 via socket 0xba144c

```
mld -j -g ff02::7777%1 -s 0xba144c -y
```

7. use setsourcefilter() to join ff02::7777 on interface 1, and accept packets from two sources (fe80::240:f4ff:feed:8b77 and fe80::211:2fff:fe1a:5518)

```
mld -j -g ff02::7777%1 -s 0xba144c -a -o "fe80::240:f4ff:feed:8b77 fe
```

8. use MCAST_JOIN_GROUP to join ff02::7777 on interface 1 via socket 0xba144c

```
mld -j -g ff02::7777%1 -s 0xba144c -m
```

9. use MCAST_LEAVE_GROUP to leave ff02::7777 on interface 1 via socket 0xba144c

```
mld -l -g ff02::7777%1 -s 0xba144c -m
```

10. use MCAST_JOIN_SOURCE_GROUP to start accepting packets from fe80::240:f4ff:feed:8b77 and destined to ff02::7777 on interface 1

```
mld -j -g ff02::7777%1 -s 0xba144c -a -o fe80::240:f4ff:feed:8b77 -m
```

11. use MCAST_LEAVE_SOURCE_GROUP to stop accepting packets from fe80::240:f4ff:feed:8b77 and destined to ff02::7777 on interface 1

```
mld -l -g ff02::7777%1 -s 0xba144c -a -o fe80::240:f4ff:feed:8b77 -m
```

12. join ff02::7777 in EXCLUDE(none) mode via IPV6_JOIN_GROUP

```
mld -j -g ff02::7777%1 -s 0xba144c
```

or, use MCAST_JOIN_GROUP to join ff02::7777 in EXCLUDE(none) mode

```
mld -j -g ff02::7777%1 -s 0xba144c -m
```

having joined by either of the preceding methods, use MCAST_BLOCK_SOURCE to block reception of packets from fe80::240:f4ff:feed:8b77 and destined to ff02::7777 on interface 1

```
mld -j -g ff02::7777%1 -s 0xba144c -o fe80::240:f4ff:feed:8b77 -m
```

use MCAST_UNBLOCK_SOURCE to unblock reception of packets from fe80::240:f4ff:feed:8b77 and destined to ff02::7777 on interface 1

```
mld -l -g ff02::7777%1 -s 0xba144c -o fe80::240:f4ff:feed:8b77 -m
```

13. print membership information for ff02::7777 on interface 1 for socket 0xba144c

```
mld -p -g ff02::7777%1 -s 0xba144c -y
```

14. print membership information for socket 0xba144c

```
mld -p -s 0xba144c
```

Location

This command is provided by the `IPV6` module when `IP_V6`, `IP_MULTICAST`, and `USE_MLD` are defined. Some options are specific to MLDv2, and require `USE_MLDV2` to be defined. (MLDv2 requires MLD to be enabled for correct operation.)

12 NAT

- [nat natset](#) - configure NAT module
- [nat natxip](#) - expunge IPv4 address from NAT tables
- [nat netstat](#) - display NAT statistics and status

12.1 nat natset

Command Name

nat natset - configure NAT module

Syntax

```
natset {-a -b <inside IPv4 address> -c <outside IPv4 address>} -e <0 | 1> -
f <IPv4 address> -i <inet network #> -l <local network #> -m <MSS, bytes> {-
o -p <protocol, TCP or UDP> -q <inside port #> -r <inside IPv4 address> -s
<outside port #>} -t <TCP timeout, seconds> -u <UDP timeout, seconds> -w
<TCP window, bytes>
```

Parameters

-a	Create alias list entry.
-b	Inside IPv4 address for alias list entry.
-c	Outside IPv4 address for alias list entry.
-e	Enable (or disable) NAT.
-f	Set local IPsec host's IPv4 address.
-i	Set inet network number.
-l	Set local network number.
-m	Set TCP MSS (bytes).
-o	Create proxy server list entry.
-p	Protocol (TCP or UDP) for proxy server list entry.
-q	Inside port number for proxy server list entry.
-r	Inside IPv4 address for proxy server list entry.
-s	Outside port number for proxy server list entry.
-t	Set TCP timeout (seconds).
-u	Set UDP timeout (seconds).
-w	Set TCP window size (bytes).

Description

This command sets various configuration parameters for the NAT module.

Location

This command is provided by the NAT module when NATRT is defined.

12.2 nat natxip

Command

```
nat natxip - expunge IPv4 address from NAT tables
```

Syntax

```
natxip -a <IPv4 address>
```

Parameters

-a	IPv4 address to be expunged.
----	------------------------------

Description

This command deletes entries that correspond to this IPv4 address from the various NAT tables.

Location

This command is provided by the NAT module when NATRT is defined.

12.3 nat netstat

Command Name

nat netstat - display NAT statistics and status

Syntax

```
netstat -a -c {-d -e <outside port #>} -f {-g -i <NAT fragmentation entry index>} -l -p -s
```

Parameters

-a	Display all information.
-c	Display NAT connection table.
-d	Display NAT connection entry.
-e	Outside port number (for NAT connection entry).
-f	Display NAT fragmentation queue.
-g	Display NAT fragmentation entry.
-i	Index of NAT fragmentation entry.
-l	Display NAT alias list.
-p	Display NAT proxy server list.
-s	Display NAT statistics.

Description

This command displays statistics for the NAT module.

Location

This command is provided by the NAT module when NATRT is defined.

13 PPP

- [modem config](#) - Configure global Modem parameters
- [modem dialer](#) - Initiate (dial) or hangup a Modem session
- [modem netstat](#) - Display MODEM status and statistics
- [ppp config](#) - Configure or display PPP global parameters
- [ppp netstat](#) - Display PPP status and statistics
- [ppp pdebug](#) - Configure PPP debug options
- [ppp plink](#) - Control a PPP interface
- [ppp plnkcfig](#) - Configure PPP per-interface parameters

13.1 modem config

Command Name

modem config - Configure global Modem parameters

Syntax

```
modem config [-a <AT init string>] [-d <dialer string>] [-t <tmo secs>]
```

Parameters

-a	string: Initialization "AT" command
-d	Dialer string: Phone number plus other characters if required
-t	Line idle timeout in seconds

Description

This command configures global parameters for the Modem module

Location

This command is provided by the `Modem` module when `USE_MODEM` is defined.

13.2 modem dialer

Command Name

modem dialer - Initiate (dial) or hangup a Modem session

Syntax

```
modem dialer -n <interface name> [-d] [-h]
```

Parameters

-n	string: interface name in the form shown by the iface command (e.g., "pp0")
-d	Dial/Initiate a modem connection
-h	Hang up/close a modem connection

Description

This command controls a modem interface

Notes/Status

- Option '-n' is required. Only a single interface name can be entered.

Location

This command is provided by the `Modem` module when `USE_MODEM` is defined

13.3 modem netstat

Command Name

`modem netstat` - Display MODEM status and statistics.

Syntax

`modem netstat`

Parameters

None

Description

This command displays the status and configuration of each modem in the system.

Notes/Status

Location

This command is provided by the `Modem` module when `USE_MODEM` is defined.

13.4 ppp config

Command Name

ppp config - Configure or display PPP global parameters.

Syntax

```
ppp config [-a <AC name>] [-e <secs>] [-t <secs>] [-z <Service name>]
[-c <req | pref | no>] [-m <md5 | mschap>] [-p <req | pref | no>] [-s <CHAP sec>]
[-d <req | prov | no>] [-x <ipaddr primary>] [-y <ipaddr secondary>]
```

Parameters

-c	string: Require CHAP, "req" or "pref" or "no"
-m	string: Set preferred CHAP type, "md5" or "mschap"
-p	string: Require PAP, "req" or "pref" or "no"
-s	string: Secret for CHAP authentication
-a	string: Access Concentrator name tag
-e	Interval in seconds between echo requests. 0 = No echo requests
-t	Line timeout in seconds. 0 = No timeout.
-z	string: Server service name tag
-d	string: DNS server addresses, "req" (request) or "prov" (provide) or "no"
-x	IPv4 address to provide to peers as their primary DNS server
-y	IPv4 address to provide to peers as their secondary DNS server

Description

This command configures PPP global parameters. The options 'c', 'm', 'p' and 's' are related to CHAP and PAP. Options 'a', 'e', 't' and 'z' are specific to PPPoE. Command options 'd', 'x' and 'y' pertain to setting PPP DNS server information.

Notes/Status

- ppp config without any options displays the current state of the dynamically configurable PPP global variables.
- Options '-c' and '-s' are only available if CHAP_SUPPORT is defined.
- Option '-p' is only available if PAP_SUPPORT is defined.
- Option '-m' is only available if both CHAP_SUPPORT and MSCHAP_SUPPORT are defined. The value set will be requested, but negotiation may result in the other type being used.
- For Options '-c' and '-p', "req" means that negotiations will fail if the peer does not agree to the required protocol. "pref" means, if the local system is the client, it will request this authorization protocol. If the local system is the server, it will NAK the first request for a different authorization protocol. However, if the peer persists, it will accept the alternate protocol if available. "No" means not required. The local system will freely negotiate any of the available options.
- Options '-a', '-e', '-t', and '-z' are only available if USE_PPPOE is defined.
- Option '-t', the idle timeout, must be larger than option '-e', the echo request interval.
- Option '-d', '-x', and '-y' are only available if PPP_DNS is defined.
- If option '-d' is set to "req", the local system will request DNS server addresses from the peer. The current values (may be zero) in the dns_servers[] array will be provided in the request. The peer may accept these or provide new DNS server addresses. New addresses will be added to the end of the array, if there is room. Otherwise, they will be ignored.
Note: If there are no addresses in the local dns_servers[] array and local system requests DNS server address and the peer does not provide at least one, then IPCP negotiations will fail.
If option '-d' is set to "prov", the local system will provide DNS server addresses to any peer that requests them. The primary and secondary DNS server addresses that will be provided can be set either in ppp_port.h or by the '-x' and '-y' options to this command. At least one address must be non-zero. A zero address will not be provided to the peer
If option '-d' is set to "no", PPP will no longer request or provide DNS server addresses
- For options '-x', '-y', if the addresses already exist, they will be replaced with the new values.
Note: these values have no effect on the values in the local dns_servers[] array.

Location

This command is provided by the ppp module when USE_PPP is defined.

13.5 ppp netstat

Command Name

ppp netstat - Display PPP status and statistics.

Syntax

```
ppp netstat [-l] [-n < iface name>] [-p] [-s]
```

Parameters

-l	(default) Displays a brief summary of the status of all of the PPP links in the system.
-n	string: "ALL" or interface name in the form shown by the iface command (e.g., "pp0").
-p	Displays a summary of PPPOE links.
-s	Displays PPPOE sessions.

