Sage CLI Command Reference

INTRODUCTION

960B units (with Option 800) and 966R units have a built-in command line interface (CLI) that is accessible via Telnet. This document lists all 68 available CLI commands, and includes descriptions, command/option(s) syntax and details, command examples, etc.

---

bertpat

Display or set (Admin only) BERT user defined patterns and loop codes

Allows the setting and display of the custom user defined patterns used by the bert command. The patterns defined by this command are accessed using the bert -patnum and -loopnum options with integer values that correspond to patterns and loop codes named Custom1, Custom2, ...

With no arguments, all current user defined BERT patterns and loop codes are returned. If only the -num option is specified, the corresponding pattern and loop codes are returned.

To set the pattern, follow the -pattern option with 1 to 127 '0' or '1' characters corresponding to the desired binary bits.

To set the loop up code, follow the -loopup option with 1 to 31 '0' or '1' characters corresponding to the desired binary bits. Similarly for the loop down code using the -loopdn option.

Only the pattern or the loop codes, not both, may be set in a single command.

The admin may set the custom patterns and loop codes; all users may display the current values.

Command syntax:

```
bertpat [-num] [-pattern] [-loopup] [-loopdn]
```

Command options *(no spaces or tabs allowed in parameters)*:

```
[-num]       pattern Number {0} (Optional) 1 to 4
[-pattern]   binary pattern (Optional)
[-loopup]    binary loop up code (Optional)
[-loopdn]    binary loop down code (Optional)
```

Examples:

Display all currently stored user defined BERT patterns and loop codes:

```
bertpat
```

Display the 'Custom1' user defined BERT pattern and loop codes:

```
bertpat -num 1
```

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Set the 'Custom2' user defined BERT pattern:

```
bertpat -num 2 -pattern 101010
```

Set the 'Custom1' user defined BERT loop codes:

```
bertpat -num 1 -loopup 101010 -loopdn 000000
```

bert

Bit Error Rate Test

Create a Bit Error Rate test (default: director) that sends the selected bit pattern once the call is up. PCM interfaces ONLY.

Command syntax:

```
bert [-dn] [-sn] -if [-rn] [-mod] [-log] [-logfreq] [-dir] [-resp] [-
mf] [-isdnb] [-loadtype] [-loaddelay] [-dur] [-ecand] [-inv] [-txoff]
[-56K] [-patnum] [-loopnum] [-channels]
```

Command options *(no spaces or tabs allowed in parameters):*

[-dn]	destination (Optional)
[-sn]	source # (Optional)
-if	IF# 1 to 10
[-rn]	Resource# (Optional) Comma separated integers 'x' or integer ranges 'x-y' with x and y in [1,255].
[-mod]	Modify existing test parameters (Optional)
[-log]	Log File (Optional)
[-logfreq]	Log frequency - N (every N [1,1000]), Ns (every N seconds [3,1000]), or final (final result only) {1} (Optional)
[-dir]	Be Director: # times to run {0} (Optional) 0 to 999
[-resp]	Be Responder (Optional)
[-mf]	Send MF call setup digits (CAS only) {DTMF} (Optional)
[-isdnb]	ISDN B Channel capability type (ISDN only: 56k, 64k, speech, udig, rdig, 3.1k, udigtone, video) {speech} (Optional)
[-loadtype]	Load Type (fixed or random) {fixed} (Optional)
[-loaddelay]	Load Delay (sec or sec range for 'random') {fixed: 4 or random: [4,10]} (Optional) 1 to 999
[-dur]	Test Duration (sec) {0} (Optional) 0 to 10000
[-ecand]	ECan Disable {no disable tone sent} (Optional)
[-inv]	Invert Pattern {not inverted} (Optional)
[-txoff]	Tx Off {Tx On} (Optional)

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```
[-56K]          56K {64K} (Optional)
[-patnum]       BERT Pattern(s) (1 to 5 comma separated pattern numbers)
                {15} (Optional)
[-loopnum]      Loop Code Number {1=None} (Optional) 1 to 18
[-channels]     Fractional BERT channels (Optional) Comma separated
                integers 'x' or integer ranges 'x-y' with x and y in
                [1,31].
```

Discussion:

BERT Patterns:

1: '2e3 (7)'	18: '2e25'	35: 'T1_1'
2: '2e4 (15)'	19: '2e28'	36: 'T1_2'
3: '2e5 (31)'	20: '2e29'	37: 'T1_3'
4: '2e6 (63)'	21: '2e31'	38: 'T1_4'
5: '2e7 (127)'	22: 'QRSS'	39: 'T1_5'
6: '2e7LB (127)'	23: 'All Ones'	40: 'T1_6'
7: '2e9 (511)'	24: 'All Zeros'	41: 'DDS1'
8: '2e10 (1023)'	25: 'Repeat '10''	42: 'DDS2'
9: '2e11 (2047)'	26: 'Repeat '1100''	43: 'DDS3'
10: '2e15'	27: '3:21 (3 in 24)'	44: 'DDS4'
11: '2e17'	28: '1:15 (1 in 16)'	45: 'DDS5'
12: '2e18'	29: '1:7 (1 in 8)'	46: 'Custom1'
13: '2e20'	30: '1:3 (1 in 4)'	47: 'Custom2'
14: '2e20 'ITU''	31: '3:1 (3 in 4)'	48: 'Custom3'
15: '2e21'	32: '7:1 (7 in 8)'	49: 'Custom4'
16: '2e22'	33: '55 Octet'	
17: '2e23'	34: 'FOX'	

Loop Codes:

1: 'None'	7: ''	13: 'DDS Alt CSU'
2: 'V.54'	8: 'DDS Latch DP'	14: 'DDS Alt DSU'
3: 'CSU, Framed'	9: 'DDS Latch OCU'	15: 'Custom1'
4: 'NIU, Framed'	10: 'DDS Latch CSU'	16: 'Custom2'
5: 'CSU'	11: 'DDS Latch NIE'	17: 'Custom3'
6: 'NIU'	12: 'DDS Alt OCU'	18: 'Custom4'

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Note that if the span is 'Unframed', a BERT test will be created that spans all timeslots. The only supported patterns are PRS 15 & 20 (non-inverted, 64K).

To create a Fractional BERT test, the first channel should be specified as the -rn parameter and the -channels parameter should be set to the range of resources covered by the Fractional BERT test.

Examples:

Dial 338-2429 on interface #1 resource #5 using the default call setup sequence; run a BERT test using the default pattern, no loop code, no ecan disable, Transmit & Receive.

```
bert -if 1 -rn 5 -dn 3382429
```

bertcntl

Reset counters and / or inject error for a Bit Error Rate Test

Command syntax:

```
bertcntl -if -rn [-resetcnt] [-injecterr]
```

Command options *(no spaces or tabs allowed in parameters):*

```
-if             IF# 1 to 10
-rn             Resource# Comma separated integers 'x' or integer ranges
                'x-y' with x and y in [1,255].
[-resetcnt]     Reset Counters (Optional)
[-injecterr]    Inject Errors {1} (Optional) 1 to 100
```

Examples:

Inject 10 bit errors into the BERT test running on interface 1 resource 5.

```
bertcntl -if1 -rn5 -injecterr10
```

Reset the counters for the BERT tests on interface 2 resources 3 through 14.

```
bertcntl -if2 -rn3-14 -resetcnt
```

cd

Change the current directory

Supports basic up/down navigation. Understands single '..' or a directory *relative* to and 'below' the current directory.

Command syntax:

```
cd directory
```

Command options *(no spaces or tabs allowed in parameters):*

```
directory
```

copy

Copy a file

Command syntax:

```
copy [-over] source file destination file or directory
```

Command options *(no spaces or tabs allowed in parameters):*

```
[-over]    overwrite destination file (Optional)

source file

destination file or directory
```

date

Display or set system date

With no arguments, the system date is returned. Admin may set the system date via the parameter.

Command syntax:

```
date [aDate]
```

Command options *(no spaces or tabs allowed in parameters):*

```
[aDate]    (Optional) MM/DD/YYYY
```

del

Delete a file

Delete the specified file.

Command syntax:

```
del filename
```

Command options *(no spaces or tabs allowed in parameters):*

```
filename
```

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deltest

Delete specified test(s)

Delete the specified test(s). Must be test owner or Admin; test must be disabled. Interface and resource #s can be specified with positional or named option parameters.

Command syntax:

```
deltest [-if] [-rn] [-a] [TestId | IF#] [Resource#]
```

Command options *(no spaces or tabs allowed in parameters):*

[-if]	IF# (Optional) Comma separated integers 'x' or integer ranges 'x-y' with x and y in [1,10].
[-rn]	Resource# (Optional) Comma separated integers 'x' or integer ranges 'x-y' with x and y in [1,255].
[-a]	All (Optional)
[TestId	IF#]	(Optional) 1 to 2147483647
[Resource#]	(Optional) Comma separated integers 'x' or integer ranges 'x-y' with x and y in [1,255].

digrecv

Digit Receiver Test

Create a Digit Receiver test that parses incoming digits (default: responder).

Command syntax:

```
digrecv [-dn] [-sn] -if [-rn] [-mod] [-log] [-dir] [-resp] [-mf] [-
isdnb] [-pre] [-post] [-minon] [-minlvl] [-maxtwist] [-maxdf] [-dur]
[-hide]
```

Command options *(no spaces or tabs allowed in parameters):*

[-dn]	destination (Optional)
[-sn]	source # (Optional)
-if	IF# 1 to 10
[-rn]	Resource# (Optional) Comma separated integers 'x' or integer ranges 'x-y' with x and y in [1,255].
[-mod]	Modify existing test parameters (Optional)
[-log]	Log File (Optional)
[-dir]	Be Director: # times to run {0} (Optional) 0 to 999
[-resp]	Be Responder (Optional)
[-mf]	Send MF call setup digits (CAS only) {DTMF} (Optional)

[-isdnb]	ISDN B Channel capability type (ISDN only: 56k,64k,speech,udig,rdig,3.1k,udigtone,video) {speech} (Optional)
[-pre]	Pre-Digit Timeout (ms) {3000} (Optional) 0 to 60000
[-post]	Post-Digit Timeout (ms) {3000} (Optional) 0 to 60000
[-minon]	Minimum On Duration (ms) {40} (Optional) 30 to 100
[-minlvl]	Minimum Tone Level (dBm) {-25} (Optional) -35 to 5
[-maxtwist]	Maximum Tone Difference (dB) {6} (Optional) 0 to 10
[-maxdf]	Maximum Frequency Deviation (Hz) {10} (Optional) 0 to 50
[-dur]	Test Duration (sec) {0(forever)} (Optional) 0 to 1000
[-hide]	Hide Errored Digits {false} (Optional)

Discussion:

'Pre-Digit Timeout': If no incoming call setup digits are detected within this time, call setup proceeds without them.

'Post-Digit Timeout': Duration to wait after last call-setup digit before proceeding with call-setup.

'Minimum On Duration': Minimum duration a detected tone must be present to be considered valid.

'Minimum Tone Level': Minimum level a detected tone must meet to be considered valid.

'Maximum Tone Difference': Maximum level difference between the tones (twist) which will be accepted and still considered valid.

'Maximum Frequency Deviation': Maximum frequency deviation of the detected tones which will be accepted and still considered valid.

Examples:

Create a digit receiver responder on channel 1 of span 2 that logs the digits to dig.csv

```
digrecv -if 2 -rn 1 -log dig.csv
```

The results file will look like:

```
Date,Time,Test Name,Span Name,Channel(s), Digit, Type(MF|DTMF),
Stage('-'|'+') , lvl1, lvl2, freq1, freq2, off, on
08/08/2005,16:22:39,Digit Receiver,pcm1,1, 7, DTMF, -, -7, -7, 852,
1209, 2371, 50
08/08/2005,16:22:39,Digit Receiver,pcm1,1, 8, DTMF, -, -7, -7, 852,
1336, 50, 50
08/08/2005,16:22:39,Digit Receiver,pcm1,1, 9, DTMF, -, -7, -7, 852,
1477, 49, 51
```

```
08/08/2005,16:22:39,Digit Receiver,pcm1,1, 6, DTMF, -, -7, -7, 770,
1477, 50, 50

08/08/2005,16:22:39,Digit Receiver,pcm1,1, 5, DTMF, -, -7, -7, 770,
1336, 49, 51

08/08/2005,16:22:39,Digit Receiver,pcm1,1, 4, DTMF, -, -7, -7, 770,
1209, 49, 51

08/08/2005,16:22:39,Digit Receiver,pcm1,1, 1, DTMF, -, -7, -7, 697,
1209, 49, 51

08/08/2005,16:22:39,Digit Receiver,pcm1,1, 2, DTMF, -, -7, -7, 697,
1336, 50, 50

08/08/2005,16:22:39,Digit Receiver,pcm1,1, 3, DTMF, -, -7, -7, 697,
1477, 50, 50

08/08/2005,16:22:39,Digit Receiver,pcm1,1, 1, DTMF, -, -7, -7, 697,
1209, 50, 50

08/08/2005,16:22:39,Digit Receiver,pcm1,1, 2, DTMF, -, -7, -7, 697,
1336, 49, 51

08/08/2005,16:22:39,Digit Receiver,pcm1,1, 3, DTMF, -, -7, -7, 697,
1477, 49, 51

08/08/2005,16:22:41,Digit Receiver,pcm1,1, 7, DTMF, +, -7, -7, 852,
1209, 1360, 57

08/08/2005,16:22:42,Digit Receiver,pcm1,1, 3, DTMF, +, -7, -7, 697,
1477, 2263, 56

08/08/2005,16:22:42,Digit Receiver,pcm1,1, 5, DTMF, +, -7, -7, 770,
1336, 774, 56
```

The 'Stage' indicated in the results indicates if the digit was captured during call setup (a '-') or after the call is up (a '+'). The 'off' time is the ms elapsed since the last event (call setup beginning event or last digit trailing edge). The on time is the duration of the digit, in milliseconds.

digsend

Digit Sender Test

Create a Digit Sender test (default: director) that sends digits once the call is up. Digit parameters do not effect call setup digits, only digits sent after call is up. Special digit annotations: E for ITU dial tone; F for ITU busy; G for ITU ringback; H for US dialtones; I for US busy; J for US fast busy; K for US ringback; W for DS1-CAS wink; - for 1s pause

Command syntax:

```
digsend [-dn] [-sn] -if [-rn] [-mod] [-log] [-dir] [-resp] [-mf] [-
isdnb] [-loadtype] [-loaddelay] [-localip] [-localport] [-localmac] [-
jitter] [-siptos] [-rtptos] [-dip] [-dport] [-dname] [-pktsize] [-
decoder] [-user] [-pass] [-displayuser] [-imsauth] [-regip] [-regport]
[-regexp] [-regint] [-regname] [-prack] [-keepalive] [-keepaliveupd]
```

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```
[-keepalivebye] [-bye] [-on] [-off] [-lvl1] [-lvl2] [-df1] [-df2] [-
MF] # to Send
```

Command options *(no spaces or tabs allowed in parameters):*

[-dn]	destination (Optional)
[-dn]	destination (Optional)
[-sn]	source # (Optional)
-if	IF# 1 to 10
[-rn]	Resource# (Optional) Comma separated integers 'x' or integer ranges 'x-y' with x and y in [1,255].
[-mod]	Modify existing test parameters (Optional)
[-log]	Log File (Optional)
[-dir]	Be Director: # times to run {0} (Optional) 0 to 999
[-resp]	Be Responder (Optional)
[-mf]	Send MF call setup digits (CAS only) {DTMF} (Optional)
[-isdnb]	ISDN B Channel capability type (ISDN only: 56k,64k,speech,udig,rdig,3.1k,udigtone,video) {speech} (Optional)
[-loadtype]	Load Type (fixed or random) {fixed} (Optional)
[-loaddelay]	Load Delay (sec or sec range for 'random') {fixed: 4 or random: [4,10]} (Optional) 1 to 999
[-localip]	(IP only) Local IP Address (Optional)
[-localport]	(IP only) Local Port {5060} (Optional) 1024 to 65535
[-localmac]	(IP only) Local MAC Address (Optional)
[-jitter]	(IP only) SIP Jitter Buffer Size {40} (Optional) 10 to 100
[-siptos]	(IP only) SIP ToS (8 binary digits) {00000000} (Optional)
[-rtptos]	(IP only) RTP ToS (8 binary digits) {00000000} (Optional)
[-dip]	(IP only) Destination / Proxy IP address (Optional)
[-dport]	(IP only) Destination / Proxy Port {5060} (Optional) 1024 to 65535
[-dname]	(IP only) Proxy Server Name (Optional)
[-pktsize]	(IP only) Packet Size (ms) {20} (Optional) 10 to 40
[-decoder]	(IP only) Decoder (PCMu or PCMa) {PCMu} (Optional)
[-user]	(IP only) Authentication User Name (max 32 chars) {} (Optional)
[-pass]	(IP only) Authentication Password (max 32 chars) {} (Optional)

```
[-displayuser]      (IP only) Display User Name (max 32 chars) {}
                    (Optional)

[-imsauth]          (IP only) IMS Authentication String (max 32 chars) {}
                    (Optional)

[-regip]            (IP only) Registration IP Address (Optional)

[-regport]          (IP only) Registration Port {5060} (Optional) 1024 to
                    65535

[-regexp]           (IP only) Registration Expiration (min) {10}
                    (Optional) 1 to 255

[-regint]           (IP only) Registration Interval (sec) {30} (Optional)
                    1 to 50

[-regname]          (IP only) Registration Server Name (Optional)

[-prack]            (IP only) RFC-3262 Support (PRACK) (Optional)

[-keepalive]        (IP only) RFC-4028 Send Keep Alive (UPDATE) (Optional)

[-keepaliveupd]     (IP only) Send Update Session Expires (min) {60}
                    (Optional) 1 to 255

[-keepalivebye]     (IP only) Requested Expiration Time (min) {60}
                    (Optional) 1 to 255

[-bye]              (IP only) Number of "BYE" or "CANCEL" upon disconnect
                    {1} (Optional) 1 to 6

[-on]               Digit On Duration (ms) {75} (Optional) 20 to 2000

[-off]              Digit Off Duration (ms) {75} (Optional) 20 to 2000

[-lvl1]             Level 1 (dBm) {-7} (Optional) -90 to -3

[-lvl2]             Level 2 (dBm) {-7} (Optional) -90 to -3

[-df1]              Freq 1 Deviation (Hz) {0} (Optional) -120 to 120

[-df2]              Freq 2 Deviation (Hz) {0} (Optional) -120 to 120

[-MF]               Send MF Digits during call {DTMF} (Optional)

 # to Send
```

Examples:

Dial 338-2429 on interface #1 resource #5 using the default call setup sequence, then send 555-1212 with 90 ms on duration and 50 ms off duration.

```
digsend -if 1 -rn 5 -dn 3382429 -on 90 -off 50 5551212
```

dir

Display current directory contents

Command syntax:

```
dir
```

Sage CLI Command Reference

dualspec

Dual Spectrum Analyzer

Create a Dual Spectrum Analyzer test (IP Only).

Command syntax:

```
dualspec -if [-rn] [-log] [-logfreq] [-target] [-jitter] [-nopktto]
```

Command options *(no spaces or tabs allowed in parameters):*

-if	IF# 1 to 10
[-rn]	Resource# (Optional) Comma separated integers 'x' or integer ranges 'x-y' with x and y in [1,255].
[-log]	Log File (Optional)
[-logfreq]	Log frequency - N (every N [1,1000]), Ns (every N seconds [3,1000]), or final (final result only) {1} (Optional)
[-target]	(IP only) Target IP Address (0.0.0.0 means any) {0.0.0.0} (Optional)
[-jitter]	(IP only) RTP Jitter Buffer Size {40} (Optional) 10 to 100
[-nopktto]	(IP only) No Packet Timeout (s) {30} (Optional) 1 to 999

echoconv

Echo Convergence Test

Create an Echo Convergence Test (default: director)

Command syntax:

```
echoconv [-dn] [-sn] -if [-rn] [-mod] [-log] [-logfreq] [-dir] [-resp]
[-mf] [-isdnb] [-loadtype] [-loaddelay] [-noecd] [-ecf] [-ecl] [-ecmf]
[-ecmi] [-ecnc] [-ecpd] [-ecpj] [-pass] [-passlvl] [-passdly] [Tx
Level (dBM) {-10}]
```

Command options *(no spaces or tabs allowed in parameters):*

[-dn]	destination (Optional)
[-sn]	source # (Optional)
-if	IF# 1 to 10
[-rn]	Resource# (Optional) Comma separated integers 'x' or integer ranges 'x-y' with x and y in [1,255].
[-mod]	Modify existing test parameters (Optional)
[-log]	Log File (Optional)

[-logfreq]	Log frequency - N (every N [1,1000]), Ns (every N seconds [3,1000]), or final (final result only) {1} (Optional)
[-dir]	Be Director: # times to run {0} (Optional) 0 to 999
[-resp]	Be Responder (Optional)
[-mf]	Send MF call setup digits (CAS only) {DTMF} (Optional)
[-isdnb]	ISDN B Channel capability type (ISDN only: 56k,64k,speech,udig,rdig,3.1k,udigtone,video) {speech} (Optional)
[-loadtype]	Load Type (fixed or random) {fixed} (Optional)
[-loaddelay]	Load Delay (sec or sec range for 'random') {fixed: 4 or random: [4,10]} (Optional) 1 to 999
[-noecd]	Disable EC Disable Tone (Optional)
[-ecf]	EC Disable Freq (Hz) {2100} (Optional) 20.00 to 3980.00
[-ecl]	EC Disable Level (dBm) {-12} (Optional) -20.00 to 0.00
[-ecmf]	EC Disable Mod Freq (Hz) {15.0} (Optional) 0.00 to 500.00
[-ecmi]	EC Disable Mod Index {0.2} (Optional) 0.00 to 1.00
[-ecnc]	EC Disable # Cycles {3} (Optional) 1 to 10
[-ecpd]	EC Disable Phase Duraton (ms) {450} (Optional) 10 to 1000
[-ecpj]	EC Disable Phase Jump (Deg) {180} (Optional) 0.00 to 180.00
[-pass]	Enable Pass / Fail Monitor (Optional)
[-passlvl]	Pass / Fail Level (dB) {0} (Optional) -70.00 to 0.00
[-passdly]	Pass / Fail Delay (ms) {600} (Optional) 0 to 1000
[Tx Level (dBM) {-10}]	(Optional) -20.00 to 0.00

Examples:

Perform an echo convergence test on interface #3 resource #2 using the default values (Tx Level = -10, EC Disable tone) to destination #434-8794:

```
echoconv -if 3 -rn 2 -dn 4348794
```

Perform an echo convergence test on interface #3 resource #2 using the default values (Tx Level = -10, EC Disable tone) to destination #434-8794 but don't send the echo canceller disable signal:

```
echoconv -if 3 -rn 2 -dn 4348794 -noecd
```

Sage CLI Command Reference

echogen

Echo Generator Test

Create an Echo Generator Test (default: responder)

Command syntax:

```
echogen [-dn] [-sn] -if [-rn] [-mod] [-log] [-dir] [-resp] [-mf] [-
isdnb] [-localip] [-localport] [-localmac] [-jitter] [-siptos] [-
rtptos] [-dip] [-dport] [-dname] [-pktsize] [-decoder] [-user] [-pass]
[-displayuser] [-imsauth] [-regip] [-regport] [-regexp] [-regint] [-
regname] [-prack] [-keepalive] [-keepaliveupd] [-keepalivebye] [-bye]
[-lvl1] [-dly1] [-lvl2] [-dly2] [-enable2] [-g168] [-gsm] [-loop] [-
pkt] [-jit] [-tone] [-hoth] [-dbl] [-bias] [-dur] [-wav] [-encoder]
```

Command options *(no spaces or tabs allowed in parameters)*:

[-dn]	destination (Optional)
[-sn]	source # (Optional)
-if	IF# 1 to 10
[-rn]	Resource# (Optional) Comma separated integers 'x' or integer ranges 'x-y' with x and y in [1,255].
[-mod]	Modify existing test parameters (Optional)
[-log]	Log File (Optional)
[-dir]	Be Director: # times to run {0} (Optional) 0 to 999
[-resp]	Be Responder (Optional)
[-mf]	Send MF call setup digits (CAS only) {DTMF} (Optional)
[-isdnb]	ISDN B Channel capability type (ISDN only: 56k,64k,speech,udig,rdig,3.1k,udigtone,video) {speech} (Optional)
[-localip]	(IP only) Local IP Address (Optional)
[-localport]	(IP only) Local Port {5060} (Optional) 1024 to 65535
[-localmac]	(IP only) Local MAC Address (Optional)
[-jitter]	(IP only) SIP Jitter Buffer Size {40} (Optional) 10 to 100
[-siptos]	(IP only) SIP ToS (8 binary digits) {00000000} (Optional)
[-rtptos]	(IP only) RTP ToS (8 binary digits) {00000000} (Optional)
[-dip]	(IP only) Destination / Proxy IP address (Optional)
[-dport]	(IP only) Destination / Proxy Port {5060} (Optional) 1024 to 65535
[-dname]	(IP only) Proxy Server Name (Optional)
[-pktsize]	(IP only) Packet Size (ms) {20} (Optional) 10 to 40

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```
[-decoder]          (IP only) Decoder (PCMu or PCMa) {PCMu} (Optional)

[-user]             (IP only) Authentication User Name (max 32 chars) {}
                    (Optional)

[-pass]             (IP only) Authentication Password (max 32 chars) {}
                    (Optional)

[-displayuser]      (IP only) Display User Name (max 32 chars) {}
                    (Optional)

[-imsauth]          (IP only) IMS Authentication String (max 32 chars) {}
                    (Optional)

[-regip]            (IP only) Registration IP Address (Optional)

[-regport]          (IP only) Registration Port {5060} (Optional) 1024 to
                    65535

[-regexp]           (IP only) Registration Expiration (min) {10}
                    (Optional) 1 to 255

[-regint]           (IP only) Registration Interval (sec) {30} (Optional)
                    1 to 50

[-regname]          (IP only) Registration Server Name (Optional)

[-prack]            (IP only) RFC-3262 Support (PRACK) (Optional)

[-keepalive]        (IP only) RFC-4028 Send Keep Alive (UPDATE) (Optional)

[-keepaliveupd]     (IP only) Send Update Session Expires (min) {60}
                    (Optional) 1 to 255

[-keepalivebye]     (IP only) Requested Expiration Time (min) {60}
                    (Optional) 1 to 255

[-bye]              (IP only) Number of "BYE" or "CANCEL" upon disconnect
                    {1} (Optional) 1 to 6

[-lvl1]             1st Echo Level (dBm) {-10} (Optional) -50 to 3

[-dly1]             1st Echo Delay (ms) {100} (Optional) 0 to 500

[-lvl2]             2nd Echo Level (dBm) {no 2nd echo} (Optional) -50 to 3

[-dly2]             2nd Echo Delay (ms) {no 2nd echo} (Optional) 0 to 500

[-enable2]          Enable 2nd Echo {no} (Optional) no,yes

[-g168]             Dispersion=G168 Model# {none} (Optional) 1 to 8

[-gsm]              Dispersion Model=GSMFR {none} (Optional)

[-loop]             Dispersion Model=Loopback {none} (Optional)

[-pkt]              Dispersion Model=Packet Loss (%) {none} (Optional) 1
                    to 90

[-jit]              Dispersion Model=Packet Jitter (ms) {none} (Optional)
                    1 to 1000

[-tone]             Dispersion Scale Type {css} (Optional)

[-hoth]             Sig Gen=Hoth {none} (Optional) -100 to 0

[-dbl]              Sig Gen=CSS DblTalk {none} (Optional) -100 to 0
```

```
[-bias]          Sig Gen=DC Bias {none} (Optional) -100 to 0

[-dur]           Test Duration (sec) {0(forever)} (Optional) 0 to 1000

[-wav]           8 kHz WAV/PCM File Maximum Length 32 sec (Optional)

[-encoder]       Encoder (PCMu or PCMa) {PCMu} (Optional)
```

Discussion:

The default is a single echo of -10 dB at 100ms with no dispersion.

For details on the G.168 dispersion models, dispersion scale type, Hoth noise, or CSS Double-Talk see the ITU G.168 document, and/or the 'G.168 White Paper' available at www.sageinst.com

The 'gsm' dispersion model is a GSM Full-Rate vocoder.

The 'packet loss' and 'packet jitter' are useful for simulating/adding known impairments in a circuit.

The 'loopback' is a true digital loopback with no level adjustment, but with a delay specified by the first echo.

Examples:

Create an echo generator responder test with a single echo of -12 dB at 53 ms on interface #1 resource #3:

```
echogen -if1 -rn3 -lvl1 -12 -dly1 53
```

Create an echo generator responder test with the single default echo on interface 4 resource 5:

```
echogen -if 4 -rn 5
```

echosnd

Echo Sounder Test

Create an Echo Sounder Test (default: director)

Command syntax:

```
echosnd [-dn] [-sn] -if [-rn] [-mod] [-log] [-logfreq] [-dir] [-resp]
[-mf] [-isdnb] [-loadtype] [-loaddelay] [-localip] [-localport] [-
localmac] [-jitter] [-siptos] [-rtptos] [-dip] [-dport] [-dname] [-
pktsize] [-decoder] [-user] [-pass] [-displayuser] [-imsauth] [-regip]
[-regport] [-regexp] [-regint] [-regname] [-prack] [-keepalive] [-
keepaliveupd] [-keepalivebye] [-bye] [-ecd] [-ecf] [-ecl] [-ecmf] [-
ecmi] [-ecnc] [-ecpd] [-ecpj] [-silence] [-cycles] [-noplot] [Tx Level
(dBM) {-10}]
```

Sage CLI Command Reference

Command options *(no spaces or tabs allowed in parameters):*

```
[-dn]           destination (Optional)

[-sn]           source # (Optional)

-if             IF# 1 to 10

[-rn]           Resource# (Optional) Comma separated integers 'x' or
                integer ranges 'x-y' with x and y in [1,255].

[-mod]          Modify existing test parameters (Optional)

[-log]          Log File (Optional)

[-logfreq]      Log frequency - N (every N [1,1000]), Ns (every N
                seconds [3,1000]), or final (final result only) {1}
                (Optional)

[-dir]          Be Director: # times to run {0} (Optional) 0 to 999

[-resp]         Be Responder (Optional)

[-mf]           Send MF call setup digits (CAS only) {DTMF} (Optional)

[-isdnb]        ISDN B Channel capability type (ISDN only:
                56k,64k,speech,udig,rdig,3.1k,udigtone,video) {speech}
                (Optional)

[-loadtype]     Load Type (fixed or random) {fixed} (Optional)

[-loaddelay]    Load Delay (sec or sec range for 'random') {fixed: 4
                or random: [4,10]} (Optional) 1 to 999

[-localip]      (IP only) Local IP Address (Optional)

[-localport]    (IP only) Local Port {5060} (Optional) 1024 to 65535

[-localmac]     (IP only) Local MAC Address (Optional)

[-jitter]       (IP only) SIP Jitter Buffer Size {40} (Optional) 10 to
                100

[-siptos]       (IP only) SIP ToS (8 binary digits) {00000000}
                (Optional)

[-rtptos]       (IP only) RTP ToS (8 binary digits) {00000000}
                (Optional)

[-dip]          (IP only) Destination / Proxy IP address (Optional)

[-dport]        (IP only) Destination / Proxy Port {5060} (Optional)
                1024 to 65535

[-dname]        (IP only) Proxy Server Name (Optional)

[-pktsize]      (IP only) Packet Size (ms) {20} (Optional) 10 to 40

[-decoder]      (IP only) Decoder (PCMu or PCMa) {PCMu} (Optional)

[-user]         (IP only) Authentication User Name (max 32 chars) {}
                (Optional)

[-pass]         (IP only) Authentication Password (max 32 chars) {}
                (Optional)

[-displayuser]  (IP only) Display User Name (max 32 chars) {}
                (Optional)
```

Sage CLI Command Reference

[-imsauth]	(IP only) IMS Authentication String (max 32 chars) {} (Optional)
[-regip]	(IP only) Registration IP Address (Optional)
[-regport]	(IP only) Registration Port {5060} (Optional) 1024 to 65535
[-regexp]	(IP only) Registration Expiration (min) {10} (Optional) 1 to 255
[-regint]	(IP only) Registration Interval (sec) {30} (Optional) 1 to 50
[-regname]	(IP only) Registration Server Name (Optional)
[-prack]	(IP only) RFC-3262 Support (PRACK) (Optional)
[-keepalive]	(IP only) RFC-4028 Send Keep Alive (UPDATE) (Optional)
[-keepaliveupd]	(IP only) Send Update Session Expires (min) {60} (Optional) 1 to 255
[-keepalivebye]	(IP only) Requested Expiration Time (min) {60} (Optional) 1 to 255
[-bye]	(IP only) Number of "BYE" or "CANCEL" upon disconnect {1} (Optional) 1 to 6
[-ecd]	Enable EC Disable Tone (Optional)
[-ecf]	EC Disable Freq (Hz) {2100} (Optional) 20.00 to 3980.00
[-ecl]	EC Disable Level (dBm) {-12} (Optional) -20.00 to 0.00
[-ecmf]	EC Disable Mod Freq (Hz) {15.0} (Optional) 0.00 to 500.00
[-ecmi]	EC Disable Mod Index {0.2} (Optional) 0.00 to 1.00
[-ecnc]	EC Disable # Cycles {3} (Optional) 1 to 10
[-ecpd]	EC Disable Phase Duraton (ms) {450} (Optional) 10 to 1000
[-ecpj]	EC Disable Phase Jump (Deg) {180} (Optional) 0.00 to 180.00
[-silence]	Silence Duration (sec) {3} (Optional) 0 to 250
[-cycles]	Number of Test Cycles {1} (Optional) 0 to 250
[-noplot]	Disable Plot Convergence Data (Optional)
[Tx Level (dBM) {-10}]	(Optional) -20.00 to 0.00

Discussion:

The Sage Echo Sounder test sends a proprietary test signal to characterize echoes that may be present on the line under test. It is capable of sending an initial echo canceller disable tone prior to the test signal. Default: no disable signal. The parameters of the disable tone are customizable. The Silence duration determines the leading and inter-test (if num cycles > 1) silence in seconds. A larger leading silence may be useful if calling a

line that is slow to answer. The number of cycles is used to repeat the echo sounder tests multiple times during a single call to look for dynamic changes.

Examples:

Perform a echo sounder test on interface #3 resource #2 using the default values (Tx Level = -10, no EC Disable tone) to destination #434-8794:

```
echosnd -if 3 -rn 2 -dn 4348794
```

Perform a echo sounder test on interface #3 resource #2 using the default values (Tx Level = -10, no EC Disable tone) to destination #434-8794 and send the echo canceller disable signal:

```
echosnd -if 3 -rn 2 -dn 4348794 -ecd
```

echoping

ICMP Echo Server Test

Create an ICMP Echo Server Test. IP interfaces ONLY.

Command syntax:

```
echoping -if [-rn]
```

Command options *(no spaces or tabs allowed in parameters):*

```
-if             IF# 1 to 10

[-rn]           Resource# (Optional) Comma separated integers 'x' or
                integer ranges 'x-y' with x and y in [1,255].
```

exit

Exit the command interpreter and close associated network resources

Command syntax:

```
exit
```

faxrx

FAX Receiver Test

Create a Fax Receiver test (default: responder)

Command syntax:

```
faxrx [-dn] [-sn] -if [-rn] [-mod] [-log] [-dir] [-resp] [-mf] [-
isdnb] [-txlevel]
```

Sage CLI Command Reference

Command options *(no spaces or tabs allowed in parameters):*

[-dn]	destination (Optional)
[-sn]	source # (Optional)
-if	IF# 1 to 10
[-rn]	Resource# (Optional) Comma separated integers 'x' or integer ranges 'x-y' with x and y in [1,255].
[-mod]	Modify existing test parameters (Optional)
[-log]	Log File (Optional)
[-dir]	Be Director: # times to run {0} (Optional) 0 to 999
[-resp]	Be Responder (Optional)
[-mf]	Send MF call setup digits (CAS only) {DTMF} (Optional)
[-isdnb]	ISDN B Channel capability type (ISDN only: 56k,64k,speech,udig,rdig,3.1k,udigtone,video) {speech} (Optional)
[-txlevel]	Tx Level (dBM) {-7} (Optional) -20 to 0

Discussion:

See the 'faxtx' command help for detailed information on the FAX Emulator Test.

Examples:

Create a FAX Receiver (responder) test on resource #1 of interface #3 that logs the results to file named faxrx.csv:

```
faxrx -if3 -rn1 -log faxrx.csv
```

faxtx

Fax Transmitter Test

Create a Fax Transmitter Test (default: director)

Command syntax:

```
faxtx [-dn] [-sn] -if [-rn] [-mod] [-log] [-dir] [-resp] [-mf] [-isdnb] [-loadtype] [-loaddelay] [-txlevel] [-type] [-pages]
```

Command options *(no spaces or tabs allowed in parameters):*

[-dn]	destination (Optional)
[-sn]	source # (Optional)
-if	IF# 1 to 10
[-rn]	Resource# (Optional) Comma separated integers 'x' or integer ranges 'x-y' with x and y in [1,255].
[-mod]	Modify existing test parameters (Optional)

[-log]	Log File (Optional)
[-dir]	Be Director: # times to run {0} (Optional) 0 to 999
[-resp]	Be Responder (Optional)
[-mf]	Send MF call setup digits (CAS only) {DTMF} (Optional)
[-isdnb]	ISDN B Channel capability type (ISDN only: 56k,64k,speech,udig,rdig,3.1k,udigtone,video) {speech} (Optional)
[-loadtype]	Load Type (fixed or random) {fixed} (Optional)
[-loaddelay]	Load Delay (sec or sec range for 'random') {fixed: 4 or random: [4,10]} (Optional) 1 to 999
[-txlevel]	Tx Level (dBM) {-7} (Optional) -20 to 0
[-type]	Modem Type (v27@2400,v27@4800,v29@7200,v29@9600,v17@7200,v17@9600,v17@12000,v17@14400) {V17@7200} (Optional)
[-pages]	Pages to send {2} (Optional) 2 to 100

Discussion:

Sage's Fax Emulator (SFE) is a test feature that emulates both a realistic FAX transmitter and a FAX receiver. By FAX transmitter, we mean the FAX machine that originates a call, and sends the FAX pages. By FAX receiver, we mean the FAX machine that answers the call, and receives the FAX pages. To use SFE, one normally originates a call from Sage's FAX transmitter to another FAX machine or Sage's FAX receiver across the network under test. Sage's FAX transmitter will then communicate with the destination FAX machine or Sage's FAX receiver with the protocols specified in ITU-T T.30. Two test pages will be sent from the transmitter to the receiver. The test pages are encoded according to formats documented in ITU-T T.4. While the test is going on, Sage's FAX emulators will report in real time the test progress, such as what signal is being sent; what signal is being received; whether or not a certain stage is being retried; whether or not an unexpected invalid protocol packet is received; whether or not certain timing errors have occurred (certain protocol packets not received within allowable time frame), and whether or not the page transmission has succeeded etc.

For more information see the 'Fax Emulator Test White Paper' available at www.sageinst.com

Examples:

Start a FAX Transmitter Test to destination #332-2345 with default settings on resource #2 of interface #1:

```
faxtx -if 1 -rn 2 -dn 3322345
```

Sage CLI Command Reference

g168

G168 tests

Create G168 tests (default: director)

The Sage G.168 test suite is series of objective subtests designed to ensure the minimum level of performance of an echo canceller. Each subtest in the series is identified by name (2Aa, 2Ab, ..., 15B) to specify which subtest the remaining command line parameters affect.

Command syntax:

```
g168 [-dn] [-sn] -if [-rn] [-mod] [-log] [-dir] [-resp] [-mf] [-isdnb]
[-loadtype] [-loaddelay] [-localip] [-localport] [-localmac] [-jitter]
[-siptos] [-rtptos] [-dip] [-dport] [-dname] [-pktsize] [-decoder] [-
user] [-pass] [-displayuser] [-imsauth] [-regip] [-regport] [-regexp]
[-regint] [-regname] [-prack] [-keepalive] [-keepaliveupd] [-
keepalivebye] [-bye] [-egif] [-egrn] [-ecfile] [-eccommand] [-
ecipaddr] [-ecusername] [-ecpassword] [-eclog] [-name] [-enable] [-
lrin] [-lrinmax] [-lrinstep] [-freq] [-freqmax] [-freqstep] [-sgen] [-
sgenmax] [-sgenstep] [-erl] [-erlmax] [-erlstep] [-echomodel] [-
duration]
```

Command options *(no spaces or tabs allowed in parameters):*

[-dn]	destination (Optional)
[-sn]	source # (Optional)
-if	IF# 1 to 10
[-rn]	Resource# (Optional) Comma separated integers 'x' or integer ranges 'x-y' with x and y in [1,255].
[-mod]	Modify existing test parameters (Optional)
[-log]	Log File (Optional)
[-dir]	Be Director: # times to run {0} (Optional) 0 to 999
[-resp]	Be Responder (Optional)
[-mf]	Send MF call setup digits (CAS only) {DTMF} (Optional)
[-isdnb]	ISDN B Channel capability type (ISDN only: 56k,64k,speech,udig,rdig,3.1k,udigtone,video) {speech} (Optional)
[-loadtype]	Load Type (fixed or random) {fixed} (Optional)
[-loaddelay]	Load Delay (sec or sec range for 'random') {fixed: 4 or random: [4,10]} (Optional) 1 to 999
[-localip]	(IP only) Local IP Address (Optional)
[-localport]	(IP only) Local Port {5060} (Optional) 1024 to 65535
[-localmac]	(IP only) Local MAC Address (Optional)
[-jitter]	(IP only) SIP Jitter Buffer Size {40} (Optional) 10 to 100

Sage CLI Command Reference

[-siptos]	(IP only) SIP ToS (8 binary digits) {00000000} (Optional)
[-rtptos]	(IP only) RTP ToS (8 binary digits) {00000000} (Optional)
[-dip]	(IP only) Destination / Proxy IP address (Optional)
[-dport]	(IP only) Destination / Proxy Port {5060} (Optional) 1024 to 65535
[-dname]	(IP only) Proxy Server Name (Optional)
[-pktsize]	(IP only) Packet Size (ms) {20} (Optional) 10 to 40
[-decoder]	(IP only) Decoder (PCMu or PCMa) {PCMu} (Optional)
[-user]	(IP only) Authentication User Name (max 32 chars) {} (Optional)
[-pass]	(IP only) Authentication Password (max 32 chars) {} (Optional)
[-displayuser]	(IP only) Display User Name (max 32 chars) {} (Optional)
[-imsauth]	(IP only) IMS Authentication String (max 32 chars) {} (Optional)
[-regip]	(IP only) Registration IP Address (Optional)
[-regport]	(IP only) Registration Port {5060} (Optional) 1024 to 65535
[-regexp]	(IP only) Registration Expiration (min) {10} (Optional) 1 to 255
[-regint]	(IP only) Registration Interval (sec) {30} (Optional) 1 to 50
[-regname]	(IP only) Registration Server Name (Optional)
[-prack]	(IP only) RFC-3262 Support (PRACK) (Optional)
[-keepalive]	(IP only) RFC-4028 Send Keep Alive (UPDATE) (Optional)
[-keepaliveupd]	(IP only) Send Update Session Expires (min) {60} (Optional) 1 to 255
[-keepalivebye]	(IP only) Requested Expiration Time (min) {60} (Optional) 1 to 255
[-bye]	(IP only) Number of "BYE" or "CANCEL" upon disconnect {1} (Optional) 1 to 6
[-egif]	Hybrid Echo Generator Interface Number (Optional) 1 to 10
[-egrn]	Hybrid Echo Generator Interface Number (Optional) 1 to 255
[-ecfile]	Echo Canceller Control File Name (Optional)
[-eccommand]	Echo Canceller Initial Command (Optional)
[-ecipaddr]	Echo Canceller IP Address (Optional)

Sage CLI Command Reference

```
[-ecusername]      Echo Canceller User Name (Optional)

[-ecpassword]      Echo Canceller password (Optional)

[-eclog]           Log Echo Canceller communications (Optional) no,yes

[-name]            Test Name (Optional)

[-enable]          Enable Test (Optional) no,yes,all,none

[-lrin]            LR(in) Nominal / Min Level (Db) (Optional) -30.00 to
                   3.00

[-lrinmax]         LR(in) Max Level (Db) (Optional) -30.00 to 3.00

[-lrinstep]        LR(in) Step Level (Db) (Optional) 0.00 to 30.00

[-freq]            Frequency Nominal / Min Level (Optional) 300.00 to
                   3000.00

[-freqmax]         Frequency Max Level (Optional) 300.00 to 3000.00

[-freqstep]        Frequency Step Level (Optional) 0.00 to 2700.00

[-sgen]            S(gen) Nominal / Min Level (Db) (Optional) -60.00 to
                   6.00

[-sgenmax]         S(gen) Max Level (Db) (Optional) -60.00 to 6.00

[-sgenstep]        S(gen) Step Level (Db) (Optional) 0.00 to 60.00

[-erl]             ERL Nominal / Min Level (Db) (Optional) -50.00 to 0.00

[-erlmax]          ERL Max Level (Db) (Optional) -50.00 to 0.00

[-erlstep]         ERL Step Level (Db) (Optional) 0.00 to 50.00

[-echomodel]       Echo Dispersion Model {flat,g168,both,1,2,3,4,5,6,7,8}
                   (Optional)

[-duration]        Duration (sec) (Optional) 0.00 to 9999.00
```

Option details:

In order to customize individual parameters for multiple subtests, a sequence of commands must be issued. The first command should be specified without the -mod parameter to create a test suite with default parameters. Subsequent commands should use the -mod and -name parameters to allow modification of the named subtest.

The -enable parameter with values 'no' or 'yes' can be used with the -name parameter to disable / enable an individual subtest. Also the -enable parameter can be used with values 'all' or 'none' (and no -name or subtest parameters) to control all subtests.

The -egif and -egrn parameters specify the Sage Echo Generator test which will be used to generate controlled signal echoes and are specified only once for all subtests.

The -ec* parameters are used to specify the echo canceller telnet client session connection variables. A separate telnet session is used for each g168 test instance.

Sage CLI Command Reference

List of supported G.168 subtests:

Name: 2Aa	Description: Convergence w/NLP
Name: 2Ab	Description: Reconvergence w/NLP
Name: 2Ba	Description: Convergence w/o NLP
Name: 2Bb	Description: Reconvergence w/o NLP
Name: 2Ca	Description: Convergence w/Noise&NLP
Name: 2Cb	Description: Steady State w/Noise w/o NLP
Name: 2Cc	Description: Convergence w/o NLP
Name: 3A	Description: Double Talk w/Low Levels
Name: 3Ba	Description: Dbl Talk Stability:High
Name: 3Bb	Description: Dbl Talk Stability:Low
Name: 3C	Description: Double Talk w/Conversation
Name: 4	Description: Leak Rate
Name: 5	Description: Convergence w/Infinite RL
Name: 6	Description: Non-Divergence w/Narrow Band
Name: 7	Description: Stability
Name: 8	Description: Non-Divergence w/Misc
Name: 9a	Description: Comfort Noise-Pt. 1
Name: 9b	Description: Comfort Noise-Pt. 2
Name: 9c	Description: Comfort Noise-Pt. 3
Name: 10Aa	Description: Fax: Caller Side w/NLP
Name: 10Ab	Description: Fax: Caller Side w/o NLP
Name: 10Ba	Description: Fax: Called Side w/NLP
Name: 10Bb	Description: Fax: Called Side w/o NLP
Name: 13A	Description: GSMFR echo w/NLP
Name: 13B	Description: GSMFR echo w/o NLP
Name: 15A	Description: PCM Offset: S(in)
Name: 15B	Description: PCM Offset: R(in)

Examples:

Create a G.168 test series with no subtests enabled and echo generator (previously created) on interface 2, resource 24.

```
g168 -if 1 -rn 24 -egif 2 -egrn 24
```

Modify the parameters and enable a subtest of an already created G.168 test

```
g168 -if 1 -rn 24 -mod -name 2aa -duration 30 -enable yes
```

help

Allows all users to access help on the various built-in commands

For more information on a specific command, type 'help command-name'.

Command syntax:

```
help [-a] [Command Name]
```

Command options *(no spaces or tabs allowed in parameters):*

```
[-a]              Show detailed help for all Commands. (Optional)
[Command Name]    (Optional)
```

inmd

INMD Test

Create an INMD (passive echo monitor) test. Requires Dual Monitor mode for T1/E1.

Command syntax:

```
inmd -if [-rn] [-log] [-isdnb] [-target] [-jitter] [-nopktto]
```

Command options *(no spaces or tabs allowed in parameters):*

```
-if          IF# 1 to 10
[-rn]        Resource# (Optional) Comma separated integers 'x' or
             integer ranges 'x-y' with x and y in [1,255].
[-log]       Log File (Optional)
[-isdnb]     ISDN B Channel capability type (ISDN only:
             56k,64k,speech,udig,rdig,3.1k,udigtone,video) {speech}
             (Optional)
[-target]    (IP only) Target IP Address (0.0.0.0 means any)
             {0.0.0.0} (Optional)
[-jitter]    (IP only) RTP Jitter Buffer Size {40} (Optional) 10 to
             100
[-nopktto]   (IP only) No Packet Timeout (s) {30} (Optional) 1 to
             999
```

Sage CLI Command Reference

Discussion:

INMD stands for In-service Non-intrusive Measurement Device. It is a passive voice quality monitoring method based on ITU-T P.561. Two types of measurements are covered by INMD:

> 1) speech and noise characterization

> 2) echo characterization

Sage's current implementation of INMD on the 960 platform focuses only on echo characterization. More specifically, once the presence of echo is detected, Sage's INMD will report in real time the detected echo level and echo delay. If the monitored DS1 are PRI-ISDN lines, then the source and destination phone numbers associated with the monitored DS0 channel are also presented.

See also 'Information in SAGE's P.561 INMD Test' available via www.sageinst.com

Examples:

Create INMD tests on interface #1 resources #1-23 and log the results to inmd.log (assumes the interface is configured for Dual-Monitor Mode):

```
inmd -if 1 -rn 1-23 -log inmd.log
```

intfc

View interface status; configure interfaces

Allows all users to view high-level status information on all installed interfaces. Allows a user who owns all the defined tests or 'Admin' to (re)configure interfaces. Allows logging of interface statistics. Specifying a log filename will enable logging with a setting of 'each event'.

Command syntax:

```
intfc [-c] [-stats] [-statc] [-statlfn] [-statlfr] [-statr] [IF#]
```

Command options *(no spaces or tabs allowed in parameters)*:

```
[-c]            Configure (Optional)

[-stats]        Interface Statistics (Optional)

[-statc]        Interface Statistics, csv format (Optional)

[-statlfn]      Interface Statistics, set log filename (Optional)

[-statlfr]      Interface Statistics, set log freq (-1=None, 0=Each
                Event, >0 every n seconds (Optional) -1 to 2147483647

[-statr]        Interface Statistics, reset (Optional)

[IF#]           (Optional) 1 to 10
```

Sage CLI Command Reference

Discussion:

On the 96X Family of products, a 96X Unit is composed of one or more physical 'interfaces'. An interface could be a PCM span, an ethernet port, or an analog jack. Each interface is composed of one or more 'resources'. For example, a T1 span has 24 resources (channels, in this case), and an analog interface has only one resource. The ethernet interface has a number of resources called 'slots' that allow for the definition of multiple, simultaneous tests on a single interface. Tests are defined at the resource level; if a resource doesn't have a test defined, it is considered an 'idle' resource.

These 'interface' and 'resource' abstractions allow for uniform command, control, and administration of completely different physical media. In this case Ethernet, PCM, and Analog media can all be manipulated via the same commands by specifying only the interface #. Likewise, individual tests are referenced by indicating the interface # and resource #. To allow the different interfaces to be reconfigured with this command, the configuration process is interactive (you will be prompted for appropriate input).

PCM NOTES: Note that there are two 'flavors' of PRI ISDN supported: the normal PRI_ISDN setting and the PRI_ISDN/Dyn setting. The Dyn setting means 'dynamic' B-Channel selection for responders that define their originating number. When in this dynamic mode, if a call comes in, the responder 'originating' numbers are searched for a match to the incoming destination number. If a match is found, the responder is started on the B-Channel of the incoming call. Otherwise a responder without a originating number is started, if found. The upshot of all this is that in the dynamic ISDN mode, the resource numbers DO NOT directly correlate with B-Channels; they are merely test slots as they are on the Ethernet interfaces. As a consequence, in this mode outgoing calls will be put up on arbitrary B-Channels. Furthermore, no indication of the B- Channel in use is available to the user.

UNFRAMED PCM Notes: Changing to / from Unframed mode will destroy any defined tests because the only supported test in unframed mode is a variation of the BERT test that is not supported in framed mode. See the help for the 'bert' test for more info. Also see: 'tests'

The following macro strings can be used as parameter values in all commands.

For example: 'intfc $pcm1'

macro	value
$anlg1	7
$anlg2	8
$anlg3	9
$anlg4	10
$enet1	5
$enet2	6
$pcm1	1

          $pcm2   2

          $pcm3   3

          $pcm4   4

Examples:

> To show high level status of all interfaces installed in the unit, use:
>
> ```
> intfc
> ```
>
> To show detailed status of a specific interface, say #2, use:
>
> ```
> intfc 2
> ```
>
> To (re)configure, say interface #2, (as Admin or owner of all tests on the interface), use:
>
> ```
> intfc -c 2
> ```

---

intcfg

Configure and view current interface parameters

Configure and view current interface parameters. Use intfc command to configure interfaces by means of a series of prompts. If only the -if option is specified then the current interface parameters are echoed and no changes are made. Unspecified parameters are left in their previous state.

Care should be taken to avoid specifying conflicting parameters (e.g. specifying E1 framing for a T1 PCM type) and the final echoed interface state should be checked to insure that the span state is as desired.

If -caschan is specified then one of -castxon, -castxoff -casrxon, -casrxoff should be specified as a single hex character representing the CAS ABCD bit pattern to be used for the corresponding transmit / receive, on / off hook state.

If -wideband is specified then all currently defined tests are deleted.

Note that depending on interface changes requested, 20 seconds or more may be required to complete the interface configuration.

Command syntax:
```
intcfg -if [-name] [-pcmtype] [-framing] [-signalling] [-wink] [-loop]
[-dchan] [-isdnntype] [-isdnnid] [-equipment] [-mode] [-coding] [-
clock] [-atten] [-pulse] [-haul] [-tximp] [-rximp] [-caschan] [-
castxon] [-castxoff] [-casrxon] [-casrxoff] [-speed] [-fulldupmon] [-
ipimpair] [-usedhcp] [-ipaddr] [-subnet] [-gateway] [-ntpmaxdelay] [-
ntpaddr] [-circmode] [-minringv] [-minringd] [-maxringd] [-txgain] [-
rxgain] [-wideband]
```

Sage CLI Command Reference

Command options *(no spaces or tabs allowed in parameters):*

```
-if             Interface # 1 to 10

[-name]         Name (Optional)

[-pcmtype]      <PCM> Type (Optional) T1,E1

[-framing]      <PCM> Framing (Optional)
                F12,F4,F24,F72,UNFRAMED,DF,DFS,CRC4,CRC4ITU

[-signalling]   <PCM> Signalling (Optional)
                CAS,CLRCH,ISDN,FXSFXO,ISDNDYN,PCM30,PCM31

[-wink]         <PCM> Wink Start (Optional) IMMEDIATE,WINK

[-loop]         <PCM> Loop Start (Optional) LOOP,GROUND

[-dchan]        <PCM> D Channel (Optional) 1 to 32

[-isdnntype]    <PCM> ISDN Number Type (Optional)
                UNKNOWN,INTERNATIONAL,NATIONAL,NETWORK,SUBSCRIBER,ABBR
                EVIATED

[-isdnnid]      <PCM> ISDN Number ID (Optional)
                UNKNOWN,ISDN,DATA,TELEX,NATIONAL,PRIVATE

[-equipment]    <PCM> Equipment (Optional) TE,NT,FXS,FXO

[-mode]         <PCM> Mode (Optional)
                TERMINATE,DROPINSERT,MONITOR,DUALMONITOR

[-coding]       <PCM> Coding (Optional) AMI,B8ZS,HDB3

[-clock]        <PCM> Clock (Optional) EXTERNAL,INTERNAL

[-atten]        <PCM> Tx Attenuation (Optional) 0,7.5,15,22.5

[-pulse]        <PCM> Pulse Shaper (Optional) 0,133,266,399,533

[-haul]         <PCM> Haul (Optional) SHORT,LONG

[-tximp]        <PCM> Tx Impedance (Optional) 75,100,120

[-rximp]        <PCM> Rx Impedance (Optional) 75,100,120,100K

[-caschan]      <PCM> CAS Channel (Optional) Comma separated integers
                'x' or integer ranges 'x-y' with x and y in [1,30].

[-castxon]      <PCM> CAS Tx On Hook (Optional)

[-castxoff]     <PCM> CAS Tx Off Hook (Optional)

[-casrxon]      <PCM> CAS Rx On Hook (Optional)

[-casrxoff]     <PCM> CAS Rx Off Hook (Optional)

[-speed]        <IP> Speed (Optional)
                10HALF,10FULL,100HALF,100FULL,1000HALF,1000FULL,AUTO

[-fulldupmon]   <IP> Full Duplex Monitor (Optional) NO,YES

[-ipimpair]     <IP> IP Impairment Emulator (Optional) NO,YES

[-usedhcp]      <IP> Use DHCP (Optional) NO,YES

[-ipaddr]       <IP> Address (Optional)

[-subnet]       <IP> Subnet Mask (Optional)
```

```
[-gateway]        <IP> Default Gateway (Optional)

[-ntpmaxdelay]    <IP> NTP Max Delay (Optional) 0,512,1024,2048

[-ntpaddr]        <IP> NTP Address (Optional)

[-circmode]       <ANALOG> Circuit Mode (Optional)
                  2W600,2W900,2W600X,2W900X,2W600D,2W900D,2W600DX,2W900D
                  X,4W,4WCELL

[-minringv]       <ANALOG> Min Ring Voltage (Optional) 5 to 100

[-minringd]       <ANALOG> Min Ring Duration (Optional) 300 to 10000

[-maxringd]       <ANALOG> Max Ring Duration (Optional) 300 to 10000

[-txgain]         <ANALOG> 4 wire Tx Gain (Optional) -40 to 0

[-rxgain]         <ANALOG> 4 wire Rx Gain (Optional) -23 to 22

[-wideband]       <ANALOG> 16 kHz Wideband Audio Mode (Optional) NO,YES
```

Discussion:

The following macro strings can be used as parameter values in all commands.

For example: 'intcfg -if $pcm1'

macro	value
$anlg1	7
$anlg2	8
$anlg3	9
$anlg4	10
$enet1	5
$enet2	6
$pcm1	1
$pcm2	2
$pcm3	3
$pcm4	4

Examples:

View current interface parameters for interface 1:

```
intcfg -if 1
```

Configure PCM interface 2 for ISDN:

```
intcfg -if 2 -signalling ISDN
```

Configure IP interface 5:

```
intcfg -if 5 -speed 100full -usedhcp no -ipaddr 10.1.1.1 -
subnet 255.0.0.0 -gateway 10.1.1.255
```

Configure PCM interface 3 CAS off hook ABCD bits to 1110 (HEX E):

```
intcfg -if 3 -caschan 1-24 -castxoff E -casrxoff E
```

ipimpair

Display and configure IP Impairment Emulator settings

The IP Impairment command displays the current IP Impairment Emulator "flows" and packet statistics. Flows may be defined and saved to describe the impairment parameters for a particular packet type. Flows can be individually enabled and disabled. Only one flow's parameters can be modified in a single command execution except that multiple flows are affected by the -disable and -enable parameters.

If the -mod option is not specified, then the current flow is reset to its default state before any specified changes are executed. If -mod is specified then unspecified flow values are left in their current state.

The "if" interface number entered should specify an Ethernet interface.

The current IP Impairment status can be displayed by specifying only the -if parameter.

Command syntax:

```
ipimpair -if [-flow] [-mod] [-name] [-dir] [-packet] [-srcabaddr] [-
srcabport] [-dstabaddr] [-dstabport] [-srcbaaddr] [-srcbaport] [-
dstbaaddr] [-dstbaport] [-lossmag] [-lossrate] [-delaymag] [-
delayrate] [-delaytime] [-delayjitter] [-disable] [-enable] [-reset]
```

Command options *(no spaces or tabs allowed in parameters)*:

```
-if             IP Interface Number 1 to 10

[-flow]         Flow Number (Optional) 1 to 8

[-mod]          Modify existing flow parameters (Optional)

[-name]         Flow Name (Optional)

[-dir]          Flow Direction (Optional) atob,btoa,both

[-packet]       Packet Type (Optional)
                all,udp,tcp,icmp,rtp,sip,rtcp,t.38

[-srcabaddr]    Source A->B Address (0.0.0.0 -> any) (Optional)

[-srcabport]    Source A->B Port (o -> any) (Optional) 0 to 65535

[-dstabaddr]    Destination A->B Address (0.0.0.0 -> any) (Optional)

[-dstabport]    Destination A->B Port (0 -> any) (Optional) 0 to 65535

[-srcbaaddr]    Source B->A Address (0.0.0.0 -> any) (Optional)
```

```
[-srcbaport]      Source B->A Port (o -> any) (Optional) 0 to 65535
[-dstbaaddr]      Destination B->A Address (0.0.0.0 -> any) (Optional)
[-dstbaport]      Destination B->A Port (0 -> any) (Optional) 0 to 65535
[-lossmag]        Loss Magnitude (0 -> No Loss) (Optional) 0 to 255
[-lossrate]       Loss Rate (Optional) 1 to 255
[-delaymag]       Delay Magnitude (0 -> No Delay) (Optional) 0 to 255
[-delayrate]      Delay Rate (Optional) 1 to 255
[-delaytime]      Delay Time (ms) (Optional) 1 to 1600
[-delayjitter]    Delay Jitter (ms) (Optional) 0 to 250
[-disable]        Disable All Flows (Optional)
[-enable]         Enable Flow(s) (Optional) Comma separated integers 'x'
                  or integer ranges 'x-y' with x and y in [1,8].
[-reset]          Reset Counters (Optional)
```

kick

Terminate a user's session (Admin only)

Admin may use the 'kick' command to invalidate a stranded or unknown session. The session will terminate when the user sends input over the network connection and is then notified of the impending disconnect; the resources are then reclaimed. Requires the sessionId of the session in question. See the 'user -a' command help for details on how to determine the sessionId of other sessions.

Command syntax:

```
kick SessionId
```

Command options *(no spaces or tabs allowed in parameters):*

```
SessionId         0 to 2147483647
```

mkdir

Create a directory

Command syntax:

```
mkdir directory
```

Command options *(no spaces or tabs allowed in parameters):*

```
directory
```

moipd

MoIP Director Test

Create a MoIP Director Test

Command syntax:

```
moipd [-dn] [-sn] -if [-rn] [-mod] [-log] [-dir] [-resp] [-mf] [-
isdnb] [-loadtype] [-loaddelay] [-voi] [-vfx] [-v34] [-dur] [Tx Level
(dBM) {-10}]
```

Command options *(no spaces or tabs allowed in parameters):*

[-dn]	destination (Optional)
[-sn]	source # (Optional)
-if	IF# 1 to 10
[-rn]	Resource# (Optional) Comma separated integers 'x' or integer ranges 'x-y' with x and y in [1,255].
[-mod]	Modify existing test parameters (Optional)
[-log]	Log File (Optional)
[-dir]	Be Director: # times to run {0} (Optional) 0 to 999
[-resp]	Be Responder (Optional)
[-mf]	Send MF call setup digits (CAS only) {DTMF} (Optional)
[-isdnb]	ISDN B Channel capability type (ISDN only: 56k,64k,speech,udig,rdig,3.1k,udigtone,video) {speech} (Optional)
[-loadtype]	Load Type (fixed or random) {fixed} (Optional)
[-loaddelay]	Load Delay (sec or sec range for 'random') {fixed: 4 or random: [4,10]} (Optional) 1 to 999
[-voi]	Voice Mode (Optional)
[-vfx]	FAX Modem (default) (Optional)
[-v34]	V34/V90 Modem (Optional)
[-dur]	Test Duration(s) {25} (Optional) 10 to 1000
[Tx Level (dBM) {-10}]	(Optional) -30 to 0

Discussion:

Sage Instruments designed this IP Telephony Service Transparency and E-model Test to specifically verify a gateway or IAD's ability to handle a MoIP call or a VoIP call. More specifically, the test sends standard-based precursor signature tones by emulating a FAX call, a V34/V90 modem call or a voice call to test the gateway's call discrimination capability. After the signature tones, the test then measures the round-trip delay as the delay is a good indicator of the internal jitter buffer size. The test then starts simplex, full-duplex or half-duplex packet network impairments test by measuring in detail each

individual packet loss event and its duration, and each individual voice jitter (gapping or jerking) event and its duration. The signal level change (gain) is also measured, and the codec type (PCM, ADPCM or VOCODER) is also detected. When voice test mode is chosen, echoes (in terms of levels and delays) are also measured from both directions using Sage's proprietary Echo Sounder algorithm. All of the measured parameters (round-trip delay, vocoder type, packet losses and echoes) are then used as inputs into the ITU-T G.107 E-model to produce a transmission rating factor R value, and the derivative GoB (Good or Better), PoW (Poor or Worse) and E-MOS (E-model-based mean-opinion-score) numbers. With this test, a user can quickly determine whether or not the device and network under test can handle various MoIP or VoIP calls.

Examples:

Run a MoIP Director test once on interface #2 resource #4 to 351-2245 and log the results to moip.csv:

```
moipd -if 2 -rn 4 -dir 1 -dn 3512245 -log moip.csv
```

moipr

MoIP Responder Test

Create a MoIP Responder Test

Command syntax:

```
moipr [-dn] [-sn] -if [-rn] [-mod] [-log] [-dir] [-resp] [-mf] [-isdnb]
```

Command options *(no spaces or tabs allowed in parameters):*

[-dn]	destination (Optional)
[-sn]	source # (Optional)
-if	IF# 1 to 10
[-rn]	Resource# (Optional) Comma separated integers 'x' or integer ranges 'x-y' with x and y in [1,255].
[-mod]	Modify existing test parameters (Optional)
[-log]	Log File (Optional)
[-dir]	Be Director: # times to run {0} (Optional) 0 to 999
[-resp]	Be Responder (Optional)
[-mf]	Send MF call setup digits (CAS only) {DTMF} (Optional)
[-isdnb]	ISDN B Channel capability type (ISDN only: 56k,64k,speech,udig,rdig,3.1k,udigtone,video) {speech} (Optional)

Sage CLI Command Reference

Discussion:

> See the Discussion found via 'help moipd'.

Examples:

> Create a moipr receiver (responder) test to answer incoming MoIP calls on interface #1 resources 1-10:
> ```
> moipr -if1 -rn1-10
> ```

mosrx

MOS Receive Test

Create a MOS Receive test (default: director)

Command syntax:

```
mosrx [-dn] [-sn] -if [-rn] [-mod] [-log] [-dir] [-resp] [-mf] [-
isdnb] [-loadtype] [-loaddelay] [-localip] [-localport] [-localmac] [-
jitter] [-siptos] [-rtptos] [-dip] [-dport] [-dname] [-pktsize] [-
decoder] [-user] [-pass] [-displayuser] [-imsauth] [-regip] [-regport]
[-regexp] [-regint] [-regname] [-prack] [-keepalive] [-keepaliveupd]
[-keepalivebye] [-bye] [-dur] [-avg]
```

Command options *(no spaces or tabs allowed in parameters):*

[-dn]	destination (Optional)
[-sn]	source # (Optional)
-if	IF# 1 to 10
[-rn]	Resource# (Optional) Comma separated integers 'x' or integer ranges 'x-y' with x and y in [1,255].
[-mod]	Modify existing test parameters (Optional)
[-log]	Log File (Optional)
[-dir]	Be Director: # times to run {0} (Optional) 0 to 999
[-resp]	Be Responder (Optional)
[-mf]	Send MF call setup digits (CAS only) {DTMF} (Optional)
[-isdnb]	ISDN B Channel capability type (ISDN only: 56k,64k,speech,udig,rdig,3.1k,udigtone,video) {speech} (Optional)
[-loadtype]	Load Type (fixed or random) {fixed} (Optional)
[-loaddelay]	Load Delay (sec or sec range for 'random') {fixed: 4 or random: [4,10]} (Optional) 1 to 999
[-localip]	(IP only) Local IP Address (Optional)
[-localport]	(IP only) Local Port {5060} (Optional) 1024 to 65535

Sage CLI Command Reference

[-localmac]   (IP only) Local MAC Address (Optional)

[-jitter]   (IP only) SIP Jitter Buffer Size {40} (Optional) 10 to
                   100

[-siptos]   (IP only) SIP ToS (8 binary digits) {00000000}
                   (Optional)

[-rtptos]   (IP only) RTP ToS (8 binary digits) {00000000}
                   (Optional)

[-dip]   (IP only) Destination / Proxy IP address (Optional)

[-dport]   (IP only) Destination / Proxy Port {5060} (Optional)
                   1024 to 65535

[-dname]   (IP only) Proxy Server Name (Optional)

[-pktsize]   (IP only) Packet Size (ms) {20} (Optional) 10 to 40

[-decoder]   (IP only) Decoder (PCMu or PCMa) {PCMu} (Optional)

[-user]   (IP only) Authentication User Name (max 32 chars) {}
                   (Optional)

[-pass]   (IP only) Authentication Password (max 32 chars) {}
                   (Optional)

[-displayuser]   (IP only) Display User Name (max 32 chars) {}
                   (Optional)

[-imsauth]   (IP only) IMS Authentication String (max 32 chars) {}
                   (Optional)

[-regip]   (IP only) Registration IP Address (Optional)

[-regport]   (IP only) Registration Port {5060} (Optional) 1024 to
                   65535

[-regexp]   (IP only) Registration Expiration (min) {10}
                   (Optional) 1 to 255

[-regint]   (IP only) Registration Interval (sec) {30} (Optional)
                   1 to 50

[-regname]   (IP only) Registration Server Name (Optional)

[-prack]   (IP only) RFC-3262 Support (PRACK) (Optional)

[-keepalive]   (IP only) RFC-4028 Send Keep Alive (UPDATE) (Optional)

[-keepaliveupd]   (IP only) Send Update Session Expires (min) {60}
                   (Optional) 1 to 255

[-keepalivebye]   (IP only) Requested Expiration Time (min) {60}
                   (Optional) 1 to 255

[-bye]   (IP only) Number of "BYE" or "CANCEL" upon disconnect
                   {1} (Optional) 1 to 6

[-dur]   Test Duration (sec) {0(forever)} (Optional) 0 to 30000

[-avg]   Measure Average Window(s) {3} (Optional) 1 to 9999

Sage CLI Command Reference

Examples:

Create a MOS test director that runs 10 times on interface 4 resource 14, calls 234-234-8873, and logs the results to mos.csv:

```
mosrx -dir 10 -if 4 -rn 14 -dn 2342348873 -log mos.csv
```

mostx

MOS Transmit Test

Create a MOS Transmit test (default: responder)

Command syntax:

```
mostx [-dn] [-sn] -if [-rn] [-mod] [-log] [-dir] [-resp] [-mf] [-
isdnb] [-loadtype] [-loaddelay] [-localip] [-localport] [-localmac] [-
jitter] [-siptos] [-rtptos] [-dip] [-dport] [-dname] [-pktsize] [-
decoder] [-user] [-pass] [-displayuser] [-imsauth] [-regip] [-regport]
[-regexp] [-regint] [-regname] [-prack] [-keepalive] [-keepaliveupd]
[-keepalivebye] [-bye] [-dur]
```

Command options *(no spaces or tabs allowed in parameters)*:

[-dn]	destination (Optional)
[-sn]	source # (Optional)
-if	IF# 1 to 10
[-rn]	Resource# (Optional) Comma separated integers 'x' or integer ranges 'x-y' with x and y in [1,255].
[-mod]	Modify existing test parameters (Optional)
[-log]	Log File (Optional)
[-dir]	Be Director: # times to run {0} (Optional) 0 to 999
[-resp]	Be Responder (Optional)
[-mf]	Send MF call setup digits (CAS only) {DTMF} (Optional)
[-isdnb]	ISDN B Channel capability type (ISDN only: 56k,64k,speech,udig,rdig,3.1k,udigtone,video) {speech} (Optional)
[-loadtype]	Load Type (fixed or random) {fixed} (Optional)
[-loaddelay]	Load Delay (sec or sec range for 'random') {fixed: 4 or random: [4,10]} (Optional) 1 to 999
[-localip]	(IP only) Local IP Address (Optional)
[-localport]	(IP only) Local Port {5060} (Optional) 1024 to 65535
[-localmac]	(IP only) Local MAC Address (Optional)
[-jitter]	(IP only) SIP Jitter Buffer Size {40} (Optional) 10 to 100

Sage CLI Command Reference

```
[-siptos]        (IP only) SIP ToS (8 binary digits) {00000000}
                 (Optional)

[-rtptos]        (IP only) RTP ToS (8 binary digits) {00000000}
                 (Optional)

[-dip]           (IP only) Destination / Proxy IP address (Optional)

[-dport]         (IP only) Destination / Proxy Port {5060} (Optional)
                 1024 to 65535

[-dname]         (IP only) Proxy Server Name (Optional)

[-pktsize]       (IP only) Packet Size (ms) {20} (Optional) 10 to 40

[-decoder]       (IP only) Decoder (PCMu or PCMa) {PCMu} (Optional)

[-user]          (IP only) Authentication User Name (max 32 chars) {}
                 (Optional)

[-pass]          (IP only) Authentication Password (max 32 chars) {}
                 (Optional)

[-displayuser]   (IP only) Display User Name (max 32 chars) {}
                 (Optional)

[-imsauth]       (IP only) IMS Authentication String (max 32 chars) {}
                 (Optional)

[-regip]         (IP only) Registration IP Address (Optional)

[-regport]       (IP only) Registration Port {5060} (Optional) 1024 to
                 65535

[-regexp]        (IP only) Registration Expiration (min) {10}
                 (Optional) 1 to 255

[-regint]        (IP only) Registration Interval (sec) {30} (Optional)
                 1 to 50

[-regname]       (IP only) Registration Server Name (Optional)

[-prack]         (IP only) RFC-3262 Support (PRACK) (Optional)

[-keepalive]     (IP only) RFC-4028 Send Keep Alive (UPDATE) (Optional)

[-keepaliveupd]  (IP only) Send Update Session Expires (min) {60}
                 (Optional) 1 to 255

[-keepalivebye]  (IP only) Requested Expiration Time (min) {60}
                 (Optional) 1 to 255

[-bye]           (IP only) Number of "BYE" or "CANCEL" upon disconnect
                 {1} (Optional) 1 to 6

[-dur]           Test Duration (sec) {0(forever)} (Optional) 0 to 30000
```

Examples:

Create a MOS responder that answers incoming calls on interface #1 resources 1-5:

```
mostx -if 1 -rn 1-5
```

Sage CLI Command Reference

passwd

Change the current user's password

Admin may change other user's passwords.

Command syntax:

```
passwd [-user] password
```

Command options *(no spaces or tabs allowed in parameters):*

```
[-user]    username (Admin Only) (Optional)

password
```

pesqrx

PESQ Receive Test

Create a PESQ Receive test (default: director)

Command syntax:

```
pesqrx [-dn] [-sn] -if [-rn] [-mod] [-log] [-dir] [-resp] [-mf] [-
isdnb] [-loadtype] [-loaddelay] [-localip] [-localport] [-localmac] [-
jitter] [-siptos] [-rtptos] [-dip] [-dport] [-dname] [-pktsize] [-
decoder] [-user] [-pass] [-displayuser] [-imsauth] [-regip] [-regport]
[-regexp] [-regint] [-regname] [-prack] [-keepalive] [-keepaliveupd]
[-keepalivebye] [-bye] [-dur] [-avg]
```

Command options *(no spaces or tabs allowed in parameters):*

```
[-dn]           destination (Optional)

[-sn]           source # (Optional)

-if             IF# 1 to 10

[-rn]           Resource# (Optional) Comma separated integers 'x' or
                integer ranges 'x-y' with x and y in [1,255].

[-mod]          Modify existing test parameters (Optional)

[-log]          Log File (Optional)

[-dir]          Be Director: # times to run {0} (Optional) 0 to 999

[-resp]         Be Responder (Optional)

[-mf]           Send MF call setup digits (CAS only) {DTMF} (Optional)

[-isdnb]        ISDN B Channel capability type (ISDN only:
                56k,64k,speech,udig,rdig,3.1k,udigtone,video) {speech}
                (Optional)

[-loadtype]     Load Type (fixed or random) {fixed} (Optional)
```

Sage CLI Command Reference

[-loaddelay]	Load Delay (sec or sec range for 'random') {fixed: 4 or random: [4,10]} (Optional) 1 to 999
[-localip]	(IP only) Local IP Address (Optional)
[-localport]	(IP only) Local Port {5060} (Optional) 1024 to 65535
[-localmac]	(IP only) Local MAC Address (Optional)
[-jitter]	(IP only) SIP Jitter Buffer Size {40} (Optional) 10 to 100
[-siptos]	(IP only) SIP ToS (8 binary digits) {00000000} (Optional)
[-rtptos]	(IP only) RTP ToS (8 binary digits) {00000000} (Optional)
[-dip]	(IP only) Destination / Proxy IP address (Optional)
[-dport]	(IP only) Destination / Proxy Port {5060} (Optional) 1024 to 65535
[-dname]	(IP only) Proxy Server Name (Optional)
[-pktsize]	(IP only) Packet Size (ms) {20} (Optional) 10 to 40
[-decoder]	(IP only) Decoder (PCMu or PCMa) {PCMu} (Optional)
[-user]	(IP only) