Software User Manual

BCM963XX

Broadband Router CLI Reference

963XX-SWUM103-R

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Revision History

Revision	*Date*	*Change Description*
963XX-SWUM103-R	07/10/15	**Updated:** • “Broadcom CLI Commands” on page 16
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Table of Contents

List of Tables

About This Document

Purpose and Audience

This document explains the CLI commands available to programmers using the broadband router. It is intended for software design engineers.

Acronyms and Abbreviations

In most cases, acronyms and abbreviations are defined on first use.

For a comprehensive list of acronyms and other terms used in Broadcom documents, go to: http://www.broadcom.com/press/glossary.php.

Document Conventions

The following conventions may be used in this document:

Convention	*Description*
Bold	User input and actions: for example, type **exit**, click **OK**, press **Alt+C**
`Monospace`	Code: `#include <iostream>` HTML: `<td rowspan = 3>` Command line commands and parameters: `wl [-l] <command>`
< >	Placeholders for *required* elements: enter your <username> or `wl <command>`
[ ]	Indicates *optional* command-line parameters: `wl [-l]` Indicates bit and byte ranges (inclusive): [0:3] or [7:0]

References

The references in this section may be used in conjunction with this document.

Note: Broadcom provides customer access to technical documentation and software through its Customer Support Portal (CSP) and Downloads and Support site (see Technical Support).

For Broadcom documents, replace the “xx” in the document number with the largest number available in the repository to ensure that you have the most current version of the document.

Document (or Item) Name	*Number*	*Source*
Broadcom Items		
[1] Configuration Management System (CMS) Developer's Guide	CPE-SWUM1xx-R	docSAFE

Technical Support

Broadcom provides customer access to a wide range of information, including technical documentation, schematic diagrams, product bill of materials, PCB layout information, and software updates through its customer support portal (https://support.broadcom.com). For a CSP account, contact your Sales or Engineering support representative.

In addition, Broadcom provides other product support through its Downloads and Support site (http://www.broadcom.com/support/).

Overview

The CLI is available from the serial console, Telnet login, and ssh logins. It is enabled via the make menuconfig option “Enable Command Line Interface” in the “Management Protocols and User Interface Selection” section. The CLI is part of the Configuration Management System (CMS), so CMS must also be enabled in make menuconfig.

The CLI has a “>” prompt character. If you type “sh”, you will enter the Busybox shell, which has the “#” prompt character. This document describes the commands available from the CLI (“>”), not the Busybox shell.

To see a list of available CLI commands, type “help”. Many of the newer, updated commands support a help message. To see the help message for a command, type the command name and then -h or --help.

In order to use commands which modify the configuration, you must be logged into the CLI as either “Admin” or “Support”.

The following is a list of commands that are available, but are not listed by typing “help”. These are referred to as hidden commands.

- dumpmem
- ebtables
- iptables
- logread
- setmem
- sh

Only the Admin and Support users are allowed to use the hidden commands.

Control Keys

Command history scrolling (maximum 15 commands in history).

Up:	Up arrow key, or CTRL+p
Down:	Down arrow key, or CTRL+n
Move cursor left:	LEFT arrow key, or CTRL-b
Move cursor right:	RIGHT arrow key, or CTRL-f
Beginning of line:	CTRL+a
End of line:	CTRL+e
Clear screen:	CTRL+l (lowercase letter of L)
Clear to the beginning of line:	CTRL+u
Clear to the end of line:	CTRL+k
Delete:	DEL key, or CTL+h
Terminate:	CTRL-c (can not terminate certain running application such as ping)

Effect of Broadcom Commands

Similar to the WebUI, all commands take effect immediately (without requiring reboot). In accordance to the CMS architecture, all commands which modify the configuration will modify the MDM (shared memory configuration database). Most commands will automatically save the changes to the configuration file. If the command does not save the changes to the configuration file, the user must use the “save” command to save the changes. Table 1 summarizes the CLI commands.

Table 1: Effect of Broadcom Commands

Command	*Changes Configuration Database (MDM)*	*Save Config to Flash Memory*	*Comments*
adsl	Yes	Yes	–
atm	Yes	Yes	–
arp	No	No	–
cat	No	No	–
defaultgateway	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	Yes	No	–
dnsrelay	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.
dumpcfg	No	No	–
help	No	No	–
lan	Yes	No	–
loglevel	Yes	No	Changes are not saved to config unless you type “save.”
logout	No	No	–
passwd	Yes	Yes	Effect after logout
ppp	No	No	–
pwd	No	No	–
restoredefault	Yes	Yes	Effect after system is rebooted automatically.
route	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	No	Yes	–
swversion	No	No	–
voice	Yes	Yes	Only enabled for BCM963xxGWV.
wan	Yes	Yes	–

Table 1: Effect of Broadcom Commands (Cont.)

wlctl	No	No	Only enabled for BCM963xxGW. Wireless can not be configured from menu-driven UI.

Broadcom CLI Commands

This section describes each command in detail. Examples are also provided.

ADSL

Name

adsl

Synopsis

```
adsl start [options]
adsl stop
adsl connection [options]
adsl configure/configure1 [options]
adsl bert [options]
adsl info [options]
adsl afelb [options]
adsl qlnmntr [options]
adsl inm [options]
adsl diag [options]
adsl snrclamp [options]
adsl nlnm [options]
adsl ntr [options]
adsl selt [options]
adsl profile [options]
```

Description

ADSL is used to control the Broadcom BCM63xx 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 calls BcmAdsl_Initialize to initialize the driver and BcmAdsl_ConnectionStart to start 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 Broadcom ADSL driver. This command calls BcmAdsl_Uninitialize.
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.
configure1	The same as the configure command, except the parameters that are not specified will be unchanged, unlike the Configure command which will reset to default.
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.
afelb	Starts, sets control parameters such as test time, signal type for AFE loopback test.
qlnmntr	Starts, sets control parameters such as total monitor time reporting frequency for QLN monitoring test mode.
inm	To configure inm parameters and Start inm, Stop monitoring, and show inm results.
info	Display information about ADSL driver and PHY status.
diag	Log statuses locally. It is useful when DslDiags is not available. It is also used to change the default media search behavior for bonding boards and PHY type for Gfast boards for testing purposes.
snrclamp	Command to configure shape of snrclamping mask.
nlnm	Command to control the non-linear noise monitoring feature.
ntr	Command to start or stop network timing reference.
selt	Command to control the experimental SELT feature.
profile	Command to display, save or restore the DSL driver configuration.

Options

Start and Configure Command Options

```
adsl start [--up] [--mod <a|d|l|t|2|p|e|m|M3|M5|v|f>] [--lpair <(i)nner|(o)uter>]
    [--trellis <on|off>] [--snr <snrQ4>] [--bitswap <on|off>][--sesdrop <on|off>][--sra
<on|off>][--CoMinMgn <on|off>][--i24k <on|off>][--phyReXmt <0xBitMap-UsDs>][--Ginp <0xBitMap-
UsDs>][--TpsTc <0xBitMap-AvPvAaPa>][--monitorTone <on|off>][--profile <0x00 – 0x7F> | <”8a |8b
|8c |8d |12a |12b |17a |30a”>] [--us0 <on|off>][--dynamicD <on|off>][--dynamicF <on|off>] [--SOS
<on|off>][--maxDataRate <maxDsDataRateKbps maxUsDataRateKbps maxAggrDataRateKbps>] [--forceJ43
<on|off>][--toggleJ43B43 <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|M3|M5|v|f>
    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 (G.992.3 and G.992.5 Annex M) enabled
    M3 – Double upstream (G.992.3 Annex M) enabled
    M5 – Double upstream (G.992.5 Annex M) enabled
    v – VDSL2 enabled
    f - G.fast 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
--sesdrop <on|off>
    Enables or disables SESdrop
--sra <on|off>
    Enables or disables SRA
--CoMinMgn <on|off>
    Enables or disables Co Minimum Margin Drop
--i24k <on|off>
    Enables or disables i24k
[--phyReXmt <0xBitMap-UsDs>]
    Enables or disables phy Re-transmit feature in US and DS
[--Ginp <0xBitMap-UsDs>]
```

```
    Enables or disables G.inp feature in US and DS
--TpsTc <0xBitMap-AvPvAaPa>
    Enable or disable ATM and PTM modes in VDSL (AvPv) and Adsl (AaPa)
[--monitorTone <on|off>]
    Enables or disables the use of monitored tones, which enables the reload of DMT carriers after
a decrease of their bitloading to zero
--profile <0x00 – 0x7F> | <”8a |8b |8c |8d |12a |12b |17a 30a”>
    VDSL profile selection. More than one profile to enable several profiles
[--us0 <on|off>]
    Enable/disable UpStream0 in VDSL2 mode
[--dynamicD <on|off>]
    Enables or disables dynamic D
[--dynamicF <on|off>]
    Enables or disables dynamic F
[--SOS <on|off>]
    Enables or disables the “SaveOurShowtime” G.993.2 feature
[--maxDataRate <maxDsDataRateKbps maxUsDataRateKbps maxAggrDataRateKbps>]
    Set max DS, US and aggregate data rate. By default, PHY uses it’s default value.
--forceJ43 <on|off>
    Enable or disable forceJ43
--toggleJ43B43 <on|off>
    Enable or disable toggleJ43B43
```

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
```

Stop Command Options

```
adsl stop
```

Connection Command Options

```
adsl connection [--up] [--down] [--loopback] [--reverb]
    [--medley] [--noretrain] [--L3][--diagMode][--Lo]
    [--tones <xmtStart xmtNum xmtMap rcvStart rcvNum rcvMap>]
     [--normal][--freezeReverb][--freezeMedley]
--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
--diagmode
    Puts modem in diagnostic test mode
--L0
    Puts modem in L0 mode
--tones
    Specifies tones which can be used by ADSL PHY.
    Tone ranges should be given separated by commas.
    For example, to select tones 0 to 100 and 200 to 300 use:
    --tones 0-100,200-300
    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.
--normal
 Puts modem in Normal mode
--freezeReverb
 Puts modem in freeze reverb mode
--freezeMedley
 Puts modem in freeze medley mode
```

Bert Command Options

```
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 errored bits are displayed as 64-bit hexadecimal numbers.

Info Command Options

```
adsl info [--state] [--show] [--stats] [--SNR] [--QLN] [--Hlog] [--Hlin] [--HlinS] [--Bits][--
pbParams][--linediag][--linediag1][--reset][--vendor][--cfg]
```

--state	Displays the shortest message about ADSL PHY connection state. For example: 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 in dB.
--QLN	Displays Quiet Line Noise (QLN) per tone in dBm/Hz.
--Hlog	Displays Hlog (Channel Response) per tone in dB.
--Hlin	Displays Hlin (Channel Response linear).
--HlinS	Displays Hlin Scaled and corresponding scaling factors.
--Bits	Display Bit Allocation per tone.
--pbParams	Displays Per Band Parameters in VDSL2 mode. This includes Band plan information, Net Data rate, TxPwr, per band LATN, SATN, SNRM.
--linediag	Used in ADSL mode. Displays Line Diagnostic Results for ADSL mode including aggregate PMD parameters such as SNRM, LATN, SATN, TxPwr, ATTNDR and per tone SNR, QLN, Hlog, HlinS.

Example:

```
> adsl info --linediag
adsl: ADSL driver and PHY status
Status: G.992 Started
Retrain Reason: 0
```

	Down	***Up***
SNRM(dB):	0.0	0.0
LATN(dB):	0.0	0.0
SATN(dB):	0.0	0.0
TxPwr(dBm):	0.0	13.0
ATTNDR(Kbps):	0	0

Tone Number	***SNR***
0	–180.0000
1	–180.0000
2	–180.0000

Tone Number	*QLN*
0	–90.0000
1	–142.0000
2	–143.0000
3	–144.0000

Tone Number	*Hlog*
0	0.0000
1	0.0000
2	0.0000
3	0.0000

Hlin scale factor: DS = 0 US = 0

Tone Number	*Hlin*	
0	0	0
1	0	0
2	0	0

```
--linediag1
Used in VDSL2 mode. Displays Line Diagnostic Results for VDSL2 mode. Displayed items include Net
Data Rate, Tx Power, Per Band PMD parameters and per-tone Hlog,QLN,SNR,HlinS
```

Example:

```
> adsl info --linediag1
adsl: ADSL driver and PHY status
Status: Showtime
Retrain Reason: 0
Max: Upstream rate = 50971 Kbps, Downstream rate = 118860 Kbps
Path: 0, Upstream rate = 20011 Kbps, Downstream rate = 79895 Kbps
```

Table 2: VDSL Port Details

	Upstream	***Downstream***
Attainable Net. Data Rate	50971 kbps	118860 kbps
Actual Aggregate TX Power	13.4 dBm	14.4 dBm

Table 3: VDSL Band Status

	U0	***U1***	***U2***	***U3***	***D1***	***D2***	***D3***
Line Attenuation:	N/A	17.2 dB	29.0 dB	N/A	7.7 dB	19.1 dB	32.2 dB
Signal Attenuation:	N/A	16.9 dB	29.8 dB	N/A	7.7 dB	19.1 dB	32.2 dB
SNR Margin:	N/A	27.2 dB	27.3 dB	N/A	15.4 dB	14.4 dB	15.1 dB

```
Line 0 DS HLOG (dB) (grouped by 8 tones):
 0 : -96.0 -96.0 -96.0 -96.0 -96.0 -8.4 -7.1 -6.1 -5.5 -5.2
 10 : -4.9 -4.8 -4.6 -4.5 -4.5 -4.4 -4.4 -4.5 -4.6 -4.7
. . .
Line 0 US HLOG (dB) (grouped by 8 tones):
 0 : -96.0 -96.0 -96.0 -96.0 -96.0 -96.0 -96.0 -96.0 -96.0 -96.0
. . .
Line 0 DS QLN (dBm/Hz) (grouped by 8 tones):
 0 : -160.0 -160.0 -160.0 -160.0 -160.0 -121.5 -119.5 -119.0 -118.0 -119.0
. . .
Line 0 US QLN (dBm/Hz) (grouped by 8 tones):
 0 : -160.0 -160.0 -160.0 -160.0 -160.0 . . .
Line 0 DS SNR (dBm/Hz) (grouped by 8 tones):
 0 : 0.0   0.0    0.0    0.0    0.0    53.4   54.4   56.2   56.7 . . .
Line 0 US SNR (dBm/Hz) (grouped by 8 tones):
 0 : 0.0   0.0    0.0    0.0    0.0    0.0    0.0    0.0    0.0    0.0 . . .
 --reset
    Clears all statistic counters in ADSL driver
 --vendor
    Display Chipset Vendor Details
 --cfg
    Display AdslCfgProfile values in MIB
```

afelb Command Options

```
adsl afelb [--time] [--tones] [--signal]
```

--time Sets the time in seconds the test would take to return the result.

--tones Optional parameter - Sets the test tone range

Example: -–tones 0–20, 25–30

```
--signal
    Sets the test signal to be used
    1 Reverb
    2 Medley
    8 High Crest factor Signal
Result will be available in SNR Mib info and seen using
adsl info --SNR
```

qlnmntr Command Options

```
adsl qlnmntr [--time] [--freq]
--time
    Sets the time in seconds for which QLN monitoring is to be done. If set to 0 , monitoring
    will be done for ever.
--freq
    Sets the frequency in milli-seconds of QLN reporting.
    At the end of monitoring time , the result is available in the QLN MIB info and can be seen
    using
adsl info --QLN
    Also, during the monitoring period the updated results is being updated in MIB and can be
    seen every “--freq” milli-seconds.
```

Description and Guidelines for inm Command

```
adsl inm [--start <BB_THRESH 10*dB> <INMIATO> <INMIATS>] [--stop] [--show]
Starting INM
adsl inm --start <BB_THRESH 10*dB> <INMIATO> <INMIATS>
Broadband Threshold value expressed as 10*dB (range [-361 to 120]), inter-arrival time offset
INMIATO (range [3-511]) and inter-arrival time step in log2 format INMIATS (range [0-7]) are the
required parameters to be specified in start command
Stopping impulse noise monitoring
adsl inm --stop
Displaying INM configuration and results
adsl inm –show
```

This prints inm state (Active/Not), mode, configuration, and results in the following format. The actual Inter Arrival Time Step in IAT histogram is displayed as INMIATS:

```
INM State:ACTIVE BB_THLD=-10.0dB INM_INPEQ_MODE=0 INMCC=0 INMAITO=2 INMIATS=16
INMAME (BB Counter)= 8777
INPEQ1:    0
INPEQ2:    0
INPEQ3:    0
 . . .
. . .
INPEQ17:   0
Inter Arrival Histogram:
[2-2]:     0
[3-18]:    0
. . .
. . .
[99-INF]:  0
```

Description and Guidelines for diag Command

```
adsl diag [--logstart < nBytes to store statuses > ] [--logpause ] [--logstop] [--
loguntilbufferfull] [--loguntilretrain] [--mediaSearchCfg <0xBitMap >] [--phyTypeCfg <0xBitMap
>]
--logstart
    Start logging statues locally and will wrap around when the buffer is full
--logpause
    Pause logging
--logstop
    Stop logging session.
--loguntilbufferfull
    Log statuses until the buffer is full
--loguntilretrain
    Log until the modem retrain
```

```
--mediaSearchCfg <0xBitMap>
    Controls the media search behavior for testing purposes.
    Bits
     [0] PHY switch:            1=Disabled, 0=Enabled
     [1] Media search:          1=Disabled, 0=Enabled
     [2] Force new PHY/line configuration as defined in bits 3, 4 and 5
     [3] PHY type:              1=Single Line, 0=Bonded
     [4-5] AFE:                 1=external, 0=internal
     [6] Save preferred media:  1=Disabled, 0=Enabled
--phyTypeCfg <0xBitMap>
    Controls which PHY(Gfast/non-Gfast) to be loaded for testing purposes.
    Bits\n"
     [0] PHY switch:            1=Disabled, 0=Enabled\n"
     [1] PHY type:              1=Gfast,    0=Non-Gfast\n"
     [2] Save preferred PHY:    1=Disabled, 0=Enabled\n"
```

To retrieve the logged statuses, connect DslDiags and issue “dbgcmd=25 4.”

Description and Guidelines for snrclamp Command

```
adsl snrclamp [--shape <shapeId>] [--bpshape [bpIndex-bpLevel,]
--shape
    Set one of the pre-defined shapes shapeIds in [0,1,2]
--bpshape
    Set shape as defined by the bpIndex-bpLevel pairs
```

Example: >adsl snrclamp --bpshape 1-1,128-32,512-128

Description and Guidelines for nlnm Command

```
adsl nlnm [--show] [--setThld <Thld_Num_Tones>]
--show
    Show measurement results, which include:
a “NonLinearityFlag indicating detection or not
the number of affected DMT carriers
an estimate of an Echo-to-Noise Ratio (ENR)
an estimate of the nonlinear echo in dB
--setThld
    A value between 0 to 480 tones to configure the detector
```

Description and Guidelines for ntr Command

```
adsl ntr [--start] [--stop]
--start
    Starts Network Timing Reference
--stop
    Stops Network Timing Reference
When NTR is started, PHY will output two frequencies, 1PPS and 8Khz
```

Description and Guidelines for selt Command

```
adsl selt [--start] [--stop] [--status] [--step <steps_bitmap>] [--cfg <selt_cfg>]
--start
    Starts the PHY SELT measurement process
--stop
    Stops the PHY SELT measurement
--status
    Returns the SELT measurement state
```

```
--steps <steps_bitmap>
    Controls the steps performed during a SELT measurement.  This is a bitmap where
    Bit0: SELT STATE STEP WAIT: wait period, to allow far-end to drop the link
    BIT1: SELT STATE STEP QLN: perform a QLN measurement
    BIT2: TBD
    BIT3: SELT STATE STEP SELT: SELT measurement
    BIT4: SELT STATE STEP POSTPROCESSING: SELT post-processing
--cfg <selt_cfg>
    BIT 0-7 (0x000000FF): PSD level for SELT measurement, as -60 – [0..255]*0.5 dBm/Hz
    BIT 8-16 (0x0001FF00): maximum tone (divided by 8)
    BIT 17-23 (0x00FE0000): duration (in seconds)
    BIT 24-31 (0xFF000000): force measurement in tone groups
```

Description and Guidelines for profile Command

```
adsl profile [--show] [--save] [--restore]
--show
    Displays the current driver configuration
--save
    Saves the current driver configuration to flash
--restore
    Restores the current driver configuration with the configuration saved from flash
```

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
```

Example:

- 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 approximately 20 seconds of BERT running, the results will look as follows:

```
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 the –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

(verified 11/09)

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 the 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 readded.

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 Broadcom BCM63xx 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.
- Add and remove priority packet group entries.
- Display the configuration for traffic descriptor table entries, ATM interfaces, VCCs and priority packet groups.
- 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 Broadcom ATM driver. This command calls BcmAtm_Initialize to initialize the driver and BcmAtm_SetTrafficDescrTable to add one UBR traffic descriptor table entry.
stop	Stops the Broadcom ATM driver. This command calls BcmAtm_Uninitialize.
operate	Operates on traffic descriptor table entries, ATM interfaces and VCCs. Depending on the options, this command calls BcmAtm_GetTrafficDescrTable, BcmAtm_SetTrafficDescrTable, BcmAtm_GetInterfaceCfg, BcmAtm_SetInterfaceCfg, BcmAtm_GetVccCfg, BcmAtm_SetVccCfg, BcmAtm_GetPriorityPacketGroup, BcmAtm_SetPriorityPacketGroup, BcmAtm_GetInterfaceStatistics or BcmAtm_GetVccStatistics.

Options

Options for the start Command

```
atm start [--cqs <size>] [--pqs <size>] [--bs <size>] [--bo <offset>] [--intf <port> <type>
<flags>]
--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> <flags>
    port – Port number starting at 0 to be configured.
    type – adsl|loopback|utopia|tc
    flags – level2|negedge|level2 negedge
    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>] [--setlink <port> <linkstate> <linkrate>] [--settype
<port> <type> [<flags>]] [--show [<port>]] [--stats [<port>] [reset]]
--state <port> <type>
    port – Port number starting at 0 to enable or disable.
    type – enable|disable
--setlink <port> <linkstate> <linkrate>
    port – Port number starting at 0 that has a change in link state.
    linkstate - 1=link up, 0=link down
    linkrate - Upstream connection rate in bits per second.
--settype <port> <type> <flags>
    port – Port number starting at 0 to be configured.
    type – adsl|loopback|utopia|tc
    flags – level2|negedge|level2 negedge
--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.

Operate VCC Command Options

```
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>] [--addpripkt <port.vpi.vci> <group> <level>] [--deletepripkt <port.vpi.vci> <group>]
[--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.

--addpripkt <port.vpi.vci> <group> <level>
    port.vpi.vci – Port number, VPI and VCI that identifies the VCC to add a priority packet group
    for.
    group – Number of the priority packet group to add for the VCC.
    level – Priority level of packets that match the information in the priority group.
    This parameter is not implemented. There is currently only priority level.

--deletepripkt <port.vpi.vci> <group>
    port.vpi.vci – Port number, VPI and VCI that identifies the VCC to add a priority packet group
    for.
    group – Number of the priority packet group to delete for the VCC.

--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.
```

Operate pripkt Command Options

```
atm operate pripkt [--add <group > <offset> <value> [<mask>]] [--delete [<group>]] [--show
[<group>]]
--add <group> <offset> <value> <mask>
    group – Number between 1 and the maximum number of groups. More than one --add command
    can be called with the same group number. All entries in the group must match in order for
    the packet to be a priority packet. The maximum number of entries in a group is 6. The maximum
    number of groups is 16.
    offset – Offset from the start of the packet data to check the value.
    value - Two byte (short word) value that is compared against the masked packet data value at
    the packet offset.
    mask - Optional two byte (short word) value that is 'anded' with the packet data value and
    then compared against the value parameter. This parameter can be used to check for a one byte
    field (mask=0x00FF).
```

If a mask is omitted, default value 0xFFFF is used.

```
--delete <group>
    group – Number of the group to remove. The group number is also removed from all VCCs that
    are using that group.
    If group is omitted, all priority entries are removed.

--show <group>
    group – Number of the group to display. The group number, offset, value and mask is displayed
    for all entries that have the specified group number.
    If group is omitted, all priority entries are displayed.
```

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 collection interval 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.
setportsnooping <bridge> <port> <addr>	Adds an entry for a port <port> in the port snooping table of the bridge <bridge>. The format of the <addr> is group_mac_address/ src_mac_address.
clearportsnooping <bridge> <port> <addr>	Removes an entry for a port <port> from the port snooping table of the bridge <bridge>. The format of the <addr> is group_mac_address/ src_mac_address.
showportsnooping <bridge>	Displays the current contents of the port snooping table.
enableportsnooping <enable>	Enable/Disable the port snooping feature. Enable by “enableportsnooping 1”,and disable by “enableportsnooping 0.”
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, it is recommended that you are an advanced user.

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
  ```

(verified 11/09)

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 the 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 supports 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 the 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 IPOE 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 IPOE 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 file system used space and available space.

Synopsis

```
df [OPTION]... [FILESYSTEM]...
```

Description

df displays the amount of disk space available on the file system of each file system name argument. If no file system name is given, the space available on all currently mounted file systems 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.

This command only configures the settings of the DHCP server. To enable or disable the DHCP server, use the lan config command.

Commands

config	Configure the DHCP server with the given data. Notice that 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

Options for the config Command

```
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).
```

Options for the show Command

```
dhcpserver show
```

Options for the --help Command

```
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
```

Last updated: 8/5/2010

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 that 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—displays the system's configuration.

Synopsis

```
dumpcfg [dynamic]
```

Description

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

Commands

None.

Options

None.

Examples

- Display the system's configuration which is saved in flash memory:
  `dumpcfg`
- Displays the system's configuration. Will be written to the flash if the user types "save." This is useful for debugging inconsistencies between the MDM and what is saved to flash.
  `dumpcfg dynamic`

(verified 11/09)

ECHO

Name

echo

Synopsis

```
echo [OPTION]... [STRING]...
```

Description

Echo displays a line of text, or an environment variable's value.

Notice that the "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 value of the environment variable $TERM:
  ```
  echo $TERM
  ```
- Display all files or subdirectories:
  ```
  echo /etc/*
  echo *
  echo /var/*
  ```

EXITONIDLE

Name

exitonidle—get or set the CLI's exit-on-idle timeout.

Synopsis

```
exitonidle get
exitonidle set [seconds]
```

Description

By default, the CLI will automatically log you out after 600 seconds of inactivity. To set the exit-on-idle timeout to a different value, use exitonidle set [number of seconds]. To disable exit-on-idle, set the number of seconds to 0.

The exit-on-idle value is only effective for the current session. It cannot be saved to configuration flash memory. To modify the exit-on-idle value permanently, you must change some constants in the system image and rebuild.

Commands

None.

Examples

- Set exit-on-idle to 1 day (86400 seconds):
  ```
  >exitonidle set 86400
  ```

(verified 11/09)

HELP

Name

help—list all of available CLI commands that the broadband router supports.

Synopsis

```
Help | ?
```

Description

Lists all available CLI commands that the broadband router supports.

Options

None.

Examples

To display available commands:

```
> help
```

(verified 11/09)

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

The kill command 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 signal.
-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>]
 [--dhcpclient <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.
- Enable or disable the DHCP client on the primary LAN interface. When DHCP client is enabled, the user must first disable DHCP server. The software does not automatically do this, so users must be sure to disable the DHCP server before enabling the DHCP client. When this option is used, the broadband router must not have a WAN connection configured.
- 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.

--dhcpclient <enable|disable>
```

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.
```

Options for the show Command

```
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.
```

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
  ```

- Configure primary lan interface for DHCP client mode:

```
lan config --dhcpserver disable
lan config --dhcpclient enable
save
```

Last updated: 8/5/2010

LOGLEVEL

Name

loglevel—get or set the CMS logging levels for applications that support this feature.

Synopsis

```
loglevel get appname
loglevel set appName [Debug|Notice|Error]
appname is the name of an app that supports CMS loglevels. Currently, this is httpd, tr69c, smd,
ssk, telnetd, sshd, consoled, upnp, dnsproxy.
```

Description

Use `loglevel get appname` to get the current CMS logging level of the specified app.

Use `loglevel set appname loglevel` to set the CMS logging level of the specified app. The logging level takes effect immediately. However, the log level setting is not automatically saved to the config file. If you want to save the setting, you must type `save`.

In order to use this command, the system software must be compiled with “Enable CMS Debug Logging” and “Enable Debug Tools” (from the Debug selection section of make menuconfig). You must also be logged in as Admin or Support.

Examples

- Get current loglevel of tr69c:
  ```
  >loglevel get tr69c
  ```
- To set the loglevel of tr69c to Debug (must capitalize the first letter of Debug, Notice, and Error):
  ```
  >loglevel set tr69c Debug
  ```

(verified 11/09)

LOGOUT

Name

logout—log out current user console.

Synopsis

```
logout
```

Description

Logout is used to log out current user console. After the 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:
```

MCPCTL

Name

mcpctl—display mcpd diagnostic information.

Synopsis

```
mcpctl objinfo
mcpctl meminfo
mcpctl allinfo
```

Description

mcpctl is used for diagnostic purposes to display mcpd object tree information and object memory allocation information.

Commands

```
objinfo – Display object tree information.
meminfo – Display object memory allocation information.
allinfo – Display object tree and object memory allocation information.
```

Options

None.

Examples

mcpctl allinfo

MCPD Object Tree Info

Interface Group Filter Source Src-Reporter Reporter Rep-Source

Name: br0 Index: 12 type: Routed dir: Downstream proto 0

```
 IF_OBJ = 0
 INTERFACE_OBJ = 1
 IPV4_ADDR_OBJ = 0
 IPV6_ADDR_OBJ = 0
 IGMP_GRP_OBJ = 0
 IGMP_REP_OBJ = 0
 IGMP_SRC_OBJ = 0
IGMP_SRC_REP_OBJ = 0
IGMP_REP_SRC_OBJ = 0
 MLD_GRP_OBJ = 0
 MLD_REP_OBJ = 0
 MLD_SRC_OBJ = 0
```

```
MLD_SRC_REP_OBJ = 0
MLD_REP_SRC_OBJ = 0
SCH_QUERY_OBJ = 0
```

MEMINFO

Name

meminfo—display various information about memory usage by various applications and also the CMS shared memory. This command is useful for diagnosing memory leaks.

Synopsis

```
meminfo [appname] [command]
```

Description

meminfo has two variants.

- The first variant (stats) displays basic shared memory and heap memory usage statistics. In order to use this first variant, ENABLE_DEBUG_TOOLS must be enabled in the Debug selection section of make menuconfig. All profiles in the reference software SDK, except for the 96338R, have this option enabled.
- The second variant (traceall, trace50, traceclones) displays detail memory leak tracing information. In order to use this variant, ENABLE_CMS_MEMORY_LEAK_TRACING must be enabled in the Debug selection section of make menuconfig. The profiles in the reference software SDK do not have this option enabled.

Note this meminfo is different from cat /proc/meminfo, which displays system memory usage from the kernel's point of view.

This command does not do any error checking of inputs. If there is an input which it does not recognize, it is silently ignored.

If appname is not specified, then appname will default to the current application running the CLI. The current application may be console, Telnet, or SSH. (These are the three apps that log into the CLI).

If a command is not specified, then the command will default to "stats", which will dump the shared memory usage statistics and the private heap memory usage statistics of the current app.

You can also request certain other apps to dump their memory stats or trace info by specifying an appname. The CLI will send a message to the specified app. Currently, only httpd, tr69c, and ssk supports receiving of these messages and dumping the requested info. Please note that if you enter an unrecognized app name, it will be silently ignored and the appname will be the current app.

For the most up-to-date usage info on meminfo, type meminfo –h

For more details on how to use the meminfo command, see *CMS Development and Porting Guide* (Reference [1] on page 13).

Examples

- Display basic memory statistics for the current app:
  ```
  > meminfo
  ```
- Display basic memory statistics for tr69c:
  ```
  > meminfo tr69c
  ```
- Display memory leak trace information for the current app:
  ```
  > meminfo traceAll
  ```
- Display memory leak trace information for ssk:
  ```
  > meminfo ssk traceClones
  ```

(verified 11/09)

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.

The Admin user can change the passwords for the admin, support, and user accounts.

The Support user can only change the password for the support account.

The User user can only change the password for the user account.

Examples

- Change password for user admin to *broadcom*:
  ```
  > passwd admin broadcom
  ```

(verified 11/09)

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 <ppp interface name (eg. ppp0)> 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.

<ppp interface name (eg. ppp0)>

The “wan show” command can be used to get the ppp interface name.

Examples

- Bring down the ppp connection on the ppp0 interface:
  “ppp config ppp0 down”. Bring it up, “ppp config ppp0 up”.

PS

Name

ps—report process status.

Synopsis

```
ps
```

Description

ps gives a snapshot of the current processes. The output consists of six columns:

- PID—process ID
- TTY—terminal device the process attaches to, such as /dev/ttyp0
- Uid—user ID of the process owner
- Size—amount of virtual memory taken by the process (kilobytes)
- State—state of the process. (S-Sleeping, R-Running, W-Waiting)
- Command—command that launches the process

Commands

None.

Options

None.

Examples

- Report process status:
  ```
  ps
  ```

PSP

Name

psp—various operations on the persistent scratch pad.

Synopsis

```
psp [command]
psp [command token]
```

Description

psp allows you to perform various operations on the persistent scratch pad area of the flash memory. Commands are:

- list— list all the entries in the psp (identified by their names/"tokens")
- dump <token>—dump the contents of the specified token.
- delete <token>—delete the specified token
- clearall—delete all tokens
- help—print out help message

Commands

None.

Options

None.

Examples

- List all entries in the psp:
  ```
  > psp list
  ```
- Dump the contents of a token called "tr69c_acsState":
  ```
  > psp dump tr69c_acsState
  ```
- Erase all tokens:
  ```
  > psp clearall
  ```

(verified 11/09)

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
```

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
  ```

(verified 11/09)

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. The show option displays the current contents of the routing tables.

Note that the 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 the 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

Synopsis

```
save
```

Description

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

Examples

- Save all current configuration to flash memory:

```
>save
```

(verified 11/09)

SNTP

Name

sntp—synchronize automatically router time with Internet time servers within a timezone.

Synopsis

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

Description

SNTP command automatically synchronizes 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 router.
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 (requires 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 help:
  `sntp --help`

SWVERSION

Name

swversion—display current running software version.

Synopsis

```
swversion [-b | -d]
```

Description

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

Examples

- Display current software version:

```
 > swversion
4.04L.01
```

- Display build timestamp:

```
> swversion -b
091104_1517
```

- Display DSL PHY and driver version:

```
> swversion –d
A2pB026.d22f
```

(verified 11/09)

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 1 Kb units.

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 transferring files to and from a remote site. Broadcom extends its capacity to update the software and configuration data from a remote TFTP server as well as backup 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/f for configuration data.

Examples

- To backup configuration data:
  ```
  tftp -p -t f -f mdm.config 192.168.1.2
  ```
- To restore configuration data:
  ```
  tftp -g -t c -f mdm.config 192.168.1.2
  ```
- To update software:
  ```
  tftp -g -t i -f bcm96345_fs_kernel 192.168.1.2
  ```
- To transmit and retrieve files:
  ```
  tftp -p -r remote_file -l local_file 192.168.1.2
  tftp -g -r remote_file -l local_file 192.168.1.2
  ```

Where the file name after “-f” should be the real file to be retrieved or backed-up from the TFTP server.

Last updated: 10/15/2010

VOICE

Name

voice—manipulate voice-related parameters or start voice application.

Synopsis

Usage:

```
voice help
Voice show
Voice start
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.

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.).

For SIP, the following parameters can be set[a]:

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.).

a. The values for the SIP proxy, registrar, and logserver should have the format ipaddress[:port], as shown in the Examples section.

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
  ```

WAN

Name

wan—allows a user to add/delete/show the WAN interfaces and connection service for the xDSL router.

Note: The “wan” command only supports xDSL (atm/ptm) layer 2 interface. Currently configuration of VlanMux, MSC and QoS from CLI are not supported.

Synopsis

```
wan add interface <atm|ptm>
wan add service <interfacename> --protocol <bridge|ipoe|pppoe|ipoa|pppoa>
wan delete interface atm <port.vpi.vci>
wan delete interface ptm <port> --priority <normal|high|both>
wan delete service L3IfName
wan show interface
wan show [<port.vpi.vci>]
wan --help <bridge|pppoe|pppoa|ipoe|ipoa>
```

Description

The wan command is used to configure the networking protocols for each WAN interface. Currently each WAN interface occupies one ATM PVC or one PTM Layer-2 interface. To create a WAN connections service, a Layer-2 WAN interface must be first added by using the “wan add interface” command and then “wan add service” command to add the WAN connection service with WAN protocol (bridge/pppoe/ipoe/pppoa/ipoa).

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

wan add interface	Add a Layer-2 xDSL interface.
wan add service	Add a service Layer-3 WAN interface—such as pppoe, ipoe, bridge and pppoa and ipoa connection based on a Layer-2 interface.
wan show interface	Displays the current Layer-2 interfaces configured in the system with information on xDSL type (ATM/PTM) and port, link type and encapsulation service category.
wan show	Displays the Layer-3 WAN services configured in the system with information on WAN interface service name, WAN interface name, WAN protocol, WAN connection status, and WAN IP address.
wan delete service	Delete the Layer-3 WAN connection service.
wan delete interface	Delete the Layer-2 xDSL interface.
wan --help	Display usage for WAN commands.

Options

Options for the add interface Command

Usage:

```
wan add interface <atm|ptm>
wan add interface atm <port.vpi.vci>
--linktype [EoA|PPPoA|IPoA] [--encap <llc|vcmux>]
[--atmcat UBR | --atmcat UBRwPCR <pcr> | --atmcat CBR <pcr>
[--atmcat nrtVBR <pcr> <scr> <mbs> | --atmcat rtVBR <pcr> <scr> <mbs>]
wan add interface ptm <port> [--priority <normal|high|both>]

<port.vpi.vci> (atm)
    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.

<port> <--priority> (ptm)
    port: port number of the PTM VCC to add.
    Valid values: 0-1.
    Priority: normal/high/both.
```

Options for the add service Command

Usage:

```
    wan add service <interfacename> --protocol <bridge|ipoe|pppoe|ipoa|pppoa>
    wan add service <L2interfacename> --protocol bridge
    [--service <servicename>]
    wan add service <L2interfacename> --protocol ipoe
    [--firewall <enable|disable>] [--nat <enable|disable>]
    [--igmp <enable|disable>]
    [--ipaddr <wanipaddress> <wansubnetmask]
    [--dhcpclient <enable|disable>]
    [--gatewayifname <L2interfacename>] [--dnsifname <L2interfacename>]
    wan add service <L2interfacename> --protocol pppoe
    [--firewall <enable|disable>] [--nat <enable|disable>]
    [--igmp <enable|disable>]
    [--username <username> --password <password>]
    [--pppidletimeout <timeout>] [--pppipextension <disable|enable>]
    [--gatewayifname <pppinterfacename>] [--dnsifname <pppinterfacename>]
    wan add service <L2interfacename> --protocol ipoa
    --ipaddr <wanipaddress> <wansubnetmask
    [--service <servicename>]
    [--firewall <enable|disable>] [--nat <enable|disable>]
    [--igmp <enable|disable>]
    wan add service <L2interfacename> --protocol pppoa
    [--service <servicename>]
    [--firewall <enable|disable>] [--nat <enable|disable>]
    [--igmp <enable|disable>]
```

```
    [--username <username> --password <password>]
    [--pppidletimeout <timeout>] [--pppipextension <disable|enable>]

--protocol <bridge|pppoe|pppoa|ipoe|ipoa>
    The protocol of the WAN interface.
    Valid values: bridge, pppoe, pppoa, ipoe, or ipoa.
    Default value: bridge.

--encap <llc|vcmux>
    The encapsulation type over the ATM PVC.
    Valid values: llc or vcmux.
        llc -
            For ipoe, 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, ipoe, or ipoa.
        Vcmux for pppoa.

--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 IPOE 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 IPOE 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 IPOE or IPoA interface.
    This option should only be used for a IPOE 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 IPOE interface. This option is only valid to a IPOE interface.
    DHCP client is not supported over any other type of WAN interface.
    Valid values: enable or disable.
    Default value: enable.
```

Options for the wan delete (interface/service) Command

Usage:

```
wan delete interface atm <port.vpi.vci>
wan delete interface ptm <port> --priority <normal|high|both>
wan delete service Layer3InterfaceName
```

Note: A WAN service must be deleted first before a corresponding wan interface can be deleted.

Options for the show (interface) 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 the summary state of all existing WAN services.
```

Options for the --help Command

```
wan –help [<bridge|pppoe|pppoa|ipoe|ipoa>]
<bridge|pppoe|pppoa|ipoe|ipoa>
    Display only the valid options for the specified protocol.
    If a protocol is not specified, then the help for all protocols is diplayed.
```

Examples

- Configure a PPPoE interface:

```
ATM interface:
To add:
    wan add interface atm 0.0.35 --linktype eoa
    wan add service atm0/0.0.35 --protocol pppoe --username script --password script --firewall
    enable --nat enable --service ppp --dnsifname ppp0 --gatewayifname ppp0
To delete:
    wan delete service ppp0
    wandelete interface atm 0.0.35

PTM interface:
To add:
    wan add interface ptm 0 --priority normal
    wan add service ptm0/0 --protocol pppoe --username username --password password --service ppp
    --dnsifname ppp0 --gatewayifname ppp0
To delete:
    wan delete service ptm0
    wan delete interface ptm 0 --priority normal
```

- Configure a IPOE configuration using DHCP client:

```
ATM interface:
To add:
    wan add interface atm 0.2.35 --linktype eoa
    wan add service atm0/0.2.35 --protocol ipoe --firewall enable --nat enable --dhcpclient
    enable --dnsifname atm0 --gatewayifname atm0
To delete:
    wan delete service atm0
    wan delete interface atm 0.2.35

PTM interface:
To add:
    wan add interface ptm 0 --priority normal
    wan add service ptm0/0 --protocol ipoe --dhcpclient enable --nat enable --firewall enable
    --dnsifname ptm0 --gatewayifname ptm0
To delete:
    wan delete service ptm0
    wan delete interface ptm 0 --priority normal
```

- Configure a bridge configuration:

```
ATM interface:
To add:
    wan add interface atm 0.2.35 --linktype eoa
    wan add service atm0/0.2.35 --protocol bridge
To delete:
    wan delete service atm0
    wan delete interface atm 0.2.35
```

```
PTM interface:
    wan add interface ptm 0 --priority normal
    wan add service ptm0/0 --protocol bridge
To delete:
    wan delete service ptm0
    wan delete interface ptm 0 --priority normal
```

- Configure a IPoA configuration with fireware and NAT:

```
ATM interface only:
To add:
    wan add interface atm 0.0.40 --linktype ipoa --encap llc
    wan add service ipoa0/0.0.40 --protocol ipoa --ipaddr 10.6.33.229 255.255.255.192 --nat
    enable --firewall enable
    dns config static 10.6.33.1
    Note: Normally, need to config a static dns ip address for this wan connection to work
To delete:
    wan delete service ipoa0
    wan delete interface atm 0.0.40
```

- Configure a PPPoA interface:

```
ATM interface only:
To add:
    wan add interface atm 0.0.36 --linktype pppoa --encap vcmux
    wan add service atm0/0.0.36 --protocol pppoa --username script --password script --dnsifname
    pppoa0 --gatewayifname pppoa0
To delete:
    wan delete service pppoa0
    wan delete interface atm 0.0.36
```

- Display all WAN interfaces:

wan show (PTM):

VCC	Con.ID	Service Name	Interface Name	Proto.	IGMP	Status	IP address
N/A	0	ipoe_0_0_1	ptm0	IPoE	Disable	Connected	10.6.37.15

Wan show (ATM):

All services associated with atm2 is activated.

VCC	Con.ID	Service Name	Interface Name	Proto.	IGMP	Status	IP address
0.0.35	0	pppoe_0_0_35	ppp0	PPPoE	Disable	Connected	10.6.33.155
0.0.36	0	pppoa_0_0_36	pppoa1	PPPoA	Disable	Connected	10.6.33.156
0.2.35	0	ipoe_0_2_35	atm2	IPoE	Disable	Connected	10.6.33.197

- Display help usage for bridge/ipoe/pppoe/ipoa/pppoa:

```
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|ipoe|ipoa>
wan –help ipoe
```

Usage:

```
wan add service <L2interfacename> --protocol ipoe
[--firewall <enable|disable>] [--nat <enable|disable>]
[--igmp <enable|disable>]
[--ipaddr <wanipaddress> <wansubnetmask]
[--dhcpclient <enable|disable>]
[--gatewayifname <L2interfacename>] [--dnsifname <L2interfacename>]
wan delete interface atm <port.vpi.vci>
wan delete interface ptm <port> --priority <normal|high|both>
wan delete service L3IfName
wan show interface
wan show [<port.vpi.vci>]
wan --help <bridge|pppoe|pppoa|ipoe|ipoa>>

wan –help pppoe
```

Usage:

```
wan add service <L2interfacename> --protocol pppoe
[--firewall <enable|disable>] [--nat <enable|disable>]
[--igmp <enable|disable>]
[--username <username> --password <password>]
[--pppidletimeout <timeout>] [--pppipextension <disable|enable>]
[--gatewayifname <pppinterfacename>] [--dnsifname <pppinterfacename>]
wan delete interface atm <port.vpi.vci>
wan delete interface ptm <port> --priority <normal|high|both>
wan delete service L3IfName
wan show interface
wan show [<port.vpi.vci>]
wan --help <bridge|pppoe|pppoa|ipoe|ipoa>

wan –help ipoa
```

Usage:

```
wan add service <L2interfacename> --protocol ipoa
--ipaddr <wanipaddress> <wansubnetmask
[--service <servicename>]
[--firewall <enable|disable>] [--nat <enable|disable>]
[--igmp <enable|disable>]
wan delete interface atm <port.vpi.vci>
wan delete interface ptm <port> --priority <normal|high|both>
wan delete service L3IfName
wan show interface
wan show [<port.vpi.vci>]
wan --help <bridge|pppoe|pppoa|ipoe|ipoa>

wan –help pppoa
```

Usage:

```
wan add service <L2interfacename> --protocol pppoa
[--service <servicename>]
[--firewall <enable|disable>] [--nat <enable|disable>]
[--igmp <enable|disable>]
[--username <username> --password <password>]
[--pppidletimeout <timeout>] [--pppipextension <disable|enable>]
wan delete interface atm <port.vpi.vci>
wan delete interface ptm <port> --priority <normal|high|both>
wan delete service L3IfName
```

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

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