TECOM AH4021

CLI Reference Manual

Version 3.00L.01V.01

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CLI Command List

The following commands are available from AH4021 command line interfaces.

- From Linux busybox:
  cat
  df
  dumpmem (hidden command)
  echo
  ifconfig
  kill
  ping
  ps
  pwd
  reboot
  setmem (hidden command)
  sh (hidden command)
  logread (hidden command and only if syslog is enabled)
  sysinfo
  tftp

- From Linux public domain
  brctl
  ebtables (hidden command)
  iptables (hidden command)

- From AH4021:
  adsl
  atm
  arp
  cat
  defaultgateway
  dhcpserver
  dnsrelay
  dumcfg
  help
  lan
  logout
  passwd
  ppp
  pwd
  remoteaccess
  restoredefault
  route
  save
  swversion
  voice
  wan
  wlctl

Table - Effect of AH4021 Commands

Command	Effective at runtime	Save to CFM runtime database	Save to flash config file	Comments
adsl	Yes	Yes	Yes	
atm	Yes	Yes	Yes	
arp	Yes	No	No	
cat	Yes	No	No	
defaultgateway	Yes	Yes	Yes	If command contains interface as option then this interface must already exist. WAN and LAN interface configuration requires reboot to be brought up.
dhcpserver	No	Yes	Yes	
dnsrelay	See comments	Yes	Yes	If change from dynamic to static then effective at run time, but if change from static to dynamic then effect after system is rebooted.
dumcfg	Yes	No	No	
help	Yes	No	No	
lan	No	Yes	Yes	
logout	Yes	No	No	
passwd	Yes	Yes	Yes	Effect after logout
ppp	Yes	No	No	
pwd	Yes	No	No	
remoteaccess	Yes	Yes	Yes	
restoredefault	See comments	Yes	Yes	Effect after system is rebooted automatically
route	Yes	Yes	Yes	If command contains interface as option then this interface must already exist. WAN and LAN interface configuration requires reboot to be brought up.
save	Yes	No	Yes	
swversion	Yes	No	No	
voice	Yes	Yes	Yes	
wan	No	Yes	Yes	
wlctl	Yes	No	No	Use WEB UI to save to flash or CFM database.

Control Key Support

1. Command history scrolling (maximum 15 commands in history)
    UP: UP arrow key, or CTL+p
    DOWN: DOWN arrow key, or CTL+n

2. Move cursor
    a. LEFT: LEFT arrow key, or CTL-b
    b. RIGHT: RIGHT arrow key, or CTL-f
    c. Beginning of line: CTL+a
    d. End of line: CTL+e

3. Clear screen: CTL+l (lowercase letter of L)

4. Clear to the beginning of line: CTL+u

5. Clear to the end of line: CTL+k

6. Delete: DEL key, or CTL+h

7. Terminate: CTL-c (can not terminate certain running
                             application such as ping)

ADSL

NAME
adsl -- allow a user to control the AH4021 ADSL driver

SYNOPSIS
```
adsl start [options]
adsl stop
adsl connection [options]
adsl configure [options]
adsl bert [options]
adsl info [options]
```

DESCRIPTION
Adsl is used to control the ADSL driver. This utility can:
- start and stop the driver
- activate, deactivate and control ADSL connection
- configure ADSL driver and connection parameters
- start, stop and monitor Bit Error Rate Test (BERT)
- display status and information of ADSL driver and connection
- display statistics for ADSL driver and connection

All information is displayed to stdout. A program or shell script that calls this utility can redirect stdout to a file and then parse the file in order to interpret the displayed output.

COMMANDS
start
> Starts the Broadcom ADSL driver. This command initializes the driver and starts ADSL PHY connection if [--up] is specified. This command takes parameters that can specify various connection modes. These parameters are the same as in "configure" command.

stop
> Stops ADSL connection and ADSL driver.

configure
> Configures ADSL connection parameters. This command takes the same parameters as "start" command except for [--up]. This command will cause ADSL PHY to retrain.

connection
> Controls ADSL connection modes, such as up and down and several special test modes. This command can also be used to specify tone selection for upstream and downstream.

bert
> Controls ADSL bit error rate test (BERT). This command can start/stop the BERT test and monitor its results.

info
> Display information about ADSL driver and PHY status.

OPTIONS
Options for the start and configure commands
```
adsl start [--up] [--mod <a|d|l|t|2|p|e|m>] [--lpair <(i)nner|(o)uter>]
       [--trellis <on|off>] [--snr <snrQ4>] [--bitswap <on|off>]
or for AnnexC:
       [--bm <(D)BM|(F)BM>] [--ccw]


adsl configure [--mod <a|d|l|t|2|p|e|m>] [--lpair <(i)nner|(o)uter>]
       [--trellis <on|off>] [--snr <snrQ4>] [--bitswap <on|off>]
or for AnnexC:
       [--bm <(D)BM|(F)BM>] [--ccw]


--up
```

```
              Will call BcmAdsl_ConnectionStart to start ADSL PHY connection
    --mod <a|d|l|t|2|p|e|m>
              a - all modulations allowed.
              d - G.DMT enabled
              l - G.Lite enabled
              t - T1.413 enabled
              2 - ADSL2 (G.992.3) enabled
              p - ADSL2+ (G.992.5) enabled
              e - Reach extended ADSL (AnnexL) enabled
              m - Double upstream (Annex M) enabled
    More than one mode letter can be given to enable several modes.
    --lpair <(i)nner|(o)uter>
              (i)nner -inner loop pair is used
              (o)uter - outer loop pair is used
    --trellis <on|off>
              Enabled or disables trellis coding
    --snr <snrQ4>
              Specify SNR margin as Q4 number
    --bitswap <on|off>
              Enables or disables ADSL bitswap
    The following options apply to AnnexC only
    --bm <(D)BM|(F)BM>
              (D)BM - DBM mode
              (F)BM - FBM mode
    --ccw
              Enables special CRC workaround for Centillium modems


    Options for the stop command
    adsl stop


    Options for the connection command
    adsl connection [--up] [--down] [--loopback] [--reverb]
          [--medley] [--noretrain] [--L3]
          [--tones <xmtStart xmtNum xmtMap rcvStart rcvNum rcvMap>]


    --up
          Starts ADSL connection in normal mode
    --down
          Puts ADSL PHY in idle mode
    --loopback
          Puts ADSL PHY in ATM cell loopback mode. In this modem ADSL PHY will not
          try to establish connection
    --reverb
          Puts ADSL PHY in test mode in which it only sends REVERB signal
    --medley
          Puts ADSL PHY in test mode in which it only sends MEDLEY signal
    --noretrain
          In this mode ADSL PHY will be trying to establish connection as in normal
          mode, but once the connection is up it will not retrain even if the
          signal is lost.
    --L3
          Puts ADSL modem in L3 power state
    --tones <xmtStart xmtNum xmtMap rcvStart rcvNum rcvMap>
          Specifies tones which can be used by ADSL PHY.
          xmtStart - first tone used in upstream direction (usually 0)
          xmtNum   - number of tones in upstream direction (usually 32)
          xmtMap   - bitmap for tones used in upstream direction. Specified as a
                     hexadecimal string. Bit value zero means the corresponding
                     tone is not used, bit value one means it is used.
          rcvStart - first tone used in downstream direction (usually 32)
          rcvNum   - number of tones in downstream direction (usually 224)
```

> rcvMap   - bitmap for tones used in downstream direction. Specified as a
>   hexadecimal string. Bit value zero means the corresponding
>   tone is not used, bit value one means it is used.

Tone configuration command does not cause ADSL PHY retrain
Automatically. To experience the effect of this command ADSL connection
must be restarted using for example adsl connection -down followed by
adsl connection -up command.
Tone selection is not affected by adsl configure commands and has to be
changed explicitly. Default tone configuration (all tones enabled) will
be set by adsl tones 0 32 0xFFFFFFFF 32 224 0xFF… (repeated 28 times)

Options for the bert command
adsl bert [--start <seconds>] [--stop] [--show]

--start
     Starts Bit Error Rate Test (BERT)
     seconds - duration of BERT test in seconds
--stop
     Stops the BERT test.
--show
     Display BERT results to stdout in the following format:
     BERT Status = [NOT] RUNNING
     BERT Total Time = 10 sec
     BERT Elapsed Time = 10 sec
     BERT Bits Tested = 0x00000000045A6380 bits
     BERT Err Bits = 0x0000000000000002 bits

     BERT Status indicates whether or not the BERT test is currently running.
     It can be used to monitor when the BERT test is complete after it is
     started. The numbers of total bit tested and errorred bits are displayed
     as 64 bit hexadecimal numbers.

Options for the info command
adsl info [--state] [--show] [--stats] [--SNR] [--reset]

--state
     Displays the shortest message about ADSL PHY connection state, e.g.
     adsl: ADSL driver and PHY status
     Status: Showtime Channel: FAST, Upstream rate = 8064 Kbps, Downstream
     rate = 1024 Kbps
--show
     Displays more statistics about ADSL connection.
--stats
     Displays all available statistics about ADSL connection.
--SNR
     Displays signal to noise ratio (SNR) per tone
--reset
     Clears all statistic counters in ADSL driver

EXIT CODES

Exit codes less than 100 are assigned by the ADSL driver. Exit codes of 100 or
greater are assigned by the adsl utility.
     BCMADSL_STATUS_SUCCESS 0
     BCMADSL_STATUS_ERROR 1
     ADSL_GENERAL_ERROR 100
     ADSL_ALLOC_ERROR 101
     ADSL_INVALID_COMMAND 102
     ADSL_INVALID_OPTION 103
     ADSL_INVALID_PARAMETER 104
     ADSL_INVALID_NUMBER_OF_OPTIONS 105
     ADSL_INVALID_NUMBER_OF_PARAMETERS 106

EXAMPLES

- A simple initialization.
  adsl start [--up]

  or

  adsl start
  adsl connection --up

- A more complex initialization.
  adsl start --up --mod dl --lpair I

  or

  adsl start
  adsl connection --up --mod dl --lpair I

- Getting in and out of the test modes
  adsl connection --reverb
  …
  adsl connection --up

- Selecting tones
  adsl connection --tones 0 32 0xFEFFFF7F 32 224 0xFEFFFFFFFFFFFF7F

  selects tones from 1 to 31 for upstream and from 33 to 95 for downstream

- Starting and monitoring BERT
  adsl bert -start 60

  to run BERT test for 60 seconds. After about 20 seconds of BERT running
  the results will look like:

  adsl bert -show

  adsl: BERT results:
  BERT Status = RUNNING
  BERT Total Time = 60 sec
  BERT Elapsed Time = 20 sec
  BERT Bits Tested = 0x0000000008B4C700 bits
  BERT Err Bits = 0x0000000000000067 bits

  After 60 seconds when the BERT has completed the results of -show command
  will be:

  adsl bert -show

  adsl: BERT results:
  BERT Status = NOT RUNNING
  BERT Total Time = 60 sec
  BERT Elapsed Time = 60 sec
  BERT Bits Tested = 0x000000001A1E5500 bits
  BERT Err Bits = 0x0000000000000067 bits

- Display minimal ADSL state.
  adsl info --state

  adsl: ADSL driver and PHY status
  Status: Showtime Channel: FAST, Upstream rate = 8064 Kbps, Downstream rate = 1024
  Kbps

- Display complete ADSL driver and PHY status.
  adsl info --show

```
adsl: ADSL driver and PHY status
Status: Showtime Channel: FAST, Upstream rate = 8064 Kbps, Downstream rate = 1024
Kbps
Mode: G.DMT
Channel: Fast
Trellis: ON
Line Status: No Defect
Training Status: Showtime
Down Up

SNR (dB): 16.1 7.0
Attn(dB): 0.0 5.5
Pwr(dBm): 6.5 7.8
Max(Kbps): 11040 1088
Rate (Kbps): 0 0
K: 0(0) 0
R: 0 0
S: 1 1
D: 1 1
SF: 25288 25286
SFErr: 1 0
RS: 0 0
RSCorr: 0 0
RSUnCorr: 0 0
HEC: 1 0
OCD: 0 0
LCD: 0 0
ES: 1 0
```

ARP

NAME

      arp - manipulate modem's ARP (Address Resolution Protocol) table

SYNOPSIS

      arp add <IP address> <MAC address>
      arp delete <IP address>
      arp show
      arp --help

DESCRIPTION

      arp is used to manipulate modem's ARP table. Note that ARP entries added by this command are not saved in the flash memory by the save command. After system reboot, ARP entries need to be re-added.

EXAMPLES

- Add a static ARP entry for IP address 192.168.1.2 with MAC address 00:11:22:33:44:55.

>arp add 192.168.1.2 00:11:22:33:44:55

- Show ARP table.

> arp show

```
IP address   HW type Flags HW address      Mask   Device
192.168.1.3  0x1     0x2   00:01:03:E3:4F:F9  *      br0
192.168.1.2  0x1     0x6   00:11:22:33:44:55  *      br0
```

- Delete ARP entry for IP address 192.168.1.2.

>arp delete 192.168.1.2

ATM

NAME

atm - allow a user to control the Broadcom BCM63xx ATM driver

SYNOPSIS

atm start [options]
atm stop
atm operate tdte|intf|vcc [options]

DESCRIPTION

Atm is used to control the ATM driver. This utility can:
- start and stop the driver
- activate and deactivate an ATM interface (port) or a Virtual Channel Connection (VCC)
- add and remove traffic descriptor table entries
- add and remove VCCs
- display the configuration for traffic descriptor table entries, ATM interfaces and VCCs
- display statistics for ATM interfaces and VCCs

All information is displayed to stdout. A program or shell script that calls this utility can redirect stdout to a file and then parse the file in order to interpret the displayed output.

COMMANDS

start
>   Starts the ATM driver. This command initializes the driver and adds one UBR traffic descriptor table entry.

stop
>   Stops the ATM driver.

operate
>   Operates on traffic descriptor table entries, ATM interfaces and VCCs.

OPTIONS

Options for the start command
atm start [--cqs <size>] [--pqs <size>] [--bs <size>] [--bo <offset>]
       [--intf <port> <type> <address>]

--cqs <size>
>   size - Size used to create the Free and Receive cell queues. Default value is 10.

--pqs <size>
>   size - Size used to create the Free and Receive packet queues. Default value is 200.

--bs <size>
>   size - Size of a buffer used in the Free and Receive packet queues. Default value is 1600.

--bo <offset>
>   offset - Offset into a receive buffer where data is to be received. Default value is 32.

--intf <port> <type> <address>
>   port - Port number starting at 0 to be configured.
>   type - adsl|loopback|utopia|tc
>   address - UTOPIA address. Only used if type is utopia.
>
>   More than one intf option can be specified to configure multiple ports. If no intf option is specified, the default value is "0, adsl, 0".

Options for the stop command
atm stop

Options for the operate tdte command
```
atm operate tdte [--add <type> [<pcr>] [<scr>] [<mbs>]] [--delete <index>]
      [--show [<index>]]
```

```
--add <type> [<pcr>] [<scr>] [<mbs>]
      type - ubr|ubr_pcr|cbr|rtvbr|nrtvbr
      pcr - Peak Cell Rate (PCR) if type requires it
      scr - Sustainable Cell Rate (SCR) if type requires it
      mbs - Maximum Burst Size (MBS) if type requires it
--delete <index>
      index - Traffic descriptor table entry index to delete. The show option
      displays the current index values.
--show [<index>]
      index - Traffic descriptor table entry index to display information about.

      If index is omitted, all traffic descriptor table entries are displayed.
```

Options for the operate intf command
```
atm operate intf [--state <port> <type>] [--show [<port>]]
      [--stats [<port>] [reset]]
```

```
--state <port> <type>
      port - Port number starting at 0 to enable or disable.
      type - enable|disable
--show [<port>]
      port - Port number starting at 0 to display configuration information
      about.
      If port is omitted, configuration information is displayed for all
      configured ports.
--stats [<port>] [reset]
      port - Port number starting at 0 to display statistics for.
      reset - Resets statistics fields.
      If port is omitted, statistics are displayed for all configured ports.
```

Options for the operate vcc command
```
atm operate vcc [--add <port.vpi.vci> <aal_type> <tdte_index>
      <encapsulation_type>] [--delete <port.vpi.vci>] [--addq <port.vpi.vci>
      <size> <priority> ] [--deleteq <port.vpi.vci> <size> <priority>]
      [-- state <port.vpi.vci> <type>] [--show [<port.vpi.vci>]]
      [--stats [<port.vpi.vci>] [reset]]
```

```
--add <port.vpi.vci> <type> <tdte_index> <encapsulation_type>
      port.vpi.vci - Port number, VPI and VCI that identifies the VCC to add.
      type - aal5|aal2|aal0pkt|aal0cell|aaltransparent
      tdte_index - Traffic descriptor table entry index to use for this VCC.
            The command, atm operate tdte --show, displays the current index
            values.
      encapsulation_type -
            vcmux_routed|vcmux_bridged8023|llcencaps|other|unknown
--delete <port.vpi.vci>
      port.vpi.vci - Port number, VPI and VCI that identifies the VCC to delete.

--addq <port.vpi.vci> <size> <priority>
      port.vpi.vci - Port number, VPI and VCI that identifies the VCC to add a
      new queue for.
      size - Size of the queue.
      priority - Priority of the queue.
--deleteq <port.vpi.vci> <size> <priority>
      port.vpi.vci - Port number, VPI and VCI that identifies the VCC to delete
      a queue for.
      size - Size of the queue.
      priority - Priority of the queue.
```

```
--state <port.vpi.vci> <type>
      port.vpi.vci - Port number, VPI and VCI that identifies the VCC to enable
      or disable.
      type - enable|disable
--show [<port.vpi.vci>]
      port.vpi.vci - Port number, VPI and VCI that identifies the VCC to
      display configuration information about.
      If port.vpi.vci is omitted, configuration information is displayed for
      all configured VCCs.
--stats [<port.vpi.vci>] [reset]
      port.vpi.vci - Port number, VPI and VCI that identifies the VCC to
      display statistics for.
      reset - Resets statistics fields.
      If port.vpi.vci is omitted, statistics are displayed for all configured
      VCCs.
```

EXIT CODES

Exit codes less than 100 are assigned by the ATM driver. Exit codes of 100 or greater are assigned by the atm utility.

```
ATMDRV_SUCCESS 0
ATMDRV_ERROR 1
ATMDRV_STATE_ERROR 2
ATMDRV_PARAMETER_ERROR 3
ATMDRV_ALLOC_ERROR 4
ATMDRV_RESOURCE_ERROR 5
ATMDRV_IN_USE 6


ATMDRV_VCC_DOWN 7
ATMDRV_INTERFACE_DOWN 8
ATMDRV_LINK_DOWN 9
ATMDRV_NOT_FOUND 10
ATMDRV_NOT_SUPPORTED 11
ATM_GENERAL_ERROR 100
ATM_ALLOC_ERROR 101
ATM_INVALID_COMMAND 102
ATM_INVALID_OPTION 103
ATM_INVALID_PARAMETER 104
ATM_INVALID_NUMBER_OF_OPTIONS 105
ATM_INVALID_NUMBER_OF_PARAMETERS 106
```

EXAMPLES

- A simple initialization.
  atm start
  atm operate vcc --add 0.0.35 aal5 1 vcmux_bridged8023

- A more complex initialization.
  atm start --pqs 400 --bo 0
  atm operate tdte --add ubr_pcr 15000
  atm operate tdte --show

  index type pcr scr mbs
  1 ubr 0 0 0
  2 ubr_pcr 15000 0 0

  atm operate vcc --add 0.0.35 aal5 2 vcmux_bridged8023

- Display interface configuration (assumes that the ATM driver is started).
  atm operate intf --show

  port status type
  0 enabled adsl

- Create and display a VCC configuration (assumes that the ATM driver is started).

```
atm operate vcc --add 0.0.35 aal5 1 vcmux_bridged8023 --addq 0.0.35 64 2
              --addq 0.0.35 80 1
atm operate vcc --add 0.0.36 aal5 1 vcmux_routed --addq 0.0.36 128 1
atm operate vcc --show

vcc       status       type tdte_index     q_size q_priority encapsulation
0.0.35    enabled      aal5 1              64      2                 vcmux_bridged8023
                                           80      1
0.0.36    enabled      aal5 1              128     1                 llcencaps
```

- Display interface statistics (assumes that the ATM driver is started).

```
atm operate intf --stats

interface statistics for port 0
in octets 8130336
out octets 46512
in errors 0
in unknown 0
in hec errors 0
in invalid vpi vci errors 0
in port not enable errors 0
in pti errors 0
in circuit type errors 0
in oam rm crc errors 0
in gfc errors 0

aal5 interface statistics for port 0
in octets 8130336
out octets 46512
in ucast pkts 5426
out ucast pkts 189
in errors 0
out errors 0
in discards 0
out discards 0
```

- Display VCC statistics (assumes that the ATM driver is started and two VCCs are configured).

```
atm operate vcc --stats

aal5 vcc statistics for 0.0.35
crc errors 0
oversized sdus 0
short packet errors 0
length errors 0

aal5 vcc statistics for 0.0.36
crc errors 0
oversized sdus 0
short packet errors 0
length errors 0
```

BRCTL

NAME
brctl - bridge administration utility

SYNOPSIS
brctl [command]

DESCRIPTION
brctl is used to set up, maintain, and inspect the bridge configuration.

A bridge is a device commonly used to connect different networks (Ethernet, USB, 802.11x wireless network or ATM) together, so that these networks will appear as one network to the participants.

Each of the networks being connected corresponds to one physical interface (port) in the bridge. These individual networks are bundled into one bigger ('logical') network, this bigger network corresponds to the bridge network interface such as "br0".

COMMANDS
addbr <bridge>
    Creates a new instance of the bridge. The network interface corresponding to the bridge will be called <bridge>.
delbr <bridge>
    Deletes the instance <bridge> of the bridge. The network interface corresponding to the bridge must be down before it can be deleted.
show <bridge>
    Shows the instance <bridge> of the bridge.
show
    Shows all current instances of the bridge.
addif <bridge> <device>
    Makes the interface <device> a port of the bridge <bridge>. This means that all frames received on <device> will be processed as if destined for the bridge. Also, when sending frames on <bridge>, <device> will be considered as a potential output interface.
delif <bridge> <device>
    Detaches the interface <device> from the bridge <bridge>.
showmacs <bridge>
    Shows a list of learned MAC addresses for this bridge.
showstp <bridge>
    Shows the STP (Spanning Tree Protocol) status of this bridge.
setageing <bridge> <time>
    Sets the MAC address ageing time, in seconds. After <time> seconds of not having seen a frame coming from a certain address, the bridge will time out (delete) that address from the Forwarding DataBase (fdb).
setbridgeprio <bridge> <priority>
    Sets the bridge's priority to <priority>. The priority value is an unsigned 16-bit quantity (a number between 0 and 65535), and has no dimension. Lower priority values are 'better'. The bridge with the lowest priority will be elected 'root bridge'.
setfd <bridge> <time>
    Sets the bridge's 'bridge forward delay' to <time> seconds.
setgcint <bridge> <time>
    Sets the garbage collectioninterval for the bridge <bridge> to <time> seconds. This means that the bridge will check the forwarding database for timed out entries every <time> seconds.
sethello <bridge> <time>
    Sets the bridge's 'bridge hello time' to <time> seconds.
setmaxage <bridge> <time>
    Sets the bridge's 'maximum message age' to <time> seconds.
setpathcost <bridge> <port> <cost>

Sets the port cost of the port <port> to <cost>. This is a dimensionless
metric.

setportprio <bridge> <port> <prio>

Sets the port <port>'s priority to <priority>. The priority value is an
unsigned 8-bit quantity (a number between 0 and 255), and has no
dimension. This metric is used in the designated port and root port
selection algorithms.

stp <bridge> <state>

Controls this bridge instance's participation in the spanning tree
protocol. If <state> is "on" or "yes" the STP will be turned on,
otherwise it will be turned off. When turned off, the bridge will not
send or receive BPDUs, and will thus not participate in the spanning tree
protocol. If your bridge isn't the only bridge on the LAN, or if there
are loops in the LAN's topology, DO NOT turn this option off. If you
turn this option off, please know what you are doing.

OPTIONS
None.

EXAMPLES

- Display all the learned MAC addresses on br0
  brctl showmacs br0

- Set the ageing timer value to be 400 seconds on br0
  brctl setageing br0 400

- Turn off STP
  brctl stp br0 off

CAT

NAME

      cat - concatenates FILE(s) and prints them to standard output

SYNOPSIS

      cat [FILE] ...

DESCRIPTION

      Concatenates FILE(s) and prints them to standard output

COMMANDS

      None.

OPTIONS

      None.

EXAMPLES

- Display system memory information.
  cat /proc/meminfo

DDNS

NAME

   ddns - add, remove or show the dynamic DNS.

SYNOPSIS

   ddns add <hostname> --username <username> --password <password>
        --interface <interface> --service <dyndns>
   ddns remove <hostname>
   ddns show
   ddns --help

DESCRIPTION

   The use of ddns command is to configure the dynamic DNS service provider
   account information. In CLI, only one operator, DynDNS.org, is supported at
   this point. This router will update the dynamic DNS service operator with the
   IP address associated with his DDNS host name whenever the IP address assigned
   to a specified WAN interface has been changed. Note that the user account for
   that dynamic DNS operator account must have been pre-established already.

OPTIONS

   hostname
        the complete DNS host name pre-established in the DDNS service operator.
   username
        the username of the dynamic DNS account.
   password
        the password of the dynamic DNS account.
   interface
        the WAN interface name that is associated with the dynamic IP address.
   service
        the dynamic DNS service operator. Currently, it only support one service
        'dyndns' - service provider dyndns.org.

EXAMPLES

   - Configure the dynamic DDNS host account associated with a provider and a
     WAN interface.
     ddns add hostname.dyndns.org --username username --password password
            --interface waninterfacename --service dyndns.

   - remove the dynamic DNS account configuration associated with a host name.
     ddns remove hostname.dyndns.org.

   - show the list of the dynamic DNS configurations in the router.
     ddns show

DEFAULTGATEWAY

NAME

      defaultgateway - configure or show the default gateway or default route

SYNOPSIS

      defaultgateway config auto
      defaultgateway config static [<ipaddress>] [<interface>]
      defaultgateway show
      defaultgateway --help

DESCRIPTION

      The primary use of defaultgateway command is to set up a static default gateway or default route, or to retrieve the default gateway information automatically from remote ISPs through DHCP protocol for a MER interface or through PPP protocol for a PPPoA or PPPoE interface. A PPPoA or PPPoE interface will always retrieve remote gateway information automatically. This command will save configuration to the Permanent Storage.

      If the default gateway is configured with static data, it will override any remote gateway address received automatically from some WAN interface and become effective immediately in the runtime system. Ipaddress is optional if the default route is en route a PPPoE, PPPoA or IPoA interface. If the default gateway is en route a MER interface, ipaddress must be configured and the interface parameter is optional. If there is only one IPoA WAN interface, you must configure static default gateway or default route since IPoA does not support DHCP.

      If the default gateway is configured with the "auto" option, the system needs to be rebooted before it can take effect. If there are multiple WAN interfaces with DHCP or PPP enabled, multiple remote gateway addresses may be received and the first received will be chosen to be the default gateway.

OPTIONS

      ipaddress
          the IP address of the default gateway in dotted decimal.
      interface
          force the default gateway to be associated with the specified device, as the kernel will otherwise try to determine the device on its own by checking already existing routes and devices.

EXAMPLES

- Enable the system to retrieve the default gateway information automatically from the remote dhcp server when system starts. The system needs to be rebooted for modified configuration to take effect.
  defaultgateway config auto

- Set up a static default gateway to 10.6.33.125. It should be effective right away and is saved to Permanent Storage on the flash memory.
  defaultgateway config 10.6.33.125

DF

NAME
      df - print the filesystem used space and available space

SYNOPSIS
      df [OPTION]... [FILESYSTEM]...

DESCRIPTION
      df displays the amount of disk space available on the file system of each filesystem name argument. If no file system name is given, the space available on all currently mounted filesystems is shown. Disk space is shown in 1 kb blocks by default.

COMMANDS
      None.

OPTIONS
      -h print sizes in human readable format (e.g., 1K 243M 2G)
      -m print sizes in megabytes
      -k print sizes in kilobytes (default)

EXAMPLES

- Display the space available on all the mounted file systems
  df

- Display the space available on the flash root file system
  df /dev/mtdblock0

DHCPSERVER

NAME

    dhcpserver - allow a user to configure, or show the DHCP Server data

SYNOPSIS

    dhcpserver config <start IP address> <end IP address> <leased time (hour)>
    dhcpserver show
    dhcpserver --help

DESCRIPTION

    dhcpserver is used to configure, or show the DHCP server data. This utility can:

- configure the DHCP server on the primary LAN interface.
- show the DHCP server configuration data.
- display usage.

    All information is displayed to stdout. A program or shell script that calls this utility can redirect stdout to a file and then parse the file in order to interpret the displayed output.

COMMANDS

    config
        configure the DHCP server with the given data.
        Notice: the command saves the configuration data to the flash but does not take effect until the system is rebooted.
    show
        show the DHCP server configuration data.
    --help
        display usage.

OPTIONS

    <u>Options for the config command</u>
    dhcpserver config <start IP address> <end IP address> <leased time (hour)>.

    <start IP address>
        The IP address of the first address in the range. The value of range start must be less than or equal to the value of range end.
        Valid values: any valid IP address.
        Default value: 192.168.1.2.
    <end IP address>
        The IP address of the last address in the range. The value of range end must be greter than or equal to the value of range start.
        Valid values: any valid IP address.
        Default value: 192.168.1.254.
    <leased time (hour)>
        The lease period for which the server assigsn an IP address to the client in case the client does not request for the specific lease period itself.
        Valid values: 0 - 8760.
        Default value: 24 hours (this equals a day).

    <u>Options for the show command</u>
    dhcpserver show

    <u>Options for the --help command</u>
    dhcpserver --help

EXAMPLES

- Configure DHCP server.
  dhcpserver config 192.168.1.2 192.168.1.254 24

- Display DHCP server configuration data.
  dhcpserver show

  start 192.168.1.2
  end 192.168.1.254
  interface br0
  option lease 86400
  option min_lease 30
  option subnet 255.255.255.0
  option router 192.168.1.1
  option dns 192.168.1.1

- Display usage.
  Dhcpserver --help

  Usage: dhcpserver config <start IP address> <end IP address>
  *   <leased time (hour)>*
  *   dhcpserver show*
  *   dhcpserver -help*

DNSRELAY

NAME
dnsrelay - allow a user to configure or show the DNS relay data

SYNOPSIS
dnsrelay config auto
dnsrelay config static <primary DNS> [<secondary DNS>]
dnsrelay show
dnsrelay --help

DESCRIPTION
dnsrelay is used to configure, or show the DNS relay data. This utility can:
- configure the DNS relay with the given data.
- show the DNS relay configuration data.
- display usage.

All information is displayed to stdout. A program or shell script that calls
this utility can redirect stdout to a file and then parse the file in order to
interpret the displayed output.

COMMANDS
config
    configure the DNS relay with the given data.
    Notice: the command only saves the configuration data to the flash, and
    does not take effect until the system is rebooted.
show
    show the DNS relay configuration data.
--help
    display usage.

OPTIONS
Options for the config auto command
dnsrelay config auto

Options for the config static command
dnsrelay config static <primary DNS> [<secondary DNS>]

<primary DNS>
    The IP address of the primary DNS server.
    Valid values: any valid IP address.
[<secondary DNS>]
    The IP address of the secondary DNS server. It¡¦s optional and can be
    omitted.
    Valid values: any valid IP address.

Options for the show command
dnsrelay show

Options for the --help command
dnsrelay -help

EXAMPLES
- A auto DNS configuration.
  dnsrelay config auto

- A static DNS configuration without secondary DNS.
  dnsrelay config static 10.6.33.1

- A static DNS configuration with secondary DNS.
  dnsrelay config static 10.6.33.1 10.6.33.2

- Display DNS relay configuration data.
  dnsrelay show

  Primary 10.6.33.1
  Secondary 10.6.33.2

- Display usage.
  dnsrelay --help

  Usage: dnsrelay config auto

  Usage: dnsrelay config static <primary DNS> [<secondary DNS>]
  *   dnsrelay show*
  *   dnsrelay --help*

DUMPCFG

NAME

    dumpcfg - display system¡¦s configuration

SYNOPSIS

    dumpcfg

DESCRIPTION

    dumpcfg displays the system¡¦s configuration which is in text XML format.

COMMANDS

    None.

OPTIONS

    None.

EXAMPLES

- Display the system's configuration.
    Dumpcfg

    <psitree>
    <SecCfg>
    <srvCtrlList ftp="lan" http="lan" icmp="lan" snmp="lan" ssh="lan" telnet="lan"
    tftp="lan"/>
    </SecCfg>
    <AtmCfg>
    <initCfg structureId="2" threadPriority="25" freeCellQSize="10" freePktQSize="200"
    freePktQBufSize ="1600" freePktQBufOffset="32" rxCellQSize="10" rxPktQSize="200"
    txFifoPriority="64" aal5MaxSduLen ="64" aal2MaxSduLen="0"/>
    </AtmCfg>
    <AtmCfgTd>
    <td1 cat="UBR" PCR="0" SCR="0" MBS="0"/>
    </AtmCfgTd>
    <SystemInfo>
    <sysLog state="enable" displayLevel="ERR" logLevel="DEBUG" option="local"
    serverIP="0.0.0.0" serve rPort="514"/> <snmp state="disable" readCommunity="public"
    writeCommunity="private" sysName="Broadcom" sysLocati on="unknown"
    sysContact="unknown" trapIP="0.0.0.0"/> <sysUserName value="admin"/> <protocol
    autoScan="enable" upnp="enable" macFilterPolicy="forward" siproxd="enable"/>
    </SystemInfo>
    <WirelessCfg>
    <vars state="enabled" hide="0" ssId="Broadcom" country="ALL" authMode="open"
    radiusServerIP="0.0.0.0" radiusServerPort="1812" radiusServerKey="" wep="disabled"
    keyBit="128-bit" key64_1="" key64_2= "" key64_3="" key64_4="" key64Index="1"
    key128_1="" key128_2="" key128_3="" key128_4="" key128 Index="1" wpaRekey="0"
    wpakey="" wpa="tkip" fltMacMode="disabled" apMode="ap" bridgeRestrict="d isabled"
    wdsMAC_0="" wdsMAC_1="" wdsMAC_2="" wdsMAC_3="" apIsolation="off" band="b"
    channel=" 11" rate="auto" multicastRate="auto" basicRate="default"
    fragThreshold="2346" RTSThreshold="2347" DTIM="1" beacon="100" XPress="off"
    gMode="auto" gProtection="auto" preamble="long"/>
    </WirelessCfg>
    <AtmCfgVcc>
    <vccId1 vpi="0" vci="35" tdId="1" aalType="AAL5" adminStatus="up" encap="llc"
    qos="disable"/>
    </AtmCfgVcc>
    <Lan>
    <entry1 address="192.168.1.1" mask="255.255.255.0" dhcpServer="enable"
    leasedTime="24" startAddr=" 192.168.1.2" endAddr="192.168.1.254"/>
    </Lan>
    <RouteCfg>
    <ripGlobal state="disable" ripIfcTableSize="1"/>
    <ripIfc tableSize="1"> <ripIfcEntry id="1" name="br0" state="disable" version="2"
    operation="active"/>
    </ripIfc>
    </RouteCfg>

```
<ADSL/>
<DDNSCfg/>
<SNTPCfg/>
<ToDCfg/>
<ipsrv_0_35>
<dhcpc_conId1 state="disable" wanAddress="10.6.33.138" wanMask="255.255.255.0"/>
</ipsrv_0_35>
<wan_0_35>
<entry1 vccId="1" conId="1" name="ipoa_0_35" protocol="IPOA" encap="LLC"
firewall="disable" nat="disable" igmp="disable" service="enable"/>
</wan_0_35>
</psitree>
```

ECHO

NAME
      echo - display a line of text or an environment variable¡¦s value

SYNOPSIS
      echo [OPTION]... [STRING]...

DESCRIPTION
      echo displays a line of text, or an environment variable¡¦s value.
      Notice that "ls" command is not supported in the CLI. Echo can be used to
      display files and subdirectories using wildcard ¡¥*¡¦.

COMMANDS
      None.

OPTIONS
      -n suppress trailing newline
      -e interpret backslash-escaped characters (i.e., \t=tab)
      -E disable interpretation of backslash-escaped characters

EXAMPLES
- Display a string
  echo "Hello, world"

- Display the vaule of the environment variable $TERM
  echo $TERM

- Display all files or subdirectories
  echo /etc/*
  echo *
  echo /var/*

HELP

NAME

help - list all of available CLI commands that the AH4021 supports.

SYNOPSIS

Help | ?

DESCRIPTION

list all of available CLI commands that the AH4021 supports.

OPTIONS

None.

EXAMPLES

- An example is shown.

  ?
  help
  logout
  reboot
  adsl
  atm
  brctl
  cat
  df
  tftp
  echo
  ifconfig
  kill
  arp
  defaultgateway
  dhcpserver
  dns
  lan
  passwd
  ppp
  remoteaccess
  restoredefault
  route
  save
  swversion
  wan
  ping
  ps
  pwd
  sysinfo
  ddns
  sntp

IFCONFIG

NAME
ifconfig - configure a network interface

SYNOPSIS
ifconfig [interface]
ifconfig interface [aftype] options | address ...

DESCRIPTION
Ifconfig is used to configure the kernel-resident network interfaces. It is used at boot time to set up interfaces as necessary. After that, it is usually only needed when debugging or when system tuning is needed.

If no arguments are given, ifconfig displays the status of the currently active interfaces. If a single interface argument is given, it displays the status of the given interface only; if a single -a argument is given, it displays the status of all interfaces, even those that are down. Otherwise, it configures an interface.

COMMANDS
None.

OPTIONS
interface
    The name of the interface. This is usually a driver name followed by a unit number, for example eth0 for the first Ethernet interface.
address
    The IP address to be assigned to this interface.
up
    This flag causes the interface to be activated. It is implicitly specified if an address is assigned to the interface.
down
    This flag causes the driver for this interface to be shut down.
[-]arp
    Enable or disable the use of the ARP protocol on this interface.
[-]promisc
    Enable or disable the promiscuous mode of the interface. If selected, all packets on the network will be received by the interface.
[-]allmulti
    Enable or disable all-multicast mode. If selected, all multicast packets on the network will be received by the interface.
metric N
    This parameter sets the interface metric.
mtu N
    This parameter sets the Maximum Transfer Unit (MTU) of an interface.
dstaddr addr
    Set the remote IP address for a point-to-point link (such as PPP). This keyword is now obsolete; use the pointopoint keyword instead.
netmask addr
    Set the IP network mask for this interface. This value defaults to the usual class A, B or C network mask (as derived from the interface IP address), but it can be set to any value.
irq addr
    Set the interrupt line used by this device. Not all devices can dynamically change their IRQ setting.
io_addr addr
    Set the start address in I/O space for this device.
mem_start addr
    Set the start address for shared memory used by this device. Only a few devices need this.
[-]broadcast [addr]

        If the address argument is given, set the protocol broadcast address for
        this interface. Otherwise, set (or clear) the IFF_BROADCAST flag for the
        interface.

[-]pointopoint [addr]
        This keyword enables the point-to-point mode of an interface, meaning
        that it is a direct link between two machines with nobody else listening
        on it. If the address argument is also given, set the protocol
        address of the other side of the link, just like the obsolete dstaddr
        keyword does. Otherwise, set or clear the IFF_POINTOPOINT flag for the
        interface.

[-]trailers
        Set or clear the IFF_NOTRAILERS flag for the interface.

[-]dynamic
        Set or clear the IFF_DYNAMIC flag for the interface.

hw class address
        Set the hardware address of this interface, if the device driver supports
        this operation. The keyword must be followed by the name of the hardware
        class and the printable ASCII equivalent of the hardware address.
        Hardware classes currently supported include ether (Ethernet) only.

multicast
        Set the multicast flag on the interface. This should not normally be
        needed as the drivers set the flag correctly themselves.

outfill N
        This parameter sets the interface outfill timeout.

keepalive N
        This parameter sets the interface keepalive timeout.

txqueuelen length
        Set the length of the transmit queue of the device. It is useful to set
        this to small values for slower devices with a high latency (modem links,
        ISDN) to prevent fast bulk transfers from disturbing interactive traffic
        like telnet too much.

EXAMPLES

- Display all the active interfaces
  ifconfig

- Set interface eth0's IP address to be 192.168.1.1, netmask to be
  255.255.255.0
  ifconfig eth0 192.168.1.1 netmask 255.255.255.0

KILL

NAME
      kill - send a signal to the specified process(es)

SYNOPSIS
      kill [-signal] pid ...
      kill -l [signal]

DESCRIPTION
      kill sends the specified signal to the specified process or process group. If
      no signal is specified, the TERM signal is sent. The TERM signal will kill
      processes which do not catch this signal. For other processes, it may be
      necessary to use the KILL (9) signal, since this signal cannot be caught.

COMMANDS
      None.

OPTIONS
      pid... Specify the list of processes that kill should sigal.
      -signal given as a signal name or number.
      -l List all signal names and numbers.

EXAMPLES

   ●   Terminate the process with pid 120
       kill 120

   ●   Send KILL signal to the process with pid 120
       kill -SIGKILL 120

   ●   List all signal names and numbers
       kill -l

LAN

NAME

lan - allow a user to configure the IP layer for the LAN interfaces

SYNOPSIS

```
lan config [--ipaddr <primary|secondary> <IP address> <subnet mask>]
    [--dhcpserver <enable|disable>]
lan delete -ipaddr <primary|secondary>
lan show [<primary|secondary>]
lan --help
```

DESCRIPTION

Lan is used to configure the IP layer data for the primary and secondary LAN interfaces. A LAN interface is a logic interface toward IP stack from the Bridge module. Both primary and secondary LAN interfaces share the same MAC address from the physical Ethernet port. This utility can:

● Configure the IP address and subnet mask for the primary LAN interface. It Can be either a private or a public IP address.
● Configure the IP address and subnet mask for the secondary LAN interface. NAT is not supported on the secondary LAN interface. Only public IP address is allowed.
● Enable or disable the DHCP server on the primary LAN interface. DHCP server is not supported on the secondary LAN interface.
● Display configuration data for the primary and secondary LAN interfaces.
● Display usage.

All information is displayed to stdout. A program or shell script that calls this utility can redirect stdout to a file and then parse the file in order to interpret the displayed output.

COMMANDS

```
config
    configure IP layer for the primary or secondary LAN interface.
delete
    delete the primary or secondary LAN interface configuration.
show
    show configuration data for the primary and secondary LAN interfaces.
--help
    display usage.
```

OPTIONS

Options for the config command
```
lan config [--ipaddr <primary|secondary> <IP address> <subnet mask>]
            [--dhcpserver <enable|disable>]

--ipaddr <primary|secondary> <IP address> <subnet mask>
    primary|secondary - specify which LAN interface will be configured.
        Valid values: primary or secondary.
    IP address - The IP address of the LAN interface.
        Valid values: any valid IP address.
        Default value: 192.168.1.1.
    Subnet mask - The subnet mask of the LAN interface.
        Valid values: 0.0.0.1 - 255.255.255.255.
        Default value: 255.255.255.0
--dhcpserver <enable|disable>
    enable|disable - specify DHCP server should be enabled or disabled. This
    option is only valid for the primary LAN interface.
        Valid values: enable or disable.
```

Default value is enable for the primary LAN interface. Options for
the delete command

lan delete --ipaddr <primary|secondary>

--ipaddr <primary|secondary>
    primary|secondary - specify which LAN interface will be deleted.
        Valid values: primary or secondary.