Description

When used without options or with the `-l` option, this command displays a brief summary of the status of all of the PPP links in the system. There is one line of output per link.

Sample output:

```
index  link_addr  iface  flags  type  LCP  IPCP
   0    00BC8328    pp0   80    ATMODEM  INITIAL  INITIAL
```

When used with `-n`, it displays extensive information about the specified link(s)

When used with `-p`, it displays configuration information about all pppoe links, 2 lines of output per link.

When used with `-s`, it displays a summary of the status of all active pppoe sessions, 3 lines of output per session.

Sample output:

```
state:      retrys:      ID:      iface:
Service:      AC:
pkts; in:      out:      last-ctrl:      last-rxdata:
```

Notes/Status

- The `-p` and `-s` options are only available when `USE_PPPOE` is defined

Location

This command is provided by the `PPP` module when `USE_PPP` is defined

13.6 ppp pdebug

Command Name

ppp pdebug - Configure PPP debug options

Syntax

```
pdebug [-d <on | off>] [-f <on | off>] [-h <on | off>] [-l <length>]
```

Parameters

	"pdebug" without parameters displays the current state of debug options
-d	string: Turn on debugging, "on" or "off"
-f	string: Send debug messages to PPPLOGFILE, "on" or "off"
-h	string: Hexdump PPP packet data, "on" or "off"
-l	integer specifying the maximum length of the hexdump for a message.

Description

This command configures PPP debug options

Notes/Status

- If `-f` is set, data will be written only to PPPLOGFILE.
- One of the options `-d` or `-f` must be set in order to turn on hexdump.
- Option `-f` is only available when PPP_LOGFILE is defined.
- Options `-h` and `-l` are only available when PPP_HEXDUMP is defined.

Location

This command is provided by the `ppp` module when `USE_PPP` is defined.

13.7 ppp plink

Command Name

`ppp plink - Control a PPP interface`

Syntax

```
ppp plink -n <iface name> -d | -u
```

Parameters

-n	string: interface name in the form shown by the iface command (e.g., "pp0")
-d	Take the specified interface down
-u	Bring the specified interface up

Description

This command controls a PPP interface

Notes/Status

- Option '-n' is required. Only a single interface name can be entered.

Location

This command is provided by the `ppp` module when `USE_PPP` is defined.

13.8 ppp plnckfg

Name

ppp plnckfg - Configure PPP per-interface parameters

Syntax

```
ppp plnckfg -n <iface name> [-a <yes | no>] [-c <yes | no>]
  [-d <yes | no>] [-i <IPV6CP IFID>] [-j <yes | no>]
  [-m <mtu>] [-p <password>] [-r <mru>] [-u <username>]
  [-v <ip4 | ip6>]
```

Parameters

n	- string: "ALL" or interface name in the form shown by the iface command (e.g., "pp0"). The options below will apply to this interface or all PPP interfaces
a	- string: Allow peer to set our local address, "yes" or "no"
c	- string: Can negotiate local link's IPV6IFID, "yes" or "no"
d	- string: Use DHCP, "yes" or "no"
i	- string in the form XXXX:XXXX:XXXX:XXXX that specifies an IP_V6 IFID to use, where each 'X' represents a hexadecimal digit. This IFID will be used for the link specified by the -n option
j	- string: Use VJ Compression, "yes" or "no"
m	- integer specifying the maximum transmission unit
p	- string specifying the password to be sent for authentication
r	- integer specifying the maximum receive unit
u	- string specifying a username to be sent for authentication
v	- string "ip4" or "ip6". The local interface will request this version with its initial configuration request

Description

This command configures PPP per-interface parameters

Notes/Status

- Option '-n' is required. Only "all" or a single interface name can be entered. The "all" string only applies to PPP interfaces. If "all" is specified, then the options specified will apply to each existing PPP interface and to those created dynamically at a later time.
- If option '-a' is set to "yes", the IP-address option will be set in the IPCP configuration request. The current address, which may be zero, for that PPP interface will be included in the option. If the peer NAKs the value we sent and sends a different address, we will accept and use it
- Options '-c' and '-i' are only available if IP_V6 is defined.
- Note: "all" cannot be used with the '-i' option.
- Option '-d' is only available if PPP_DHCP_CLIENT is defined.
- Option '-j' is only available if PPP_VJC is defined.
- Option '-v' is only available if both IP_V4 and IP_V6 are defined. By default, IPv4 will be used unless the remote system specifies IPv6. The version specified by this option will be requested in the initial configuration request; however, IP4 may still be selected as a result of negotiations with the peer.

Location

This command is provided by the `ppp` module when `USE_PPP` is defined.

14 RIP

- [rip config](#) - Configure RIP global variables
- [rip netstat](#) - Displays RIP statistics
- [ripauth](#) - Add/remove/display entries in the RIP authorization table
- [riprefuse](#) - Add/remove/display entries in the RIP refuse table
- [riproute](#) - add/remove/display routes

14.1 rip config

Command Name

`rip config` - Configure RIP global variables

Syntax

```
rip config -b <broadcast> -d <deletion> -t <time to live> -z <trigger>
```

Parameters

-b	Broadcast interval in seconds
-d	Deletion interval in seconds
-t	time to live in seconds
-z	trigger interval in seconds

Description

This command configures RIP global variables

Notes/Status

- The defaults for these variables were all set according to the recommendations of the RIP specification.

Location

This command is provided by the `RIP` module when `RIP_SUPPORT` is defined.

14.2 rip netstat

Command Name

`rip netstat` - Displays RIP statistics

Syntax

`rip netstat`

Parameters

None	Command takes no parameters
------	-----------------------------

Description

This command is used to display statistics for RIP.

Location

This command is provided by the `RIP` module when `RIP_SUPPORT` is defined.

14.3 rip ripauth

Command Name

ripauth - Add/remove/display entries in the RIP authorization table

Syntax

```
ripauth [{-a | -r} -i <iface> -p <password>]
```

Parameters

	ripauth without parameters will display the current RIP authorization table
-a	Add an entry to the RIP authorization table
-r	Remove an entry from the RIP authorization table
-i	Interface
-p	Password

Description

This command is used to add, remove, or display entries in the RIP authorization table

Notes/Status

- The authorization table only exists when RIP_AUTHENTICATION is defined.
- If parameters are entered, then either '-a' or '-r' is required, and '-i' and '-p' are both required.

Location

This command is provided by the RIP module when RIP_SUPPORT and RIP_AUTHENTICATION are defined.

14.4 rip riprefuse

Command Name

`riprefuse` - Add/remove/display entries in the RIP refuse table

Syntax

```
riprefuse [{-a | -r} -i <ipaddr>]
```

Parameters

	riprefuse without parameters will display the current RIP refuse table
<code>-a</code>	Add an entry to the RIP refuse table
<code>-r</code>	Remove an entry from the RIP refuse table
<code>-i</code>	IP address

Description

This command is used to add, remove, or display entries in the RIP refuse table

Notes/Status

- The refuse table only exists when `RIP_REFUSE_LOOKUP` is defined.
- If parameters are entered, then either `'-a'` or `'-r'` is required and `'-i'` is required.

Location

This command is provided by the `RIP` module when `RIP_SUPPORT` and `RIP_REFUSE_LOOKUP` are defined.

14.5 rip riproute

Command Name

```
riproute - add/remove/display routes
```

Syntax

```
riproute [{-a | -r} -d <dest> -i <iface> -s <subnetmask> [-g <gw>] [-m <metric>] [-t <tttl>] [-f [PRIVATE | TRIGGER] [-p <proxy>] ]
```

Parameters

	riproute without parameters displays the RIP routing table
-a	Add entry to RIP routing table
-r	Remove entry from RIP routing table
-d	Destination IP address
-i	Interface
-s	Subnet mask
-g	Gateway IP addr
-m	Metric
-t	Time to live (TTL)
-f	Flag
-p	Proxy IP address

Description

This command is used to set up entries in the routing table in order to be used by RIP.

RIP is a protocol that exchanges routing information between routers.

Notes/Status

- If `IP_ROUTING` is defined, the routing table will automatically be filled with all basic basic routing entries: an entry for each routable interface on the local system plus those learned from connected routers. RFC 1723 describes special cases where you may wish to add additional routes to these automatically generated routes.
- This command currently only supports IPv4 routes.
- If parameters are entered, then either `-a` or `-r` is required, and `-d`, `-i`, and `-s` are all required.
- Unless subnetting should be used for this entry, the value of the subnet mask must identify the full network portion of the address.
- For the `-f` operand, `PRIVATE` protects the entry from deletion.
- For the `-f` operand, `TRIGGER` is the default. It means that an RIP response message will be sent immediately, whenever there is a change in the metric for any entry in the routing table.
- For the `-m` operand, the metric is the "cost" (typically number of hops) to get to the given node. Note: RIP will substitute "16" (infinity) for this metric in messages sent on networks for which the entry should not be used (split horizon principle).
- The interface identifier is one-based (and not zero-based).
- After TTL seconds, an entry that has not been renewed will be marked as unusable (metric = 16). Then following the `"rip_def_deletion_interval"`, the entry will be removed.

Location

This command is provided by the `RIP` module when `RIP_SUPPORT` is defined.

15 SNMPv1/v2c

- [snmp community](#) - manage the SNMP community table
- [snmp config](#) - configure SNMP agent
- [snmp mib](#) - display SNMP MIB counters
- [snmp netstat](#) - display SNMP agent information
- [snmp target](#) - configure SNMP trap target
- [snmp trap](#) - send SNMP trap(s)

15.1 snmp community

Command Name

snmp community - manage the SNMP community table

Syntax

```
community -i INT -c STRING -a STRING
```

```
community -c STRING -a STRING -n STRING -e STRING [-k STRING -v STRING -t
INT -s INT]
```

```
community -d INT
```

Parameters

-i	Argument of type <i>INT</i> , specifying the SNMPv1/SNMPv2c community table index.
-c	Argument of type <i>STRING</i> , specifying the community string.
-a	Argument of type <i>STRING</i> , specifying the access permissions.
-n	Argument of type <i>STRING</i> , specifying the Security Name associated with the SNMPv3 table entry.
-e	Argument of type <i>STRING</i> , specifying the Engine ID associated with the SNMPv3 table entry.
-k	Argument of type <i>STRING</i> , specifying the Context Name associated with the SNMPv3 table entry.
-v	Argument of type <i>STRING</i> , specifying the Tag value associated with the SNMPv3 table entry.
-t	Argument of type <i>INT</i> , specifying the storage type of the SNMPv3 table entry.
-s	Argument of type <i>INT</i> , specifying the row status of the SNMPv3 table entry.
-d	Argument of type <i>INT</i> , specifying the index of the SNMPv3 table entry to delete.

Description

This command manages the table entries for the SNMPv1/SNMPv2c or SNMPv3 community table. The '-i' parameter selects the SNMPv1/SNMPv2c community table. If '-i' is absent, the SNMPv3 community table is assumed. Table indexes begin at 1. Possible values for the access strings are: *ONLY*, *RWRITE*, *NOACCESS*, *READCREATE*, *WRITEONLY*, and *NOTIFY*.

If the command is successful, the updated table is displayed.

Notes/Status

- NOTIFY is equivalent to ACCESSIBLE_FOR_NOTIFY.
- If the community string is too long, it is truncated.
- The '-k' parameter defaults to the default context name.
- The '-t' parameter defaults to 4 = permanent.
- The '-s' parameter defaults to 1 = active.

Location

This command is provided by the `SNMP` module when `INCLUDE_SNMP` is defined.

15.2 snmp config

Command Name

snmp config - configure SNMP agent

Syntax

```
config [-a] [-c STRING] [-d STRING] [-k STRING] [-n STRING] [-l STRING] [-b INT]
```

Parameters

-a	(no parameter), toggle the SNMP Agent ON/OFF.
-c	Argument of type <i>STRING</i> , specifying the default community string.
-d	Argument of type <i>STRING</i> , stored in the <i>sysDescr</i> field of the RFC1213-MIB system definition.
-k	Argument of type <i>STRING</i> , stored in the <i>sysContact</i> field of the RFC1213-MIB system definition.
-n	Argument of type <i>STRING</i> , stored in the <i>sysName</i> field of the RFC1213-MIB system definition.
-l	Argument of type <i>STRING</i> , stored in the <i>sysLocation</i> field of the RFC1213-MIB system definition.
-b	Argument of type <i>INT</i> , specifying the SNMPv3 engine boot count.

Description

This command is used to set various fields in the RFC1213-MIB structure.

If the command is successful, the updated values are displayed.

Notes/Status

- The current SNMP configuration is displayed after any fields have been updated.
- String values which are too long will be truncated.
- A warning is displayed if the new engine boot count is less than the current value.
- The *sysDescr.0* MIB variable cannot be updated via SNMP (because it is categorised as read-only).

Location

This command is provided by the *SNMP* module when *ENABLE_SNMP* is defined.

15.3 snmp mib

Command Name

```
snmp mib - display SNMP MIB counters
```

Syntax

```
mib
```

Description

This command displays SNMP MIB counters.

Location

This command is provided by the `SNMP` module when `INCLUDE_SNMP` and `MIB_COUNTERS` is defined.

15.4 snmp netstat

Command Name

```
snmp netstat - display SNMP agent information
```

Syntax

```
netstat
```

Description

Displays information related to the SNMP Agent.

Notes/Status

- SNMPv3 Agent information is displayed when `INCLUDE_SNMPV3` is defined.

Location

This command is provided by the `SNMP` module when `INCLUDE_SNMP` is defined.

15.5 snmp target

Command Name

```
snmp target - configure SNMP trap target
```

Syntax

```
target -i INT [-a IPADDR] [-c STRING] [-d]
```

Parameters

-i	Argument of type INT, indicating the trap target entry to modify.
-a	Argument of type IPADDR, indicating the IPv4 or IPv6 address of the trap target.
-c	Argument of type STRING, indicating the community string associated with the trap target.
-d	(no parameter), delete the selected trap target.

Description

This command configures a trap target entry. An entry in the trap target table contains a destination IPv4 address and a community string. When a trap message is sent, it is sent to each entry in the trap table.

Notes/Status

- Trap target indexes range from 1 to MAX_TRAP_TARGETS.
- If the community string is too long, it will be truncated.
- The '-d' parameter takes precedence over all other parameters.
- If no parameters are specified, the current trap target table is displayed.

Location

This command is provided by the SNMP module when ENABLE_SNMP_TRAPS is defined.

15.6 snmp trap

Command Name

```
snmp trap - send SNMP trap(s)
```

Syntax

```
trap -v {1,2} (-a | -t INT)
```

```
trap -v 3 (-a | -k STRING) -c STRING -k STRING
```

Parameters

-v	Argument of type INT, indicating the SNMP version, range is 1..3.
-t	Argument of type INT, indicating the type of trap message to send, range is 0..6.
-a	(no parameter), send a trap message for each trap type.
-k	Argument of type STRING, indicating the tag value of the corresponding target table entries.
-c	Argument of type STRING, specifying the context name.

Description

Sends a `SNMP TRAP` message to each trap target. The trap message is formatted using the specified trap type and SNMP protocol version. If '-a' is specified, a trap message of each type is sent. An error is returned if the selected SNMP version is not supported.

Notes/Status

- The '-v' parameter defaults to SNMPv1.
- If both '-t' and '-a' are specified, '-a' is assumed.
- If the trap type is 6 and `SNMP_TEST_SP_TRAP` is defined, a second "enterprise-specific" trap of type 6 is sent.
- The community string defaults to the global community string (see the `snmp config` command).

Location

This command is provided by the `SNMP` module when `ENABLE_SNMP_TRAPS` is defined.

16 SNMPv3

- [snmpv3 access](#) - manage the SNMPv3 access table
- [snmpv3 authoid](#) - manage the SNMPv3 algorithm table
- [snmpv3 context](#) - manage the SNMPv3 context table
- [snmpv3 group](#) - manage the SNMPv3 group table
- [snmpv3 mibview](#) - manage the SNMPv3 mibview table
- [snmpv3 notify](#) - manage the SNMPv3 notify table
- [snmpv3 tables](#) - display all SNMPv3 tables
- [snmpv3 taddr](#) - manage the SNMPv3 target address table
- [snmpv3 tparam](#) - manage the SNMPv3 target parameters table
- [snmpv3 username](#) - manage the SNMPv3 user table
- [snmpv3 v3test](#) - test SNMPv3 security algorithm

16.1 snmpv3 access

Command Name

snmpv3 access - manage the SNMPv3 access table

Syntax

```
access -m INT -g STRING -l INT -c STRING [-x] -r STRING -w STRING -n STRING
[-t INT -s INT]
```

```
access -d INT
```

Parameters

-m	Argument of type INT, specifying the security model of the SNMPv3 access table entry.
-g	Argument of type STRING, specifying the group name of the SNMPv3 access table entry.
-l	Argument of type INT, specifying the security level of the SNMPv3 access table entry.
-c	Argument of type STRING, specifying the context name associated with the SNMPv3 access table entry.
-x	(no parameter), specifies that an exact match of the context name is required.
-r	Argument of type STRING, specifying the read view name.
-w	Argument of type STRING, specifying the write view name.
-n	Argument of type STRING, specifying the notify view name.
-t	Argument of type INT, specifying the storage type of the SNMPv3 table entry.
-s	Argument of type INT, specifying the row status of the SNMPv3 table entry.
-d	Argument of type INT, specifying the index of the SNMPv3 access table entry to delete.

Description

This command manages the SNMPv3 access table.

If the command is successful, the updated table is displayed.

This command is provided by the `SNMP` module when `INCLUDE_SNMP` and `INCLUDE_SNMPV3` are defined.

16.2 snmpv3 authoid

Command Name

snmpv3 authoid - manage the SNMPv3 algorithm table

Syntax

```
authoid -n STRING -o STRING
```

```
authoid -d INT
```

Parameters

-n	Argument of type STRING, specifying the name of authentication or encryption algorithm.
-o	Argument of type STRING, specifying the OID of the authentication or encryption algorithm.
-d	Argument of type INT, specifying the index of the entry to delete.

Description

This command manages the auth-oid table.

If the command is successful, the updated table is displayed.

Notes/Status

- Table entry indexes start at 1.
- If the name string is too long, it is truncated.
- The '-d' parameter takes precedence over all other parameters.

Location

This command is provided by the SNMP module when `ENABLE_SNMP_TRAPS` is defined.

16.3 snmpv3 context

Command Name

`snmpv3 context` - manage the SNMPv3 context table

Syntax

```
context -n STRING
```

```
context -d INT
```

Parameters

-n	Argument of type <code>STRING</code> , specifying the context name to add to the SNMPv3 context table.
-d	Argument of type <code>INT</code> , specifying the index of the SNMPv3 context table entry to delete.

Description

This command manages the SNMPv3 context table entries.

If the command is successful, the updated table is displayed.

Notes/Status

- If the context string is too long, it is truncated.
- The context indices are zero-based.

Location

This command is provided by the `SNMP` module when `INCLUDE_SNMP` is defined.

16.4 snmpv3 group

Command Name

snmpv3 group - manage the SNMPv3 group table

Syntax

```
group -g STRING -n STRING -m INT [-t INT] [-s INT]
```

```
group -d INT
```

Parameters

-g	Argument of type STRING, specifying the group name.
-n	Argument of type STRING, specifying the security name.
-m	Argument of type INT, specifying the security model of the SNMPv3 group table entry.
-t	Argument of type INT, specifying the storage type of the SNMPv3 table entry.
-s	Argument of type INT, specifying the row status of the SNMPv3 table entry.
-d	Argument of type INT, specifying the index of the SNMPv3 group table entry to delete.

Description

This command manages the group table, which maps group names to security models.

If the command is successful, the updated table is displayed.

Notes/Status

- If the name string is too long, it is truncated.
- Table entry indexes start at 1.
- The '-t' parameter defaults to 4 = permanent.
- The '-s' parameter defaults to 1 = active.
- The '-d' parameter takes precedence over all other parameters.

Location

This command is provided by the SNMP module when ENABLE_SNMP and INCLUDE_SNMPV3 are defined.

16.5 snmpv3 mibview

Command Name

snmpv3 mibview - manage the SNMPv3 mibview table

Syntax

```
mibview -n STRING -o STRING -m STRING [-x] [-t INT] [-s INT]
```

```
mibview -d INT
```

Parameters

-n	Argument of type STRING, specifying the name of the MIB view.
-o	Argument of type STRING, specifying the OID associated with the MIB view.
-m	Argument of type INT, specifying the OID mask.
-x	(no parameter), exclude this MIB subtree from the MIB view.
-t	Argument of type INT, specifying the storage type of the SNMPv3 table entry.
-s	Argument of type INT, specifying the row status of the SNMPv3 table entry.
-d	Argument of type INT, specifying the index of the SNMPv3 table entry to delete.

Description

This command manages the MIB view table.

If the command is successful, the updated table is displayed.

Notes/Status

- If the name string is too long, it is truncated.
- Table entry indexes start at 1.
- The '-t' parameter defaults to 4 = permanent.
- The '-s' parameter defaults to 1 = active.
- The '-d' parameter takes precedence over all other parameters.

Location

This command is provided by the SNMP module when ENABLE_SNMP and INCLUDE_SNMPV3 are defined.

16.6 snmpv3 notify

Command Name

snmpv3 notify - manage the SNMPv3 notify table

Syntax

```
notify -m INT -n STRING -v STRING [-t INT] [-s INT]
```

```
notify -d INT
```

Parameters

-m	Argument of type INT, specifying the notify type.
-n	Argument of type STRING, specifying the notify group name.
-o	Argument of type STRING, specifying the notify tag.
-t	Argument of type INT, specifying the storage type of the SNMPv3 table entry.
-s	Argument of type INT, specifying the row status of the SNMPv3 table entry.
-d	Argument of type INT, specifying the index of the SNMPv3 table entry to delete.

Description

This command manages the Notify table used in sending SNMPv3 notification messages.

If the command is successful, the updated table is displayed.

Notes/Status

- If the name string is too long, it is truncated.
- Table entry indexes start at 1.
- The '-t' parameter defaults to 4 = permanent.
- The '-s' parameter defaults to 1 = active.
- The '-d' parameter takes precedence over all other parameters.

Location

This command is provided by the SNMP module when ENABLE_SNMP and INCLUDE_SNMPV3 are defined.

16.7 snmpv3 tables

Command Name

`snmpv3 tables - display all SNMPv3 tables`

Syntax

`tables`

Description

Displays all of the SNMPv3 tables.

Location

This command is provided by the `SNMP` module when `INCLUDE_SNMP` and `INCLUDE_SNMPV3` are defined.

16.8 snmpv3 taddr

Command Name

snmpv3 taddr - manage the SNMPv3 target address table

Syntax

```
taddr -n STRING -a IPADDR -v STRING -r INT -x INT -z STRING [-t INT] [-s INT]
```

```
taddr -d INT
```

Parameters

-n	Argument of type STRING, specifying the entry name.
-a	Argument of type IPADDR, specifying the destination IP address.
-v	Argument of type STRING, specifying the trap tag value.
-r	Argument of type INT, specifying the retry count.
-x	Argument of type INT, specifying the timeout (seconds).
-z	Argument of type STRING, specifying the trap parameter(s).
-t	Argument of type INT, specifying the storage type of the SNMPv3 table entry.
-s	Argument of type INT, specifying the row status of the SNMPv3 table entry.
-d	Argument of type INT, the index of the SNMPv3 table entry to delete.

Description

This command manages the Target Address table. If it is successful, the updated table is displayed.

Notes/Status

- If the name string is too long, it is truncated.
- Table entry indexes start at 1.
- The '-t' parameter defaults to 4 = permanent.
- The '-s' parameter defaults to 1 = active.
- The '-d' parameter takes precedence over all other parameters.

Location

This is provided by the SNMP module when ENABLE_SNMP and INCLUDE_SNMPV3 are defined.

16.9 snmpv3 tparam

Command Name

snmpv3 tparam - manage the SNMPv3 target parameters table

Syntax

```
tparam -m INT -n STRING -u INT -v STRING -l INT [-t INT] [-s INT]
```

```
tparam -d INT
```

Parameters

-m	Argument of type INT, specifying the MPC model of the trap.
-n	Argument of type STRING, specifying the name of this entry.
-u	Argument of type INT, specifying the USEC model.
-v	Argument of type STRING, specifying the Security model name.
-l	Argument of type INT, specifying the Security level.
-t	Argument of type INT, specifying the storage type of the SNMPv3 table entry.
-s	Argument of type INT, specifying the row status of the SNMPv3 table entry.
-d	Argument of type INT, specifying the index of the SNMPv3 table entry to delete.

Description

This command manages the Target Parameter table. If it is successful, the updated table is displayed.

Notes/Status

- If the name string is too long, it is truncated.
- Table entry indexes start at 1.
- The '-t' parameter defaults to 4 = permanent.
- The '-s' parameter defaults to 1 = active.
- The '-d' parameter takes precedence over all other parameters.

Location

This is provided by the SNMP module when ENABLE_SNMP and INCLUDE_SNMPV3 are defined.

16.10 snmpv3 username

Command Name

snmpv3 username - manage the SNMPv3 user table

Syntax

```
username -u STRING -v STRING -a STRING -b STRING -p STRING -q STRING [-t
INT] [-s INT]
```

```
username -d INT
```

Parameters

-u	Argument of type STRING, specifying the user name.
-v	Argument of type STRING, specifying the Security name.
-a	Argument of type STRING, specifying the Authentication entry in the Auth-OID table.
-b	Argument of type STRING, specifying the Authentication password.
-p	Argument of type STRING, specifying the Privacy entry in the Auth-OID table.
-q	Argument of type STRING, specifying the Privacy password.
-t	Argument of type INT, specifying the storage type of the SNMPv3 table entry.
-s	Argument of type INT, specifying the row status of the SNMPv3 table entry.
-d	Argument of type INT, specifying the index of the SNMPv3 table entry to delete.

Description

This command manages the User table.

If the command is successful, the updated table is displayed.

Notes/Status

- If the name string is too long, it is truncated.
- Table entry indexes start at 1.
- The '-t' parameter defaults to 4 = permanent.
- The '-s' parameter defaults to 1 = active.
- The '-d' parameter takes precedence over all other parameters.

Location

This command is provided by the `SNMP` module when `ENABLE_SNMP` and `INCLUDE_SNMPV3` are defined.

16.11 snmpv3 v3test

Command Name

```
snmpv3 v3test - test SNMPv3 security algorithm
```

Syntax

```
v3test (-a | -m)
```

Parameters

-a	(no parameter), perform all authentication tests.
-m	(no parameter), perform MD5 authentication test.

Description

This command tests the security algorithms supported by the build.

Notes/Status

- This commands only supports the MD5 authentication algorithm.

Location

This command is provided by the `SNMP` module when `INCLUDE_SNMP` and `V3_USE_AUTH` are defined.

17 SNTPv4

- `sntp netstat` - display SNTPv4 client statistics and status
- `sntp sntpcfg` - configure SNTPv4 client
- `sntp sntplog` - display SNTPv4 client state transition log
- `sntp sntpsync` - synchronize with the time server
- `sntp sntp term` - terminate synchronization with the time server
- `sntp sntp time` - display current time

17.1 sntp netstat

Command Name

`sntp netstat - display SNTPv4 client statistics and status`

Syntax

`netstat`

Parameters

None

Description

This command displays statistics associated with the SNTPv4 client module.

Location

This command is provided by the `SNTPv4 client` module when `USE_SNTP_V4` is defined.

17.2 sntp sntpconfig

Command Name

```
sntp sntpconfig - configure SNTPv4 client
```

Syntax

```
sntpconfig -a -c -d -e -l -m -o -p -r -s -t -v -x
```

Parameters

-a	Add new time server address (specified as IPv4 address or hostname).
-c	Specify list of time servers from which an update will be accepted.
-d	Delete time server address (specified as IPv4 address or hostname).
-e	Specify value of the "bm_perp" parameter ("none", "once", or "perpetual") for time server.
-l	Specify value of "def_delay" parameter (in microseconds) for time server.
-m	Specify value of the "bm_active" parameter ("none", "active", or "passive") for time server.
-o	Specify value of the "sord" parameter ("none", "dynamic", or "static") for time server.
-p	Specify slot number in time server address table.
-r	Specify retransmission timeout (in seconds).
-s	Specify time server (as IPv4 address or hostname) for which parameters are being configured.
-t	Specify value of TTL field in IPv4 header for outgoing multicast packets.
-v	Specify passive timeout (in seconds).
-x	Specify total number of transmissions of request packet.

Description

This command is used to configure the SNTPv4 client module.

Notes/Status

- The `-p` option specifies the slot number for the time server being added via the `-a` option. Both of these options must be specified together.
- The `-c`, `-l`, `-o`, and `-t` options must be used to configure parameters for an existing time server specified via the `-s` option.
- The `-c`, `-e`, `-l`, `-m`, and `-o` options are only intended for use with broadcast- or multicast-based time servers.

The following sequence of CLI commands can be used to configure the SNTPv4 client to communicate with a unicast-based time server.

```
##add a new time server (129.6.15.28) at slot# zero in the server address table
```

```
sntpconfig -a 129.6.15.28 -p 0
```

Alternatively, a server can be specified via its name.

```
sntpconfig -a time-a.nist.gov -p 0
```

The following sequence of CLI commands can be used to configure the SNTPv4 client to operate in passive perpetual mode, and to accept updates sent from 10.0.0.70 to the 224.0.1.1 multicast group address. The server is configured for a static delay of 10000 microseconds.

```
##add a new time server (224.0.1.1) at slot# zero in the server address table
```

```
sntpconfig -a 224.0.1.1 -p 0
```

```
##configure client to use a static one-way delay of 10000 microseconds
```

```
sntpconfig -s 224.0.1.1 -o static -l 10000
```

```
##configure client to operate in passive perpetual mode
```

```
sntpconfig -m passive -e perpetual
```

```
##configure client to only accept updates sent from 10.0.0.70 to the 224.0.1.1 multicast group address
```

```
sntpconfig -s 224.0.1.1 -c 10.0.0.70
```

Broadcast-based time servers can be configured in a manner similar to that shown above. To configure a client for operation in active mode (with multicast- or broadcast-based servers), use the `'-m active'` option. Here's an example of configuration that allows the client to accept time updates (sent to the 10.0.0.255 broadcast address) from any one of four servers.

```
sntpconfig -s 10.0.0.255 -c "10.0.0.1 10.0.0.2 10.0.0.3 10.0.0.4"
```

Location

This command is provided by the `SNTPv4_client` module when `USE_SNTP_V4` is defined.

17.3 sntp sntplog

Command Name

```
sntp sntplog - display SNTPv4 client state transition log
```

Syntax

```
sntplog
```

Parameters

None

Description

This command displays the contents of the state transition log in the time server.

Location

This command is provided by the `SNTPv4 client` module when `USE_SNTP_V4` is defined.

17.4 sntp sntpsync

Command Name

`sntp sntpsync - synchronize with the time server`

Syntax

`sntpsync`

Parameters

None

Description

This command initiates a sync with the time server.

Location

This command is provided by the `SNTPv4 client` module when `USE_SNTP_V4` is defined.

17.5 sntp sntp term

Command Name

sntp sntp term - terminate synchronization with the time server

Syntax

```
sntp term
```

Parameters

None

Description

This command terminates an ongoing sync with the time server.

Location

This command is provided by the `SNTPv4 client` module when `USE_SNTP_V4` is defined.

17.6 sntp sntptime

Command Name

```
sntp sntptime - display current time
```

Syntax

```
sntptime
```

Parameters

None

Description

This command displays the current time. The time returned is the sum of the last update received from the time server, and the elapsed interval since then (based on information extracted via the local clock).

Location

This command is provided by the `SNTPv4 client` module when `USE_SNTP_V4` is defined.

18 SSH

- [ssh cfgfwds](#) - Configure or display SSH forwarding parameters
- [ssh config](#) - display or modify SSH server configuration parameters
- [ssh memstat](#) - Display SSH server memory usage
- [ssh netstat](#) - displays SSH Server statistics and status
- [ssh nosecurity](#) - Allow/Disallow NULL authorization and security parameters

18.1 ssh ckgfwds

Command Name

ssh ckgfwds - Configure or display SSH forwarding parameters

Syntax

```
ssh ckgfwds [-p <port>] [-q <port>] [-r <port>] [-s <port>]
```

Parameters

(none)	Command without arguments displays the current state of ssh forwarding parameters
-p	lowest port number to be used for local port forwarding.
-q	highest port number to be used for local port forwarding
-r	lowest port number to be used for remote port forwarding.
-s	highest port number to be used for remote port forwarding

Description

This command is used to configure or display SSH forwarding parameters

Location

This command is provided by the `SSH_server` module when `USE_SSH` and `SSH_MENUS` are defined.

18.2 ssh config

Command Name

`ssh config` - display or modify SSH server configuration parameters

Syntax

```
ssh config [-a <maxattempts>] [-t <maxidle>] [-v <"on" | "off">]
```

Parameters

(none)	Command without arguments displays the current state of ssh configuration parameters
-a	Integer: Maximum allowed authorization attempts.
-t	Integer: Maximum allowed idle time during authorizations.
-v	String: Turn ssh debug "on" or "off"

Description

This command displays or sets SSH configuration parameters

Location

This command is provided by the `ssh` module when `USE_SSH` and `SSH_MENUS` are defined.

18.3 ssh memstat

Command Name

`ssh memstat` - Display SSH server memory usage

Syntax

`ssh memstat`

Parameters

This command takes no arguments

Description

This command is used to display SSH server memory usage

Notes/Status

SSH obtains memory from pre-configured SSH buffer pools. The memstat display shows:

- The name of the memory pool.
- The size of each element in bytes
- The maximum number of elements that may be allocated in this pool
- The lowest number that were available at any time.
- The number of currently allocated elements in the pool (whether used or not).

Location

This command is provided by the `SSH server` module when `USE_SSH` and `SSH_MENUS` are defined.

18.4 ssh netstat

Command Name

ssh netstat - displays SSH Server statistics and status

Syntax

```
ssh netstat [-i <client ID>] [-l ]
```

Parameters

(none)	Command without arguments displays statistics for all connections
-i	Integer: Display statics for specified Client ID (Obtained with ssh netstat -l).
-l	List active connections

Description

This command is used to display SSH Server statistics and status

Location

This command is provided by the `SSH server` module when `USE_SSH` and `SSH_MENUS` are defined.

18.5 ssh nosecurity

Command Name

ssh nosecurity - Allow/Disallow NULL authorization and security parameters

Syntax

```
ssh nosecurity [-a <"yes"|"no">] [-c <"yes"|"no">] [-c <"yes"|"no">] [-p <"yes"|"no">]
```

Parameters

(none)	Command without arguments displays the current state of ssh NULL authorization and security parameters
-a	Allows/disallows access without authorization.
-c	Allows/disallows connections that do not use encryption.
-m	Allows/disallows connections that do not use MAC integrity protection
-p	Allows/disallows the use of passwords on connections without encryption.

Description

This command is intended for use during development and debugging. It enables/disables ssh server configuration parameters for permitting the use of NULL authorization and security

Notes/Status

- This command is only available if `ssh_globs.ssh_nosecurity_allowed` was set at compile time
- Key files specified in the usertable cannot be used with the NULL cipher. If `NONE_AUTH` is allowed, `key_files` will be ignored. Otherwise an error will be returned if the entry for the user specifies a key file.
- Passwords specified in the usertable cannot be used with the NULL cipher unless `ssh_globs.ssh_allow_pwd_with_none_cipher` is set. If that parameter is set and `NONE_AUTH` is allowed, passwords in the usertable will be ignored. Otherwise an error will be returned if the entry for the user specifies a password.

Location

This command is provided by the `SSH_server` module when `USE_SSH` and `SSH_MENUS` are defined.

19 Syslog

- [syslog netstat](#) - display syslog statistics and status
- [syslog sendtest](#) - send test syslog message(s)
- [syslog server](#) - configure syslog server address
- [syslog syslog](#) - disable or enable syslog

19.1 syslog netstat

Command Name

```
syslog netstat - display syslog statistics and status
```

Syntax

```
syslog netstat -a
```

Parameters

-a	Display all statistics for the syslog client module.
----	--

Description

This command displays statistics associated with the syslog client module.

Location

This command is provided by the `syslog client` module when `INICHE_SYSLOG` is defined.

19.2 syslog sendtest

Command Name

```
syslog sendtest - send test syslog message(s)
```

Syntax

```
syslog sendtest -f STRING -s STRING -m STRING
```

Parameters

-m	Argument of type <code>STRING</code> , indicating message, a mandatory parameter
-f	Argument of type <code>STRING</code> , indicating facility
-s	Argument of type <code>STRING</code> , indicating severity

Description

This command sends a test message to syslog server.

Location

This command is provided by the `syslog client` module when `INICHE_SYSLOG` is defined.

19.3 syslog server

Command Name

`syslog server - configure syslog server address`

Syntax

`syslog server {-i <0 | 1 | 2>} {-s <IPv4 or IPv6 address>}`

Parameters

<code>-i</code>	index of slot in syslog server address table.
<code>-s</code>	IPv4 or IPv6 address of syslog server.

Description

This command updates the syslog server table with a new IPv4 or IPv6 address.

Location

This command is provided by the `syslog client` module when `INICHE_SYSLOG` is defined.

19.4 syslog syslog

Command Name

```
syslog syslog - disable or enable syslog
```

Syntax

```
syslog syslog -d -e -t
```

Parameters

-d	Disables Syslog function
-e	Enables Syslog function
-t	Toggles Syslog function (If enabled disables it and if disabled enables it)

Description

This command Enables Or Disables Or Toggles the Syslog Function.

Location

This command is provided by the `syslog client` module when `INICHE_SYSLOG` is defined.

20 System

- `cbadd` - add chained buffer pool
- `cbdel` - Set aside the buffers from a pool of chained buffers or delete the entire pool
- `call` - call a command script
- `config` - Set the CLI configuration
- `echo` - echo a string through current GIO context
- `help` - display information about a command
- `sleep` - pause for a specified number of seconds or ticks
- `arp` - Display ARP statistics
- `buffers` - list chained buffer and socket statistics
- `bufstat` - Display packet buffer statistics
- `debug` - set the IP stack trace level
- `dtrap` - Execute the `dtrap()` function
- `dyniface` - Dynamic Interface Command
- `gratarp` - Send a gratuitous ARP request/reply
- `halt` - Stop NicheStack execution
- `iface` - Display network interface information
- `linkstats` - Display link-specific information
- `net mbufs` - Display mbuf pool statistics and mbuf lists
- `net netstat` - display operational statistics
- `ping` - Send ICMP requests
- `queues` - Display NicheStack packet queues
- `route` - add/delete/print IP route table entry
- `setip` - manually set IPv4 or IPv6 address information
- `status` - display system status
- `tcpecho` - Start a tcp echo client request
- `tesvr` - Control the TCP echo server
- `udpecho` - Start, stop, or provide status for a udp echo client request
- `uesvr` - Start or stop the UDP echo server
- `user` - Access or modify user table

20.1 chainbuff cbadd

Command Name

```
cbadd - add chained buffer pool
```

Syntax

```
cbadd -n number -s size -r number
```

Parameters

-n	Argument of type <code>int</code> , total number of buffers in this pool
-s	Argument of type <code>int</code> , size of each buffer in this pool
-r	Argument of type <code>int</code> , restore: number of buffers to add back from those previously set aside via the <code>cbdel</code> command

Description

Add a new chained buffer queue.

Sample use:

```
cbadd -s 512 -n 30
```

Notes/Status

- `cbadd -s xx -n xx` will fail if a pool of buffers of that size already exists. To add more buffers to a pool, you must first delete the pool and then create the pool again.
- When a chain buffer pool of `-n` is created, the command will also add a region containing `-n X MBUF_PERCENT` mbufs .
- If a pool of `size` buffers does exist, and at least `number` buffers have been previously "set aside" (see command '`cbdel`') this command returns the requested number of buffers to the pool for allocation.
- If no number parameter is given with `-r` option, all buffers on the delete/set-aside queue of the specified size will be restored.
- `-n` and `-r` cannot be used in the same command.

Location

This command is provided by the `chainbuff` module when `CHAINED_BUFFERS` and `INCLUDE_CLI` are defined.

20.2 chainbuff cbdel

Command Name

`cbdel` - Set aside the buffers from a pool of chained buffers or delete the entire pool

Syntax

```
cbdel -s size [-n number]
```

Parameters

<code>-s size</code>	Argument of type <code>int</code> , indicating size in bytes of each buffer in the pool
<code>-n number</code>	Argument of type <code>int</code> , indicating number of buffers to delete from the allocation pool.

Description

Artificially reduce the size of a chained buffer pool by setting aside the specified number of buffers, or delete the entire pool.

Sample use:

```
cbdel -s 512 -n 10
```

Notes/Status

- If `-n` option is not provided, this command frees the region of the heap containing the buffers and also the mbufs associated with that pool.
- If `-n` option is provided and sufficient buffers exist in the pool, this command will "set aside" `number` buffers, thereby artificially reducing the pool of buffers available for allocation.
- If the value of the `-n` option always specifies the total number of buffers to be set aside. If it is less than the number previously set aside, then some buffers will be restored. If it is larger than the number previously set aside, then more buffers will be set aside until the total reaches the specified value

Location

This command is provided by the `chainbuff` module when `CHAINED_BUFFERS` and `INCLUDE_CLI` are defined.

20.3 cli call

Command Name

```
call - call a command script
```

Syntax

```
call -s STRING [-i] [-o] [-x]
```

Parameters

-s	Script file name
-i	Suppress echoing script lines to the output stream
-o	Suppress all output
-h	Terminate script processing if an error is encountered

Description

This command reads lines from a script file and passes them on to the Command Line Interpreter. The lines of the script file may optionally be echoed to the output stream (normally the Console). Output resulting from the execution of the CLI commands may optionally be suppressed. Commands are executed until the input stream reaches end-of-file, at which time the previous input stream is restored. Script files may invoke other script files.

Notes/Status

- Script files may invoke other script files

Location

This command is provided by the CLI module when `INCLUDE_CLI` is defined.

20.4 cli config

Command config

`config` - Set the CLI configuration

Syntax

```
config [-p STRING]
```

Parameters

<code>-p</code>	Argument of type <code>STRING</code> , specifying the new CLI prompt string
-----------------	---

Description

The command sets the CLI prompt string for the current CLI context and any subsequent CLI contexts.

Notes/Status

- The prompt string is limited to a maximum of `CLI_PROMPT_LEN` characters.
- The command can be called by the `boot_rc` script.

Location

This command is provided by the `CLI` module when `INCLUDE_CLI` is defined.

20.5 cli echo

Command Name

echo - echo a string through current GIO context

Syntax

```
echo -s STRING
```

Parameters

-s	the string which is to be echoed to gio's current output device
----	---

Description

Copies the string to the current output stream. Primarily used in web scripts for inserting "canned" messages into the output stream.

Notes/Status

- If the string includes spaces, the string must be enclosed in single quotes, double quotes, or parentheses.
- This command can be called by the `boot_rc` script.

Location

This command is provided by the CLI module when `INCLUDE_CLI` is defined.

20.6 cli help

Command Name

`help` - display information about a command

Syntax

`help [-m STRING] [-c STRING]`

Parameters

<code>-m</code>	Menu group name
<code>-c</code>	Command name

Description

This command provides helpful information about the CLI commands. If no parameters are entered, the list of available menu groups and the commands within each menu group is displayed. If a menu group is specified, information about the menu group and its commands are displayed. If a command is specified, information about the command is displayed. If the command name is present in more than one menu group, the menu group name must also be specified to remove any ambiguity.

Notes/Status

- "`help -m foo -c bar`" is equivalent to "`foo bar ?`".
- Entering "?" is equivalent to entering "`help`".

Location

This command is provided by the `CLI` module when `INCLUDE_CLI` is defined.

20.7 cli sleep

Command Name

sleep - pause for a specified number of seconds or ticks

Syntax

```
sleep [ -s UINT | -t UINT ]
```

Parameters

-s	the number of seconds to sleep.
-t	the number of ticks to sleep.

Description

Suspends the caller for the requested number of seconds or ticks.

Notes/Status

- Both '-s' and '-t' cannot be specified.

Location

This command is provided by the CLI module when `INCLUDE_CLI` is defined.

20.8 net arp

Command arp

arp - Display ARP statistics

Syntax

arp [-z]

Parameters

-z	Reset the ARP statistics to zero
----	----------------------------------

Description

This command displays the ARP table and the ARP statistics. If '-z' is specified, the statistics are reset to zero after they are displayed.

Location

This command is provided by the `DIAG` module when `NET_STATS` is defined.

20.9 net buffers

Command Name

```
buffers - list chained buffer and socket statistics
```

Syntax

```
buffers [-a] [-q UINT] [-o UINT] [-l UINT] [-s]
```

Parameters

-a	List all buffer and socket statistics
-q	Buffer queue to list. Queue is one of those defined by the <code>in_bufq[]</code> array in <code>userdata.c</code> , e.g., 128, 512. (default: 0 = "all buffers")
-o	Offset into buffer to begin data dump (default: 0)
-l	Number of bytes to dump (default: 14)
-s	List socket statistics

Description

This command displays the current status of the selected chained buffers.

Notes/Status

- The packet buffer information may not accurately reflect packets that are currently being processed.

Location

This command is provided by the `NET` module when `PKTLOG` is defined.

20.10 net bufstat

Command bufstat

bufstat - Display packet buffer statistics

Syntax

```
bufstat
```

Parameters

None

Description

Displays packet buffer statistics.

Notes/Status

- Should this command be rolled into a 'netstat' command?

Location

This command is provided by the `DIAG` module when `INCLUDE_CLI` is defined.

20.11 net debug

Command debug

debug - set the IP stack trace level

Syntax

```
debug [ [-d] | [-e] | [-n UINT] ]
```

Parameters

-d	disable IP stack tracing
-e	enable default IP stack trace levels
-n	Argument of type <code>UINT</code> , specifying the IP stack trace levels

Description

NicheStack includes code to trace the progress of network packets as they move through the various levels of the stack. This command controls which levels of the stack display trace information.

The '-n' parameter is a bitmask specifying which levels of the IP stack (i.e. protocol, transport, internet, application, etc.) will display trace information. The bits are defined in the file, h/net.h. If '-d' is specified, IP stack tracing is disabled (equivalent to '-n 0'). If '-e' is specified, IP stack tracing is enabled for the default IP stack trace levels; general, protocol, transport, and internet (equivalent to '-n 0x314').

Notes/Status

- Only available if `NPDEBUG` is defined.

Location

This command is provided by the `DIAG` module when `INCLUDE_CLI` and `NPDEBUG` are defined.

20.12 net dtrap

Command dtrap

dtrap - Execute the dtrap() function

Syntax

dtrap

Parameters

None

Description

This command calls the NicheStack `dtrap()` function. The `dtrap()` function is a "port dependent" mechanism which allows users to interrupt the execution of NicheStack and pass control to a debugger process.

Notes/Status

- This command is "port dependent."

Location

This command is provided by the `DIAG` module when `NPDEBUG` is defined.

20.13 net dyniface

Command Name

`dyniface` - Dynamic Interface Command

Syntax

```
dyniface [-c <typestring>] | [-l]
```

```
dyniface -n <name> [-d] | [-e] | [-r]
```

Parameters

-c	Create interface of type specified by string
-l	List interfaces
-n	Interface name
-d	Disable interface named with -n option
-e	Enable interface named with -n option
-r	Remove/delete interface named with -n option

Description

This command is used to create or remove a dynamic interface. It can also be used to list all interfaces or to enable or disable an interface

Notes/Status

- The type string for the -c option must be either "ppp", or "lo"
- A dynamic interface is disabled when it is created.
- A dynamically created ppp interface must be configured before it is enabled (See `plnkcfg` and `setip` commands)
- Only a dynamically created interface can be removed (-r), and it must be disabled before it can be removed
- The API function, `ni_create()`, has additional options not supported by this CLI command. See the NicheStack Reference Manual for details.

Location

This command is provided when `DYNAMIC_IFACES` and `INCLUDE_CLI` are defined

20.14 net gratarp

Command

gratarp - Send a gratuitous ARP request/reply

Syntax

```
gratarp -i UINT -r
```

Parameters

-i	Argument of type <code>UINT</code> , indicating the index of the network interface to use send the ARP packet.
-r	(no parameter), if present, sends a gratuitous ARP reply, otherwise sends a gratuitous ARP request.

Description

This command sends a gratuitous ARP packet. The '-i' parameter selects the network interface to be used. A gratuitous ARP request packet is sent unless the '-r' parameter is present, in which case a gratuitous ARP reply packet is sent.

Location

This command is provided by the `ARP` module.

20.15 net halt

Command halt

halt - Stop NicheStack execution

Syntax

halt

Parameters

None

Description

This command stops NicheStack execution. Execution passes to the process that started NicheStack.

Notes/Status

- Th command calls the "port dependent" function, `netexit()`.

Location

This command is provided by the NET module when `INCLUDE_CLI` is defined.

20.16 net iface

Command Name

`iface` - Display network interface information

Syntax

```
iface [-i UINT [-m UINT]]
```

Parameters

<code>-i</code>	Network Interface number.
<code>-m</code>	The maximum transmission unit of a Network Interface.

Description

This command displays information about the specified Network Interface. If '`-i`' is not specified, the list of available Network Interfaces is displayed.

The value of the '`-m`' is used to set the maximum transmission unit of the selected interface. Valid values are 128 to 65535. Care must be taken when setting the value to ensure that the value matches the capabilities of the underlying hardware.

Notes/Status

- The first Network Interface number is 1.

Location

This command is provided by the `NET` module when `INCLUDE_CLI` is defined.

20.17 net linkstats

Command Name

`linkstats` - Display link-specific information

Syntax

```
linkstats -i INT
```

Parameters

<code>-i</code>	Network Interface number.
-----------------	---------------------------

Description

This command displays Link information for the specified Network Interface. The Link information is device-specific, and is provided by the implementor of the Network Interface device driver.

Notes/Status

- The first Network Interface number is 1.

Location

This command is provided by the `NETMAIN` module when `INCLUDE_CLI` is defined.

20.18 net mbufs

Command Name

`net mbufs` - Display mbuf pool statistics and mbuf lists

Syntax

```
net mbufs -l
```

Parameters

-l	This parameter is optional. With the parameter the command displays mbuf lists and mbuf statistics.
----	---

Description

This command with the parameter `l` displays mbuf pool statistics and mbuf lists and without the parameter displays only mbuf pool statistics.

Location

This command is provided by the `net` module when `INCLUDE_CLI` is defined.

20.19 net netstat

Command Name

```
net netstat - display operational statistics
```

Syntax

```
netstat -a {-c [-p <protocol>]} -m -q {-s [-p <protocol>]}
```

Parameters

-a	display status information about all protocols or modules.
-c	display status information about TCP or UDP sockets.
-h	Argument takes no parameter and returns help message for this command
-m	display status information about mbufs.
-p	specify network protocol (ICMP ("icmp"), ICMPv6 ("icmp6"), IP ("ip"), IPv6 ("ip6"), TCP ("tcp" or "tcp6"), and UDP ("udp" or "udp6")) for which information is being requested.
-q	display status information about the TCP/IP stack's receive queue.
-s	display statistics for specified network protocol.

Description

This command displays status information for various network protocols or modules.

Notes/Status

- The protocol names can be specified in either lowercase or uppercase.
- The -p option is only intended for use with either the -c option or the -s option. For the ICMPv6 protocol, the user can also enter an identifier with the -i option to specify the interface for which ICMPv6 statistics are desired. Here's an example invocation: "net netstat -s -p icmp6 -i 1". The existing code does not provide any mechanism to dump ICMPv6 statistics for multiple interfaces via one CLI command.
- The protocol names "tcp6" and "udp6" can be used with only the -c and -p options to display TCP /IPv6 and UDP/IPv6 sockets respectively.
- When the -c option is used without a -p option, this command will display information about sockets for all protocols.
- When the -s option is used without a -p option, this command will display statistics for all protocols.
- The TCP and UDP modules provide a unified set of statistics for IPv4 and IPv6.

Location

This command is provided by the `base TCP/IP stack`. Statistics information is only provided when `NET_STATS` is defined. IPv6-related information is only provided if `IPv6` support is included in the build.

20.20 net ping

Command Name

ping - Send ICMP requests

Syntax

```
ping (-a <IP addr> | -h <host name>) [-l <length of packets>] [-n <number of pings>] [-t <ticks between pings>]
```

```
ping -h <host name> -v <version>
```

```
ping -k <session ID>
```

```
ping -s
```

Parameters

-a	IPv4/6 addr
-h	Host name
-l	Length of packets. Default = 64 bytes
-n	Number of pings. Default = 5
-t	Interval between pings in ticks. Default = TPS. Minimum = 2 ticks.
-k	Kill ping request specified by Session ID
-s	Print cumulative ping statistics
-v	INT: 4=IPv4, 6=IPv6. Required only when Dual stack

Description

This command sends an ICMP echo requests in either IPv4 or IPv6 format. It verifies that the data in the responses exactly matches the data in the request and reports any mismatches. Multiple ping requests can be entered while the earlier requests are in progress.

Notes/Status

- The `-a` and `-h` options are mutually exclusive.
- For IPv6 link local addresses on MULTI_HOMED systems, the `-a` parameter must include the scope ID.
- The `-k` and `-s` options must be used by themselves
- The session ID argument for the `-k` option is printed when the ping request is started
- Some echo servers limit the length of responses. The returned messages will be truncated to that length.
- ping depends on the DNS server addresses being loaded (setdnssvr command).
- Please turn on the following in `ipport.h_h` - `DNS_CLIENT`, `PING_APP`, and optionally `PING_VERBOSE`

Location

This command is provided by the `DIAG` module when `PING_APP` is defined

20.21 net queues

Command queues

`queues` - Display NicheStack packet queues

Syntax

`queues`

Parameters

<code>-z</code>	(no parameter). Resets all queues' min and max thresholds to their current values.
-----------------	--

Description

This command displays the current status of various resource queues. These queues include the receive packet queue (`rcvdq`), free packet queues (`cb-#`), the free mbuf queue (`mfreeq`) and the 'inuse' mbuf queue (`mbufq`).

Sample Output:

```
-> queues
Packet buffer free queues, total packets:120 (99840 bytes)
cb-1 Q0128: size:7680, head:00A5A9FC, tail:00A5A96C, len:60, min:57, max:60
cb-2 Q1536: size:92160, head:00A5E784, tail:00A5E73C, len:60, min:52, max:60
mfreeq: head:00A5D82C, tail:00A5D804, len:120, min:118, max:120
mbufq: head:00000000, tail:00000000, len:0, min:0, max:2
rcvdq: head:00000000, tail:00000000, len:0, min:0, max:3
```

Location

This command is provided by the `net` module.

20.22 net route

Command Name

route - add/delete/print IP route table entry

Syntax

```
route {-a -d <dst> -m <mask> -n <nexthop>} | {-x -d <dst> -m <mask> -i  
<interface>} | {-p -v 4}
```

Parameters

-a	Add IP route
-d	Destination address associated with route
-i	Interface identifier
-m	Subnet mask associated with route
-n	IP address of next hop associated with route
-p	Print IP route table
-v	Version number of IP
-x	Delete IP route

Description

This command can be used to add or delete an entry from the IP routing table. It can also be used to print the entire routing table.

Notes/Status

- This command currently only supports IPv4 routes.
- The interface identifier is one-based (and not zero-based).
- The -v option must specify 4 to indicate that the user intends to dump the IPv4 routing table.

Location

This command is provided by the `IP routing` module when `IP_ROUTING` is defined.

20.23 net setup

Command Name

setup - manually set IPv4 or IPv6 address information

Syntax

```
setup -i INT [-a IPADDR] [-s IPADDR] [-g IPADDR] [-m MACADDR] [-d IPADDR]
[[-o | -r] -p STRING]
```

Parameters

-a	Network Interface's IPv4 or IPv6 address.
-d	Network Interface's IPv6 address.
-g	Network Interface's IPv4 gateway address.
-i	Network Interface number.
-o	Obtain an IPv4 address using the specified protocols (e.g., DHCP ("dhcp"), auto-configuration ("autoip")).
-p	Set of address protocols to be used on the link (e.g., "dhcp" (DHCP only), "autoip" (auto-configuration only), "dhcp:autoip" (DHCP or auto-configuration)).
-r	Terminate the use of the specified address protocols on the link, and relinquish address obtained thru' them.
-s	Network Interface's IPv4 subnet mask.

Description

This command configures a Network Interface. The '-i' parameter selects the Network Interface to configure. The user can set the IPv4 address, network submask, gateway IP address, and the Ethernet (i.e. MAC) address. IP address are specified in the format: NNN.NNN.NNN.NNN, where NNN can range from 0 to 255. The format: NNN.NNN, is shorthand for NNN.0.0.NNN. The Ethernet address has the format: XX:XX:XX:XX:XX:XX, where XX is a 2-digit hexadecimal value from 00 to FF.

The '-a' parameter will also accept an IPv6 address in the form `xxxx:xxxx:xxxx:xxxx:xxxx:xxxx:xxxx:xxxx`. The `setip` command may be used repeatedly to add more than one IPv6 unicast address.

The '-d' parameter will accept an IPv6 address to delete from the interface. The `setip` command may be used repeatedly to delete more than one IPv6 unicast address.

Changes to the Network Interface configuration are performed immediately; open connections are not flushed or closed. Setting the MAC address should only be done during network initialization. If no parameters are specified, the current IPv4 configuration settings are displayed.

Notes/Status

- When both DHCP and auto-configuration are specified on a link, the system first attempts to obtain an address via DHCP.
- Setting incorrect values may cause the network interface to become unusable.
- This command can be called by the `boot_rc` script.
- Example invocation sequences:

1. configure a static IPv4 address

```
setip -i 1 -a 10.0.0.112 -s 255.255.255.0 -g 10.0.0.1
```

2. configure interface #1 to obtain an IPv4 address via DHCP

```
setip -i 1 -o -p dhcp
```

3. configure interface #1 to obtain an IPv4 address via auto-configuration

```
setip -i 1 -o -p autoip
```

4. configure interface #1 to obtain an IPv4 address via DHCP or auto-configuration in this case, the system first attempts to obtain an address via DHCP. If that fails, it auto-configures itself with an address in the range from 169.254.1.0 to 169.254.254.255.

```
setip -i 1 -o -p dhcp,autoip
```

5. terminate the use of DHCP on interface #1, and release address obtained via that protocol. If auto-configuration was previously configured, the system will attempt to obtain an address via that protocol. Otherwise, it will revert to the previously configured static IPv4 address.

```
setip -i 1 -r -p dhcp
```

Location

This command is provided by the NET module when `INCLUDE_CLI` is defined.

20.24 net status

Command Name

```
status - display system status
```

Syntax

```
status [-a] [-i] [-m] [-q] [-s] [-t]
```

Parameters

-a	Display all. Equivalent to: -i -m -q -s -t
-i	Display IP MIB information.
-m	Display MBuf information.
-q	Display packet queue information.
-s	Display system status information.
-t	Display task information.

Description

This command displays information about various NicheStack components.

Notes/Status

- The '-m' option is only available if `INCLUDE_TCP` is defined.

Location

This command is provided by the `NETMAIN` module when `INCLUDE_CLI` is defined.

20.25 net tcpecho

Command Name

tcpecho - Start a tcp echo client request

Syntax

```
net tcpecho{ -a <ipaddr> | -c | -s } [-l <reqlen>] [-n <number of
requests>] [-p <port on server>] [-t <ticks between requests>]
```

Parameters

-a	IPv4/6 address of echo server
-c	Used to close an echo request that is in progress
-s	Display cumulative echo statistics
-l	Total number of bytes in each echo request (default = 256)
-n	Number of requests (default = 1)
-p	Port on server. Default = 7, the standard echo port
-t	Number of ticks between each echo request (default = 0)

Description

Starts a TCP echo request. Sends a total number of bytes equal to reqlen * number of requests. Request data consists of 32-bit values. The values start at 0 at the beginning of the command and then continuously increment across all requests in the command. Each byte in the echoed responses are compared with the values expected. When the client has recieved echo responses for all of the echo requests, then the command will complete and the socket will be closed.

Notes/Status

- For IPv6 link local addresses on MULTI_HOMED systems, the -a parameter must include the scope ID.
- The -l parameter (reqlen) cannot be larger than ECHOBUFFSIZE, which is compiled as TCP_SEND_SPACE - 64
- The output for the -s parameter (statistics) will only include a BPS calculation if the -t parameter (delay) is 0.
- The defaults for TCP echo requests are defined at the top of tcpecho.
- The tesvr command must be used to open the TCP Echo Server.

Location

This command is provided by the `DIAG` module when `TCP_ECHOTEST` and `TCPECHO_MENU` are defined, and `tcp_echo.$(OBJ)` is in the list of `OBJS` in the `misclib` makefile

20.26 net tesvr

Command Name

tesvr - Control the TCP echo server

Syntax

```
diag tesvr { -o <ipaddr> | -c | -s } [-i <interface>] [-p <port>]
```

Parameters

-o	Open/start the echo server
-c	Close the echo server
-s	Display cumulative echo server statistics
-i	Interface to listen on (Default = nd0)
-p	Port on which to listen. Default = 7, the standard echo port

Description

Control or display statistics for the TCP echo server. For dual stacks (IP_V4 and IP_V6 both defined), the echo server will automatically open two listen sockets, one for each protocol. The echo server can handle only one client at a time.

Location

This command is provided by the DIAG module when TCP_ECHOTEST and TCPECHO_MENU are defined, and tcp_echo.\$(OBJ) is in the list of OBJs in the misclib makefile

20.27 net udpecho

Command Name

`udpecho` - Start, stop, or provide status for a udp echo client request

Syntax

```
net udpecho { -a <ipaddr> | -c | -s } [-q] [-l <reqlen>] [-n <number of requests>]
```

Parameters

-a	IPv4/6 address of echo server
-c	Used to close an echo command that is in progress
-s	Displays server status and stats for current/last client command
-l	Total number of bytes in each echo request (default = 64)
-n	Number of requests (default = 4)
-q	Don't report as each response is received

Description

Starts, stops, or provides status for a udp echo client request. Sends a total number of bytes equal to `reqlen * number of requests`. Request data consists of 32-bit values. There is no byte order conversion. For each packet the values start at 0 and increment throughout the packet. For packet sizes not divisible by 4, a partial value is written. Each byte in the echoed response is compared with the value expected. When the client has received responses to all requests, the command will complete and buffers will be released.

Notes/Status

- For IPv6 link local addresses on MULTI_HOMED systems, the `-a` parameter must include the scope ID.
- The defaults for UDP echo requests are defined at the top of `udp_echo.c`.
- There will be a delay of `UECHO_DFTPKTDELAY` ticks between the sending of each echo request.
- The `-l` parameter (`reqlen`) cannot be larger than `UECHO_MAXPKTLENGTH`
- The command will stop if there are `UECHO_MAXCMPERRS`. When looking for software bugs, it may be useful to set `UECHO_MAXCMPERR` to one and add a `dtrap()` at the point where an error is found.
- The `udpecho` command only works with the NicheStack UDP echo server. The `uesvr` command must be used to start the UDP Echo Server.

Location

This command is provided by the `DIAG` module when `UDP_ECHOTEST` and `UDPECHO_MENU` are defined, and `udp_echo.$(OBJ)` is in the list of `OBJS` in the `misclib` makefile

20.28 net uesvr

Command Name

uesvr - Start or stop the UDP echo server

Syntax

```
diag uesvr -o | -c
```

Parameters

-o	Open/start the echo server
-c	Close the echo server

Description

Starts or stops the UDP echo server. For dual stacks (IP_V4 and IP_V6 both defined), the echo server will automatically open two UDP echo listening connections, one for each protocol. The server can handle multiple simultaneous clients using either IPv4 or IPv6

Location

This command is provided by the `DIAG` module when `UDP_ECHOTEST` and `UDPECHO_MENU` are defined, and `udp_echo.$(OBJ)` is in the list of `OBJS` in the `misclib` makefile

20.29 net user

Command Name

`user` - Access or modify user table

Syntax

`user [-a | -c] -u U [-p P] [-m M] [-r] [-z Z]`

`user -d -u U`

`user -l`

`user -s`

Parameters

- a	Add entry in user table
- c	Change existing entry in user table
- d	Delete entry in user table
- l	List (dump) entire user table
- m	Add (OR-in) appcode bit(s) specified by string <code>M</code> to entry for specified user.
- P P	Set password <code>P</code> in entry for specified user
- r	For specified user, replace (vs. OR-in) appcode and permission fields with: <code>m M z Z</code>
- s S	Parameter <code>s</code> is one of the strings "TRUE" or "FALSE". It could be used to toggle whether or not the user table will be saved in file system. Implementation has been left to the porting engineer
- u	username <code>U</code> for <code>-a -c</code> or <code>-d</code> commands
- z Z	Add (OR-in) permission bit(s) <code>Z</code> to entry for specified user.

Description

Used to add or modify entries in the user table. At initialization, entries in the user table can be added via commands in a script file. No module should directly access or modify the user table. Modules should use the "user" command or call the available (non-STATIC) functions in `userpass.c` or `user_nt.c`

Notes/Status

- The `-l` option is only available if `NPDEBUG` is defined.
- The `M` argument is the string "all" or a comma separated list of modules (applications) for which the user entry is valid. For example, if the entry for username "root" only has the FTP bit set, then "root" is not a valid user name for any other module. Currently the individual module names in the list of modules must be one of the following: ftp, telnet, http, or ppp
- The only currently defined permissions are `PERMISSIONS_ALL` (0xFFFFFFFF). This field is available for the porting engineer.
- An error will be returned for the change (`-c`) command if the entry does not exist. With the add (`-a`) command, an error will be returned if the entry already exists, unless password parameter exactly matches the password entry in the table. In that case, the specified module and permission bits will be ORed-in to the existing entry.
- A username can only have one entry in the user table.
- With the change (`-c`) command, the values for the `M` and `Z` arguments will be ORed into the existing values of the fields in the user table, unless `-r` is specified. In that case the values for the `M` and `Z` arguments will replace the values in the existing entry.
- Only the username argument should be given for the delete (`-d`) command.
- No other arguments should be given with the list (`-l`) command.

21 TFTP

- [get](#) - Get a file from a remote TFTP server
- [netstat](#) - Display TFTP statistics
- [put](#) - Put a file to a remote TFTP server
- [tfsrv](#) - Manage the state of the TFTP Server

21.1 tftp get

Command get

get - Get a file from a remote TFTP server

Syntax

```
get -a IPADDR [-i] -s STRING [-d STRING]
```

Parameters

-a	IP address of the remote TFTP server
-i	Transfer data in IMAGE mode
-s	Source file name
-d	Destination file name

Description

The TFTP Client transfers a file from the remote TFTP Server. The '-s' parameter specifies the name of the file on the remote site. The '-d' parameter specifies the name of the file on the local site. If '-d' is omitted, the destination file name is the same as the source file name. The transfer mode can be either ASCII or IMAGE.

Transfer statistics are displayed upon completion of the file transfer.

Notes/Status

- The local file system must be writable.
- The transfer mode is ASCII unless '-i' is present.

Location

This command is provided by the TFTP module when TFTP_CLIENT is defined.

21.2 tftp netstat

Command netstat

netstat - Display TFTP statistics

Syntax

netstat [-a]

Parameters

-a	Display all TFTP Server and Client statistics
----	---

Description

This command displays information about the state of the TFTP Server and the state of all active TFTP transfers.

Location

This command is provided by the TFTP module when TFTP_SERVER or TFTP_CLIENT is defined.

21.3 tftp put

Command put

put - Put a file to a remote TFTP server

Syntax

```
put -a IPADDR [-i] -s STRING [-d STRING]
```

Parameters

-a	IP address of the remote TFTP server
-i	Transfer data in IMAGE mode
-s	Source file name
-d	Destination file name

Description

The TFTP Client transfers a file to the remote TFTP Server. The '-s' parameter specifies the name of the file on the local site. The '-d' parameter specifies the name of the file on the remote site. If '-d' is omitted, the destination file name is the same as the source file name. The transfer mode can be either ASCII or IMAGE.

Transfer statistics are displayed upon completion of the file transfer.

Notes/Status

- The transfer mode is ASCII unless '-i' is present.

Location

This command is provided by the TFTP module when TFTP_CLIENT is defined.

21.4 tftp tfsrv

Command tfsrv

tfsrv - Manage the state of the TFTP Server

Syntax

```
tfsrv [ -e | -d | -t ]
```

Parameters

-e	Set the TFTP Server state to ON
-d	Set the TFTP Server state to OFF
-t	Toggle the TFTP Server state between ON and OFF

Description

This command controls the operational state of the TFTP Server. A TFTP Client application can only communicate with the TFTP Server if the TFTP Server is in the ON state.

The '-e' and '-d' parameters force the TFTP Server into the ON and OFF states, respectively. The '-t' parameter toggles the TFTP Server's state.

Notes/Status

- '-e', '-d', '-t' are mutually exclusive.
- The default action is to toggle the TFTP Server state.
- The TFTP Server state is initialized to OFF.

Location

This command is provided by the TFTP module when TFTP_SERVER is defined.

22 Telnet

- [exit](#) - Terminate a Telnet session
- [logout](#) - Terminate a Telnet session
- [netstats](#) - Display Telnet options and/or statistics

22.1 telnet exit

Command exit

`exit` - Terminate a Telnet session

Syntax

`exit`

Parameters

none

Description

This command terminates a Telnet session.

Notes/Status

- The `exit` and `logout` commands are functionally equivalent.
- This command is only valid within a Telnet session.

Location

This command is provided by the `Telnet` module when `TELNET_SVR` is defined.

22.2 telnet logout

Command logout

logout - Terminate a Telnet session

Syntax

logout

Parameters

none

Description

This command terminates a Telnet session.

Notes/Status

- The `exit` and `logout` commands are functionally equivalent.
- This command is only valid within a Telnet session.

Location

This command is provided by the `Telnet` module when `TELNET_SVR` is defined.

22.3 telnet netstat

Command netstats

netstat - Display Telnet options and/or statistics

Syntax

```
netstat [-o] [-s]
```

Parameters

-o	Display the option settings for each Telnet session
-s	Display the session statistics for each Telnet session

Description

This command displays information about each open Telnet session. If '-o' is specified, the state of the negotiated options are displayed. If '-s' is specified, session statistics are displayed. Specifying no parameters is equivalent to '-o -s'.

Notes/Status

- If no parameters are specified, both options and statistics are displayed.

Location

This command is provided by the `Telnet` module when `TELNET_SVR` is defined.

23 Virtual File System

- [attribute](#) - set or clear VFS file attributes
- [vfs delete](#) - Delete a VFS file
- [directory](#) - display a directory listing
- [vfs read](#) - Copy a VFS file to the output device

23.1 vfs attribute

Command Name

`attribute - set or clear VFS file attributes`

Syntax

`attribute -f F [-c C] [-s S]`

Parameters

<code>-f F</code>	file name
<code>-c C</code>	flags to clear: String of unseparated characters, e.g., "SWN"
<code>-s S</code>	flags to set: String of unseparated characters, e.g., "SWN"

Description

Set or clear VFS file attributes.

Notes/Status

The following characters represent flags that can be used to set or clear the attributes of a VFS file:

H	File has been HTML compressed
B	Access to file requires BASIC authentication
S	Access to file requires MD5 authentication
M	File is a MAPFILE
W	File is writable
N	File data should be copied to non-volatile storage on close

Location

This command is provided by the `VFS` module when `USE_VFS`, `VFS_MENUS`, and `VFS_RWFILES` are defined.

23.2 vfs delete

Command Name

`vfs delete` - Delete a VFS file

Syntax

```
vfs delete -f F
```

Parameters

<code>-f F</code>	String: File name
-------------------	-------------------

Description

This command is used to delete a VFS File.

Notes/Status

- The `-f` (filename) option is required

Location

This command is provided by the `VFS` module when `USE_VFS`, `VFS_MENUS`, and `VFS_RWFILES` are defined.

23.3 vfs directory

Command Name

directory - display a directory listing

Syntax

```
directory [ -o ]
```

Parameters

-o	Only list files that are open
----	-------------------------------

Description

Lists the files in the current directory. If '-o' is present, only list the files that are currently open.

Notes/Status

- This output of this command is dependent upon the underlying file system implementation.

Location

This command is provided by the `VFS` module when `VFS_FILES` is defined.

23.4 vfs read

Command Name

`vfs read` - Copy a VFS file to the output device

Syntax

```
read -f F
```

Parameters

<code>-f F</code>	String: File name
-------------------	-------------------

Description

This command is used to copy a VFS file to the output device.

Notes/Status

- The `-f` (filename) option is required

Location

This command is provided by the `VFS` module when `USE_VFS` and `VFS_MENUS` are defined.