<u>Options for the show command</u>
lan show [<primary|secondary>]
    primary|secondary - specify which LAN interface will be shown.
        Valid values: primary or secondary.
        If it is omitted, all LAN interfaces are displayed.

<u>Options for the --help command</u>
lan --help

EXAMPLES

- Configure a primary LAN interface.
  lan config -ipaddr primary 192.168.1.1 255.255.255.0

- Remove a secondary LAN interface.
  lan delete -ipaddr secondary

- Display all LAN interfaces.
  lan show

  br0 Link encap:Ethernet HWaddr 02:10:18:01:00:01
  inet addr:192.168.1.1 Bcast:192.168.1.255 Mask:255.255.255.0
  UP BROADCAST RUNNING MULTICAST MTU:1500 Metric:1
  RX packets:42083 errors:0 dropped:0 overruns:0 frame:0
  TX packets:107786 errors:0 dropped:0 overruns:0 carrier:0
  collisions:0 txqueuelen:0
  RX bytes:7412118 (7.0 MiB) TX bytes:34445874 (32.8 MiB)
  br0:0 Link encap:Ethernet HWaddr 02:10:18:01:00:01
  UP BROADCAST RUNNING MULTICAST MTU:1500 Metric:1

- Display usage.
  lan -help

  Usage: lan config [--ipaddr <primary|secondary> <IP address> <subnet mask>]
  *   [--dhcpserver <enable|disable>]*
  *   lan delete --ipaddr <primary|secondary>*
  *   lan show [<primary|secondary>]*
  *   lan -help*

LOGOUT

NAME

    logout - log out current user console

SYNOPSIS

    logout

DESCRIPTION

    logout is used to log out current user console. After logout command is
    executed, a bye bye message appears. Hit return to see a new Login prompt.

EXAMPLES

- Logout user admin.

    Login: admin
    Password:
    > logout

    Bye bye. Have a nice day!!!

    Login:

PASSWD

NAME

      passwd - allow a user to change password

SYNOPSIS

      passwd <admin|support|user> <password>

DESCRIPTION

      passwd is a CLI command used to change password for user account admin, support or user.

EXAMPLES

- Change password for user admin to broadcom.
  > *passwd admin broadcom*

PING

NAME

    ping - send ICMP echo requests to target host

SYNOPSIS

    Ping [-c <count>] [-s <size>] host

DESCRIPTION

    Ping sends out ICMP echo requests over the ICMP protocol to a
    host on the network. The default number of the ICMP echo request
    packets ping sends out is four. To continually send out packets
    without stop, use "-c 0" option.

OPTIONS

count
        The number of ICMP echo request packets ping command will send out.
size
        force the ping to send out ICMP echo request packets with this number of
        data bytes.
host
        The name or ip address of the target host.

EXAMPLES

- Send eight ICMP echo requests to 192.168.0.5.
    Ping -c 8 192.168.0.5

PPP

NAME

      ppp - allow a user to bring up or bring down a ppp connection

SYNOPSIS

      ppp config <port.vpi.vci> [<connection Id>] up|down

DESCRIPTION

      ppp is used to control the ppp interfaces. Ppp command brings up the ppp
      connection with "up" option, and brings down the connection with "down" option.
      For ppp connection in on-demand mode, in addition to the "up" option, traffic
      to the ppp interface needs to be initiated to bring the connection up.

      <port.vpi.vci>
            Port number, VPI and VCI that identifies the VCC where the ppp connection
            is established.
      <connection Id>
            The number that identifies a existent WAN connection on a PVC. If
            connection Id is obmitted, the default is 1.
            Valid values: 1 - 8.
            Default value: 1

EXAMPLES

    ●   Bring down the ppp connection on the 0.0.35 VCC.
        ppp config 0.0.35 down

PS

NAME
```
ps - report process status
```

SYNOPSIS
```
ps
```

DESCRIPTION
```
ps gives a snapshot of the current processes. The output consists of six
columns:
PID           The process ID
TTY           The terminal device the process attaches to, such as /dev/ttyp0
Uid           The user ID of the process owner
Size          The amount of virtual memory taken by the process (kilobytes)
State         The state of the process. (S-Sleeping, R-Running, W-Waiting)
Command       The command that launches the process
```

COMMANDS
```
None.
```

OPTIONS
```
None.
```

EXAMPLES
- ```
  Report process status
  ps
  ```

PWD

NAME
     pwd - print name of current working directory

SYNOPSIS
     pwd

DESCRIPTION
     pwd is a CLI command used to display name of current working directory.

EXAMPLES
   ● To see current working directory.
     >pwd
     /

REBOOT

NAME
    reboot - reboot the system

SYNOPSIS
    reboot

DESCRIPTION
    Reboot the system.

COMMANDS
    None.

OPTIONS
    None.

EXAMPLES
- Reboot the system
  reboot

REMOTEACCESS

NAME

    remoteaccess - allow certain protocols to access the modem from the WAN side

SYNOPSIS

    Usage: remoteaccess <enable|disable>
         remoteaccess show
         remoteaccess --help

DESCRIPTION

    Remoteaccess sets security level to allow or disallow remote access into the route using telnet, http, snmp or ping from the WAN side. The options are enable, disable and show.

EXAMPLES

- Show current remote access mode.
  >remoteaccess show
  remote access is disabled

- Enable remote access.
  > remoteaccess enable

- Disable remote access.
  >remoteaccess disable

RESTOREDEFAULT

NAME

     restoredefault - restore modem configuration to factory defaults

SYNOPSIS

     restoredefault

DESCRIPTION

     restoredefault is a CLI command used to erase all configurations made by user, and restore the modem back to factory default configuration. Once this command is executed, modem reboots automatically with default configuration.

EXAMPLES

- Restore configuration to factory defaults.
  >*restoredefault*

ROUTE

NAME
        route - show / manipulate the IP routing table

SYNOPSIS
        route add <ipaddress> <subnetmask> <[<gateway>] [<interface>]>
        route delete <ipaddress> <subnetmask>
        route show
        route --help

DESCRIPTION
        route manipulates the IP routing table. Its primary use is to set up static
        routes to specific hosts or networks via an interface.

        When the add or delete options are used, route modifies the routing tables.
        Show option displays the current contents of the routing tables.

        Note default gateway route should use another ¡§defaultgateway¡¨ command. If
        0.0.0.0 is entered using route add command, it is treated the same as a static
        default gateway where a subnetmask must be entered.

COMMANDS
        add   add a new route entry
        delete   delete a route entry
        show   show current content of routing table including static and dynamic
                        route entries

OPTIONS
        ipaddress
                the destination network or host IP address in dotted decimal notation.
        subnetmask
                when adding a network route, the netmask must be specified. Target
                address must have zero matching with the zero portion in NM. Otherwise,
                command will fail and display message "netmask doesn't match route
                address"
        gateway
                route packets via a gateway. NOTE: The specified gateway must be
                reachable first. This usually means that you have to set up a static
                route to the gateway beforehand. If you specify the address of one of
                your local interfaces, it will be used to decide about the interface to
                which the packets should be routed to.
        interface
                force the route to be associated with the specified device, as the kernel
                will otherwise try to determine the device on its own by checking already
                existing routes and devices.

EXAMPLES
   ●   add a route to the network 192.56.76.x via "br0" interface.
        route add 192.56.76.0 255.255.255.0 br0

   ●   add route to to gateway 10.6.33.129 for network 192.57.66.x.
        route add 192.57.66.0 255.255.255.0 10.6.33.129

OUTPUT
        The output of the kernel routing table is organized in the following columns

        Destination
                The destination network or destination host.
        Gateway
                The gateway address or * if none set.

```
Genmask
      The netmask for the destination net; 255.255.255.255 for a host
      destination and 0.0.0.0 for the default route.
Flags       Possible flags include
            U (route is up)
            H (target is a host)
            G (use gateway)
            R (reinstate route for dynamic routing)
            D (dynamically installed by daemon or redirect)
            M (modified from routing daemon or redirect)
```

FILES
```
/proc/net/route
/proc/net/rt_cache
```

SAVE

NAME

    save - save current configuration to Permanent Storage on the flash memory

SYNOPSIS

    save

DESCRIPTION

    save is a CLI command used to save current configuration to flash.

EXAMPLES

- Save all current configuration to flash.
  >save

SNTP

NAME

      sntp - synchronize automatically router time with Internet time servers with a timezone.

SYNOPSIS

      sntp -s server [-s server2] -t "timezone"
      sntp disable
      sntp date
      sntp zones
      sntp --help

DESCRIPTION

      sntp command synchronizes automatically the router¡¦s time with the specified internet timer servers.

OPTIONS

      disable
            If SNTP is enable, disable it (require reboot).
      date
            Show the current date and time of the routeer.
      zones
            Show the list of the supported zones.

EXAMPLES

- To set up sntp server with "Pacific Time, Tijuana" zone
  sntp -s time.nist.gov -t ¡§Pacific Time, Tijuana¡¨

- To disable sntp (require reboot to be effective)
  sntp disable

- To show the current date and time
  sntp date

- To show a list of supported time zone
  sntp zones

- To get a help
  sntp --help

SWVERSION

NAME

    swversion - display current running software version

SYNOPSIS

    swversion show

DESCRIPTION

    swversion is a CLI command used to view the current running software version.

EXAMPLES

- Display current software version.
  > swversion show
  AH4021.01.2.01.300L01.V28.mgcp.dspApp3341_fxo.LE9500A2pB018b.d15h

SYSINFO

NAME

      sysinfo - display the general system information

SYNOPSIS

      sysinfo

DESCRIPTION

      sysinfo displays the number of processes in the system, system time, system uptime, the average system load in the past 1, 5 and 15 minutes, and the system memory consumption. The figures in the memory consumption table are in 1kb unit.

COMMANDS

      None.

OPTIONS

      None.

EXAMPLES

      ●   Display the system information
          sysinfo

TFTP

NAME

tftp - tftp client to update software or retrieve and backup the configuration data.

SYNOPSIS

Usage: tftp [OPTION]... tftp_server_ip_address

DESCRIPTION

Tftp client is used for updating the software and configuration data from a remote tftp server as well as backup and retrieve the configuration to the remote tftp server.

COMMANDS

None.

OPTIONS

-g Get file. (Update image/configuration data)
-p Put file. (backup configuration data)
-f remote file name.
-t i for image and c for configuration data.

EXAMPLES

- To backup configuration data:
  tftp -p -t c -f backupsetting.cfg 192.168.1.2

- To restore configuration data:
  tftp -g -t c -f backupsetting.cfg 192.168.1.2

- To update software:
  tftp -g -t i -f bcm96345_fs_kernel 192.168.1.2

  Where the file name after "-f" should be the real file to be retrieved or backuped from tftp server.

VOICE

NAME
        voice - manipulate voice-related parameters or start voice application

SYNOPSIS
        voice --help
        voice show
        voice start
        voice stop
        voice set <parameter> <value>

COMMANDS
        --help
                Displays the command syntax.
        show
                Shows the voice-related parameters. For example, for MGCP application the
                following parameters are shown: call agent IP address, gateway name and
                interface used for sending the voice packets.
        start
                Starts the voice application.
        stop
                Stops the voice application.
        set
                Configures the voice related parameters. These parameters are specific to
                type of voice protocol used in the voice application.

                For MGCP, the following parameters can be set:
                Parameter   Value
                callagent   IP address of the call agent
                gwname   Name of the MGCP gateway (this name is used in each
                                 MGCP message sent to the call agent)
                interface   Interface name over which the MGCP and voice packets
                                 are sent (e.g. br0, nas25, etc.)
                prefcodec   The codec that will be put in the first position of the
                                 codec list (e.g. auto, G711U, G729, etc.)
                country   The country where the device is located
                aaln   Endpoint name (e.g. aaln/1, where 'aaln/' is fixed)
                caport   UDP port number used by call agent
                clientport   UDP port number used by AH4021
                txgain   Gain level for transmission
                rxgain   Gain level for receiving
                pstncode   PSTN access code
                hbtimer   Time interval for sending Heartbeat packet
                emergency   List of emergency numbers

                For SIP, the following parameters can be set:
                Parameter   Value
                proxy   IP address and port for the SIP proxy server.
                registrar   IP address and port for the SIP registrar server.
                logserver   IP address and port for logging SIP messages.
                extension   Phone extension (used only in combination with SIP
                                 proxy)
                interface   Interface name over which the MGCP and voice packets
                                 are sent (e.g. br0, nas25, etc.)

                NOTE: The values for the SIP proxy, registrar, and logserver should have
                the format ipaddress[:port]. See the examples below.

DESCRIPTION
        Voice command enables manipulation of the voice-related parameters or starting
        the voice application.

EXAMPLES

- Show the voice-related parameters
  >voice show

- Set the IP address for the MGCP callagent to 192.168.1.100
  >voice set callagent 192.168.1.100

- Set the MGCP gateway name to [192.168.1.1]
  >voice set gwname [192.168.1.1]

- Set the interface to nas25
  >voice set interface nas25

- Set the SIP proxy IP address to 192.168.1.100, port number 12345
  >voice set proxy 192.168.1.100:12345

- Set the SIP registrar IP address to 192.168.1.110
  >voice set registrar 192.168.1.110

- Set the SIP log server IP address to 192.168.1.100, port number 12345
  >voice set logserver 192.168.1.100:12345

- Set all the voice-related parameters to default values
  >voice set default

- Start the voice application
  >voice start

- Stop the voice application
  >voice stop

WAN

NAME

wan - allow a user to configure the WAN interfaces for the AH4021

SYNOPSIS

```
wan config <port.vpi.vci> [<connection Id>]
        [--protocol <bridge|pppoe|pppoa|mer|ipoa>] [--encap <llc|vcmux>]
        [--state <enable|disable>] [--service <servicename>]
        [--firewall <enable|disable>] [--nat <enable|disable>]
        [--username <username> --password <password>]
        [--pppidletimeout <timeout>] [--pppipextension <disable|enable>]
        [--ipaddr <wanipaddress> <wansubnetmask]
        [--dhcpclient <enable|disable>]
wan delete <port.vpi.vci>
wan show [<port.vpi.vci>]
wan --help <bridge|pppoe|pppoa|mer|ipoa>
```

DESCRIPTION

wan is used to configure the networking protocols for each WAN interface.
Currently each WAN interface occupies one ATM PVC. It does not support multiple
PPPoE sessions on one ATM PVC. Before using this command, the ATM PVC of which
the WAN interface is based on, must be configured first by using the atm
command. This command can:

- configure the protocol, encapsulation mode over ATM PVC, state, service
  name for each WAN interface.
- configure the username, password, idle timeout, and PPP IP extension for a
  PPPoE or a PPPoA interface.
- configure the IP address and subnet mask for a MER or a IPoA interface.
- enabling NAT or firewall for a MER or IPoA interface.
- enable or disable the DHCP client for a MER interface.
- delete the existed WAN interface (it will not delete the ATM PVC).
- show ATM PVC and WAN interface summary data and status.
- display usage for WAN interface.

All information is displayed to stdout. A program or shell script that calls
this utility can redirect stdout to a file and then parse the file in order to
interpret the displayed output. Note that special characters are supported in
all options of character string type.

COMMANDS

config
>   configure the WAN interface for the AH4021.
>   Notice: the command only saves the configuration data to the flash, and
>   does not take effect until the system is rebooted.

delete
>   remove the existed WAN interface.
>   Notice: the command only saves the configuration data to the flash, and
>   does not take effect until the system is rebooted.

show
>   show ATM PVC VPI/VCI, service category, WAN interface service name, WAN
>   interface name, WAN protocol, WAN interface service state, WAN interface
>   up/down status, and WAN IP address.

--help
>   display usage for WAN interface.

OPTIONS

Options for the config command

```
wan config <port.vpi.vci>
        [--protocol <bridge|pppoe|pppoa|mer|ipoa>] [--encap   <llc|vcmux>]
```

```
        [--state <enable|disable>] [--service <servicename>]
        [--firewall <enable|disable>] [--nat <enable|disable>]
        [--username <username> --password <password>]
        [--pppidletimeout <timeout>] [--pppipextension <disable|enable>]
        [--ipaddr <wanipaddress> <wansubnetmask>]
        [--dhcpclient <enable|disable>]


<port.vpi.vci>
        port: port number of the ATM VCC to add.
        Valid values: 0.
        vpi: VPI of the VCC to add.
        Valid values: 0 - 255.
        Default value: 0
        Vci: VCI of the VCC to add.
        Valid values: 32 - 65535.
        Default value: 35.
<connection Id>
        The connection ID identifies a WAN connection on a PVC. To add a new WAN
        connection, connection Id should be obmitted. To edit an existent WAN
        connection, connection Id can be be specified to identify a specific WAN
        connection. If omitted, it is defaulted to be 1.
        Valid values: 1 - 8.
        Default value: 1
--protocol <bridge|pppoe|pppoa|mer|ipoa>
        The protocol of the WAN interface.
        Valid values: bridge, pppoe, pppoa, mer, or ipoa.
        Default value: bridge.
--encap <llc|vcmux>
        The encapsulation type over the ATM PVC.
        Valid values: llc or vcmux.
                llc -
                        For mer, pppoe or bridge, it's RFC2684 bridged encapsulation
                        For pppoa, it¡¦s RFC2364 LLC/NLPID encapsulation
                Vcmux - RFC2684 VC-MUX (null encapsulation).
        Default value:
                llc for bridge, pppoe, mer, or ipoa.
                Vcmux for pppoa.
--state <enable|disable>
        The service state of the WAN interface.
        Valid values: enable or disable.
        Default value: enable.
--service <servicename>
        The service name of the WAN interface.
        Valid values: strings of 32 characters.
        Default value: <protocol>_<vpi>_<vci>.
--firewall <enable|disable>
        The firewall state of the MER or IPoA interface.
        Notice that firewall is always enabled on a PPPoE or a PPPoA interface.


        Valid values: enable or disable.
        Default value: enable.
--nat <enable|disable>
        The NAT state of the MER or IPoA interface.
        Notice that NAT is always enabled on a PPPoE or a PPPoA interface.
        Valid values: enable or disable.
        Default value: enable.
--username <username>
        The login name of the PPPoE or PPPoA interface.
        This option is only applied to a PPPoE or PPPoA interface.
        The --password option is also needed when this option is used.
        Valid values: string of 32 characters.
--password <password>
        The password of the PPPoE or PPPoA interface.
```

       This option is only applied to a PPPoE or PPPoA interface.
       The --username option is also needed when this option is used.
       Valid values: string of 256 characters.
--pppidletimeout <timeout>
       The PPP timeout of a PPPoE or PPPoA interface.This option is only applied
       to a PPPoE or PPPoA interface.
       Valid values: 0 - 1090 (minutes).
       0: PPP connection is always-on.
       Greater than 0: WAN traffic will be monitored and PPP connection will be
       torn down when there is no user data activity over the WAN interface for
       more than this idle time period.
       Default value: 30 minutes.
--pppipextension <disable|enable>
       The PPP IP extension mode of a PPPoE or PPPoA interface.
       This option is only applied to a PPPoE or PPPoA interface.
       Valid values: disable or enable.
       Default value: disable.
--ipaddr <wanipaddress> <wansubnetmask>
       The WAN IP address and WAN subnet mask of a MER or IPoA interface.
       This option should only be used for a MER or IPoA interface. PPPoE and
       PPPoA interface always receives the IP address, submask and DNS addresses
       automatically from the ISP through the PPP protocol. If this option is
       used and the dhcpclient value is "enable", DHCP client will be disabled
       on this interface. In general principle, static configuration overwrites
       dynamically assigned data.
       <wanipaddress> - the WAN IP address.
       Valid values: any valid IP address.
       <wansubnetmask> - the WAN subnet mask.
       Valid values: 0.0.0.1 - 255.255.255.255.
--dhcpclient <enable|disable>
       The DHCP client state of the MER interface. This option is only valid to
       a MER interface. DHCP client is not supported over any other type of WAN
       interface.
       Valid values: enable or disable.
       Default value: enable.

Options for the delete command
wan delete <port.vpi.vci> [<connection Id>]

<port.vpi.vci>
       port: port number of the VCC to add.
       Valid values: 0.
       vpi: VPI of the VCC to add.
       Valid values: 0 - 255.
       Default value: 0
       vci: VCI of the VCC to add.
       Valid values: 32 - 65535.
       Default value: 35.
<connection Id>
       The number that identifies the existed WAN connection. If the connection
       Id is obmitted, then its value is 1.
       Valid values: 1 - 8.
       Default value: 1

Options for the show command
wan show [<port.vpi.vci>]

<port.vpi.vci>
       port: port number of the VCC to add.
       Valid values: 0.
       vpi: VPI of the VCC to add.
       Valid values: 0 - 255.
       Default value: 0

```
           vci: VCI of the VCC to add.
           Valid values: 32 - 65535.
           Default value: 35
           If <port.vpi.vci> is obmitted then it will display summary state of all
           existing WAN interfaces. Notice, configuration needs to be saved to the
           Permanent Storage first and then become effective after reboot. The wan
           show command shows the WAN interfaces after reboot, the second stage.
```

   Options for the --help command
   wan -help [<bridge|pppoe|pppoa|mer|ipoa>]

   <bridge|pppoe|pppoa|mer|ipoa>
          Display only valid options for the specified protocol.
          If it is obmitted then the help for all protocols is diplayed.

EXAMPLES

- Configure a PPPoE interface
  wan config 0.0.35 --protocol pppoe --username username --password password --encap
  llc

- Configure a PPPoA interface
  wan config 0.0.36 --protocol pppoa --username username --password password --encap
  vcmux

- Configure a MER configuration using DHCP client
  wan config 0.0.37 --protocol mer --encap llc

- Configure a MER configuration using static WAN address
  wan config 0.0.37 --protocol mer --encap llc --ipaddr 10.6.33.163 255.255.255.0

- Configure a IPoA configuration without fireware, without NAT
  wan config 0.0.40 --protocol ipoa --encap llc --firewall disable --nat disable --
  ipaddr 10.6.33.227 255.255.255.0

- Configure a bridge configuration
  wan config 0.2.35

- Remove a WAN interface
  wan delete 0.2.35

- Display all WAN interfaces
  wan show

```
   ===============================================================================
   VCC     Catego. Service      Intf.     Proto.    State     Status    IP
                   Name         Name                                    Address
   ===============================================================================
   0.0.35 UBR      pppoe_0_35   ppp33     PPPoE     Enable    Up        10.6.33.143
   0.0.36 UBR      pppoa_0_36   ppp42     PPPoA     Enable    Up        10.6.33.152
   0.0.37 UBR      mer_0_37     nas27     MER       Enable    Up        10.6.33.193
   0.0.40 UBR      ipoa_0_40    atm52     IPoA      Enable    Up        10.6.33.227
   ===============================================================================
```

- Display usage for all protocols
  wan -help

  Usage: wan config <port.vpi.vci>
        [--protocol <bridge|pppoe|pppoa|mer|ipoa>] [--encap <llc|vcmux>]
        [--state <enable|disable>] [--service <servicename>]
        [--firewall <enable|disable>] [--nat <enable|disable>]
        [--username <username> --password <password>] [--pppidletimeout <timeout>]
        [--pppipextension <disable|enable>] [--ipaddr <wanipaddress> <wansubnetmask]

        [--dhcpclient <enable|disable>]

```
wan delete <port.vpi.vci>
wan show [<port.vpi.vci>]
wan --help <bridge|pppoe|pppoa|mer|ipoa>
```

● Display usage for bridge
```
wan -help bridge

Usage: wan config <port.vpi.vci>
        [--protocol <bridge|pppoe|pppoa|mer|ipoa>] [--encap <llc|vcmux>]
        [--state <enable|disable>] [--service <servicename>]
        wan delete <port.vpi.vci>
        wan show [<port.vpi.vci>]
        wan --help <bridge|pppoe|pppoa|mer|ipoa>
```

WLCTL

NAME

    wlctl - allow a user to configure the Wireless interfaces for the AH4021

SYNOPSIS

    wlctl [-a|i <adapter>] [-hu] <command> [arguments]

DESCRIPTION

    wlctl is used to configure the parameters of WiFi interface including SSID, rate, channel, security settings, etc.

OPTIONS

    Ver
        get version information
    cmds
        generate a short list of available commands
    up
        reinitialize and mark adapter up (operational)
    down
        reset and mark adapter down (disabled)
    out
        mark adapter down but do not reset hardware(disabled)
        On dualband cards, cards must be bandlocked before use.
    Clk
        set board clock state. return error for set_clk attempt if the driver is not down
        0: clock off
        1: clock on
    restart
        Restart driver. Driver must already be down.
    Reboot
        Reboot platform
    Ucflags
        Get/Set ucode flags
    Radio
        Set the radio on or off.
        "on" or "off"
    dump
        print driver software state and chip registers to stdout
    srdump
        print contents of SPROM to stdout
    nvdump
        print nvram variables to stdout
    lodump
        print measlo table to stdout
    nvset
        set an nvram variable
        name=value (no spaces around '=')
    nvget
        get the value of an nvram variable
    revinfo
        get hardware revision information
    msglevel
        set driver console debugging message bitvector
        type 'wlctl msglevel ?' for values
    PM
        set driver power management mode:
        0: CAM (constantly awake)
        1: PS (power-save)
        2: FAST PS mode
    wake

```
            set driver power-save mode sleep state:
            0: core-managed
            1: awake
      promisc
            set promiscuous mode ethernet address reception
            0 - disable
            1 - enable
      monitor
            set monitor mode
            0 - disable
            1 - enable active monitor mode (interface still operates)
      frag
            Set the fragmentation threshhold.  (integer [256, 2346])
      rts
            Set the RTS threshhold. (integer [0, 2347])
      cwmin
            Set the cwmin.  (integer [1, 255])
      cwmax
            Set the cwmax.  (integer [256, 2047])
      srl
            Set the short retry limit.  (integer [1, 255])
      lrl
            Set the long retry limit.  (integer [1, 255])
      rate
            force a fixed rate:
            valid values for 802.11a are (6, 9, 12, 18, 24, 36, 48, 54)
            valid values for 802.11b are (1, 2, 5.5, 11)
            valid values for 802.11g are (1, 2, 5.5, 6, 9, 11, 12, 18, 24, 36, 48, 54)

            -1 (default) means automatically determine the best rate
      mrate
            force a fixed multicast rate:
            valid values for 802.11a are (6, 9, 12, 18, 24, 36, 48, 54)
            valid values for 802.11b are (1, 2, 5.5, 11)
            valid values for 802.11g are (1, 2, 5.5, 6, 9, 11, 12, 18, 24, 36, 48, 54)

            -1 (default) means automatically determine the best rate
      a_rate
            force a fixed rate for the A PHY:
            valid values for 802.11a are (6, 9, 12, 18, 24, 36, 48, 54)
            -1 (default) means automatically determine the best rate
      a_mrate
            force a fixed multicast rate for the A PHY:
            valid values for 802.11a are (6, 9, 12, 18, 24, 36, 48, 54)
            -1 (default) means automatically determine the best rate
      bg_rate
            force a fixed rate for the B/G PHY:
            valid values for 802.11b are (1, 2, 5.5, 11)
            valid values for 802.11g are (1, 2, 5.5, 6, 9, 11, 12, 18, 24, 36, 48, 54)

            -1 (default) means automatically determine the best rate
      bg_mrate
            force a fixed multicast rate for the B/G PHY:
            valid values for 802.11b are (1, 2, 5.5, 11)
            valid values for 802.11g are (1, 2, 5.5, 6, 9, 11, 12, 18, 24, 36, 48, 54)

            -1 (default) means automatically determine the best rate
      infra
            Set Infrastructure mode: 0 (IBSS) or 1 (Infra BSS)
      ap
            Set AP mode: 0 (STA) or 1 (AP)
      bssid
            Get the BSSID value, error if STA and not associated
```

```
channe
     Set the channel:
     valid channels for 802.11b/g (2.4GHz band) are 1 through 14
     valid channels for 802.11a  (5 GHz band) are:
          36, 40, 44, 48, 52, 56, 60, 64,
          100, 104, 108, 112, 116,120, 124, 128, 132, 136, 140,
          149, 153, 157, 161,
          184, 188, 192, 196, 200, 204, 208, 212, 216
tssi
     Get the tssi value from radio
txpwr
     Set tx power in milliwatts.  Range [1, 84]. (Deprecated: Use txpwr1
     instead)
txpwr1
     Set tx power in in various units. Choose one of (default: dbm):
     -d dbm units
     -q quarter dbm units
     -m milliwatt units
     Can be combined with:
     -o turn on override to disable regulatory and other limitations
     Use wl txpwr -1 to restore defaults
txpathpwr
     Turn the tx path power on or off on 2050 radios
txpwrlimit
     Return current tx power limit
powerindex
     Set the transmit power for A band(0-63).
     -1 - default value
atten
     Set the transmit attenuation for B band. Args: bb radio txctl1.
     auto to revert to automatic control
phyreg
     Get/Set a phy register.
radioreg
     Get/Set a radio register.
shmem
     Get/Set a shared memory location.
macreg
     Get/Set any mac registers(include IHR and SB)
     macreg offset size[2,4] [value]
antdiv
     Set antenna diversity for rx
     0 - force use of antenna 0
     1 - force use of antenna 1
     3 - automatic selection of antenna diversity
txant
     Set the transmit antenna
     0 - force use of antenna 0
     1 - force use of antenna 1
     3 - use the RX antenna selection that was in force during
     the most recently received good PLCP header
ratedump
     Print driver rate selection tunables and per-scb state to stdout
     based on remote station mac address[xx:xx:xx:xx:xx:xx]
plcphdr Set the plcp header.
     "long" or "auto" or "debug"
phytype
     Get phy type
scbdump
     print driver scb state to stdout
rateparam
     set driver rate selection tunables
     arg 1: tunable id
```

```
        arg 2: tunable value
wepstatus
        Set or Get WEP status
        wepstatus [on|off]
primary_key
        Set or get index of primary key
addwep
        Set an encryption key.  The key must be 5, 13 or 16 bytes long, or
        10, 26, 32, or 64 hex digits long.  The encryption algorithm is
        automatically selected based on the key size. keytype is accepted
        only when key length is 16 bytes/32 hex digits and specifies
        whether AES-OCB or AES-CCM encryption is used. Default is ccm.
        addwep <keyindex> <keydata> [ocb | ccm] [notx] [xx:xx:xx:xx:xx:xx]
rmwep
        Remove the encryption key at the specified key index.
wep
        Set WEP options.
        wlctl wep [options]
        [on|enable|1]   enable WEP
        [off|disable|0] disable WEP
        [sw|software]   perform WEP in software
        [hw|hardware]   perform WEP in hardware
tkip
        Set TKIP options.
        wlctl tkip [options]
        [on|enable|1]   enable TKIP
        [off|disable|0] disable TKIP
        [sw|software]   perform TKIP in software
        [hw|hardware]   perform TKIP in hardware
aes
        Set AES options.
        wlctl aes [options]
        [on|enable|1]   enable AES
        [off|disable|0] disable AES
        [sw|software]   perform AES in software
        [hw|hardware]   perform AES in hardware
keys
        Prints a list of the current WEP keys
tsc
        Print Tx Sequence Couter for key at specified key index.
wsec_test
        Generate wsec errors
        wsec_test <test_type> <keyindex|xx:xx:xx:xx:xx:xx>
        type 'wlctl wsec_test ?' for test_types
tkip_countermeasures
        Enable or disable TKIP countermeasures (TKIP-enabled AP only)
        0 - disable
        1 - enable
wsec_restrict
        Drop unencrypted packets if WSEC is enabled
        0 - disable
        1 - enable
eap
        restrict traffic to 802.1X packets until 802.1X authorization succeeds
        0 - disable
        1 - enable
authorize
        restrict traffic to 802.1X packets until 802.1X authorization succeeds
deauthorize
        do not restrict traffic to 802.1X packets until 802.1X authorization
        succeeds
deauthenticate
deauthenticate a STA from the AP with optional reason code (AP ONLY)
```

```
wsec
        wireless security bit vector
        1 - WEP enabled
        2 - TKIP enabled
        4 - AES enabled
        8 - WSEC in software
wpa_auth
        Bitvector of WPA authorization modes:
        1       WPA NONE
        2       WPA-802.1X/WPA-Professional
        4       WPA-PSK/WPA-Personal
        64      WPA2-802.1X/WPA2-Professional
        128     WPA2-PSK/WPA2-Personal
        0       disable WPA
set_pmk
        Set passphrase for PMK in driver-resident supplicant.
scan
        Initiate a scan.
        Default an active scan across all channels for any SSID.
        Optional arg: SSID, the SSID to scan.
        Options:
        -s S, --ssid=S          SSID to scan
        -t ST, --scan_type=ST   [active|passive] scan type
        --bss_type=BT           [bss/infra|ibss/adhoc] bss type to scan
        -b MAC, --bssid=MAC     particular BSSID MAC address to scan,
        xx:xx:xx:xx:xx:xx
        -n N, --nprobes=N       number of probes per scanned channel
        -a N, --active=N        dwell time per channel for active scanning
        -p N, --passive=N       dwell time per channel for passive scanning
        -h N, --home=N          dwell time for the home channel between channel
        scans
        -c L, --channels=L      comma or space separated list of channels to scan
passive
        Puts scan engine into passive mode
regulatory
        Get/Set regulatory domain mode (802.11d). Driver must be down.
spect
        Get/Set 802.11h Spectrum Management mode.
        0 - Off
        1 - Loose interpretation of spec - may join non-11h APs
        2 - Strict interpretation of spec - may not join non-11h APs
scanresults
        Return results from last scan.
assoc
        Print information about current network association.
        (also known as "status")
status
        Print information about current network association.
        (also known as "assoc")
disassoc
        Disassociate from the current BSS/IBSS.
chanlist
        Return valid channels for the current settings.
channels
        Return valid channels for the current settings.
channels_in_country
        Return valid channels for the country specified.
        Arg 1 is the country abbreviation
        Arg 2 is the band(a or b)
curpower
        Return current tx power settings
scansuppress
        Suppress all scans for testing.
```

```
        0 - allow scans
        1 - suppress scans
evm
        Start an EVM test on the given channel, or stop EVM test.
        Arg 1 is channel number 1-14, or "off" or 0 to stop the test.
        Arg 2 is optional rate (1, 2, 5.5 or 11)
rateset
        Returns or sets the supported and basic rateset, (b) indicates basic
        With no args, returns the rateset. Args are
        rateset "default" | "all" | <arbitrary rateset>
                default - driver defaults
                all - all rates are basic rates
                arbitrary rateset - list of rates
        List of rates are in Mbps and each rate is optionally followed by "(b)"
        or "b" for a Basic rate. Example: 1(b) 2b 5.5 11
        At least one rate must be Basic for a legal rateset.
roam_trigger
        Set the roam trigger RSSI threshold.  (integer)
roam_delta
        Set the roam candidate qualification delta.  (integer)
roam_scan_period
        Set the roam candidate qualification delta.  (integer)
suprates
        Returns or sets the 11g override for the supported rateset
        With no args, returns the rateset. Args are a list of rates,
        or 0 or -1 to specify an empty rateset to clear the override.
        List of rates are in Mbps, example: 1 2 5.5 11
scan_channel_time
        Get/Set scan channel time
scan_unassoc_time
        Get/Set unassociated scan channel dwell time
scan_home_time
        Get/Set scan home channel dwell time
scan_passive_time
        Get/Set passive scan channel dwell time
scan_nprobes
        Get/Set scan parameter for number of probes to use per channel scanned
prb_resp_timeout
        Get/Set probe response timeout
channel_qa
        Get last channel quality measurment
channel_qa_start
        Start a channel quality measurment
country
        Select Country code for use with 802.11d
        Use either long name or abbreviation from ISO 3166.
        Use 'wlctl country list [band(a or b)]' for the list of supported
        countries
locale
        OBSOLETE: use "wlctl country"
        Select the country:
        Worldwide
        Thailand
        Israel
        Jordan
        China
        Japan
        USA/Canada/ANZ
        Europe
        USAlow
        JapanHigh
        All
join
```

Join a specified network SSID.
Join syntax is: join <ssid> [key xxxxx] [imode bss|ibss]
[amode open|shared|wpa|wpapsk|wpanone]
ssid
        Set or get the current SSID.
        Setting will initiate an assoication attempt if in infrastructure mode,
        or join/creation of an IBSS if in IBSS mode,
        or creation of a BSS if in AP mode.
mac
        Set or get the list of source MAC address matches.
        wlctl mac xx:xx:xx:xx:xx:xx [xx:xx:xx:xx:xx:xx ...]
        To Clear the list: wl mac none
macmode
        Set the mode of the MAC list.
        0 - Disable MAC address matching.
        1 - Deny association to stations on the MAC list.
        2 - Allow association to stations on the MAC list.
wds
        Set or get the list of WDS member MAC addresses.
        Set using a space separated list of MAC addresses.
        wlctl wds xx:xx:xx:xx:xx:xx [xx:xx:xx:xx:xx:xx ...]
lazywds
        Set or get "lazy" WDS mode (dynamically grant WDS membership to anyone).
noise
        Get noise (moving average) right after tx in dBm
fqacurcy
        Manufacturing test: set frequency accuracy mode.
        freqacuracy syntax is: fqacurcy <channel>
        Arg is channel number 1-14, or 0 to stop the test.
crsuprs
        Manufacturing test: set carrier suppression mode.
        carriersuprs syntax is: crsuprs <channel>
        Arg is channel number 1-14, or 0 to stop the test.
int
        Interrupt Test - remember to precede by 'wlctl down' and follow by 'wlctl
        up'
lbt
        Loopback Test - remember to precede by 'wlctl down' and follow by 'wlctl
        up'
band
        Returns or sets the current band
        auto - auto switch between available bands (default)
        a - force use of 802.11a band
        b - force use of 802.11b band
bands
        Return the list of available 802.11 bands
phylist
        Return the list of available phytypes
shortslot
        Get current 11g Short Slot Timing mode. (0=long, 1=short)
shortslot_override
        Get/Set 11g Short Slot Timing mode override. (-1=auto, 0=long, 1=short)
shortslot_restrict
        Get/Set AP Restriction on associations for 11g Short Slot Timing capable
        STAs.
        0 - Do not restrict association based on ShortSlot capability
        1 - Restrict association to STAs with ShortSlot capability
ignore_bcns
        AP only (G mode): Check for beacons without NONERP element (0=Examine
        beacons, 1=Ignore beacons)
pktcnt
        Get the summary of good and bad packets.
upgrade

          Upgrade the firmware on an embedded device

gmode
          Set the 54g Mode (LegacyB|Auto||GOnly|BDeferred|Performance|LRS)

gmode_protection
          Get G protection mode. (0=disabled, 1=enabled)

gmode_protection_control
          Get/Set 11g protection mode control alg. (0=always off, 1=monitor local
          association, 2=monitor overlapping BSS)

gmode_protection_cts
          Get/Set 11g protection type to CTS (0=disable, 1=enable)

gmode_protection_override
          Get/Set 11g protection mode override. (-1=auto, 0=disable, 1=enable)

legacy_erp
          Get/Set 11g legacy ERP inclusion (0=disable, 1=enable)

scb_timeout
          AP only: inactivity timeout value for authenticated stas

assoclist
          AP only: Get the list of associated MAC addresses.

rssi
          Get the current RSSI val, for an AP you must specify the mac addr of the
          STA

isup
          Get driver operational state (0=down, 1=up)

fasttimer
          Get/Set High frequency watchdog timeout (tx_power) [15 sec]

slowtimer
          Get/Set Low frequency watchdog timeout (nrssislope) [60 sec]

glacialtimer
          Get/Set Very Low frequency watchdog timeout (measurelo) [120 sec]

radar
          Enable/Disable radar

rssidump
          Dump rssi values from aci scans

interference
          Get/Set interference mitigation mode. Choices are:
          0 = none
          1 = non wlan
          2 = wlan manual
          3 = wlan automatic

aciargs
          Get/Set various aci tuning parameters. Choices are:
          enter: CRS glitch trigger level to start detecting ACI
          exit: CRS glitch trigger level to exit ACI mode
          glitch: Seconds interval between ACI scans when glitchcount is
          continuously high
          spin: Num microsecs to delay between rssi samples
          Usage: wlctl aciargs [enter x][exit x][spin x][glitch x]

frameburst
          Disable/Enable frameburst mode

pwr_percent
          Get/Set power output percentage

wet
          Get/Set wireless ethernet bridging mode

bi
          Get/Set the beacon period (bi=beacon interval)

dtim
          Get/Set DTIM

wds_remote_mac
          Get WDS link remote endpoint's MAC address

wds_wpa_role_old
          Get WDS link local endpoint's WPA role (old)

wds_wpa_role
          Get/Set WDS link local endpoint's WPA role

```
authe_sta_list
      Get authenticated sta mac address list
autho_sta_list
      Get authorized sta mac address list
measure_req
      Send an 802.11h measurement request.
      Usage: wlctl measure_req <type> <target MAC addr>
      Measurement types are: TPC, Basic, CCA, RPI
      Target MAC addr format is xx:xx:xx:xx:xx:xx
quiet
      Send an 802.11h quiet command.
      Usage: wlctl quiet <TBTTs until start>, <duration (in TUs)>, <offset (in
      TUs)>
csa
      Send an 802.11h channel switch anouncement
      Usage wlctl csa <mode> <when (in TBTTs)> <channel>
constraint
      Send an 802.11h Power Constraint IE
      Usage: wlctl constraint 1-255 db
rm_req
      Request a radio measurement of type basic, cca, or rpi
      Specify a series of measurement types each followed by options.
      example: wl rm_req cca -c 1 -d 50 cca -c 6 cca -c 11
      Options:
      -t n   numeric token id for measurement set or measurement
      -c n   channel
      -d n   duration in TUs (1024 us)
      -p     parallel flag, measurement starts at the same time as previous
      Each measurement specified uses the same channel and duration as the
      previous unless a new channel or duration is specified.
rm_rep
      Get current radio measurement report
wme
      Set WME (Wireless Multimedia Extensions) mode (0=off, 1=on)
wme-ac
      Usage: wlctl wme-ac sta/ap [be, bk, vi, vo] [ecwmax, ecwmin, txop, aifsn,
      acm] value
sta_info
      wl sta_info <xx:xx:xx:xx:xx:xx>
cap
      driver capabilities
malloc_dump
      debug malloc info
chan_info
      channel info
add_ie
      Add a vendor proprietary IE to 802.11 management packets
      Usage: wlctl add_ie <pktflag> length OUI hexdata
      <pktflag>: Bit 0 - Beacons
      Bit 1 - Probe Rsp
      Bit 2 - Assoc/Reassoc Rsp
      Bit 3 - Auth Rsp
      Example: wlctl add_ie 3 10 00:90:4C 0101050c121a03
      to add this IE to beacons and probe responses
del_ie
      Delete a vendor proprietary IE from 802.11 management packets
      Usage: wlctl del_ie <pktflag> length OUI hexdata
      <pktflag>: Bit 0 - Beacons
      Bit 1 - Probe Rsp
      Bit 2 - Assoc/Reassoc Rsp
      Bit 3 - Auth Rsp
      Example: wlctl del_ie 3 10 00:90:4C 0101050c121a03
list_ie
```

```
                Dump the list of vendor proprietary IEs
        rand
                Get a 2-byte Random Number from the MAC's PRNG
                Usage: wlctl rand
        corerev
                Get current core revision
        autochannel
                auto channel selection
        close
                hides the network from active scans, 0 or 1.
                0 is open, 1 is hide
        beacon
                Set the beacon interval:
                valid beacon interval are 1-65535
        auth
                Sets the shared key authentication method
                0 is optional, 1 is required
        essid
                Set the SSID ID value
                <name|ssid>
```

EXAMPLES

- Display WEP key information.
  wlctl keys

  The current WEP keys:
  1.
  2.
  3.
  4.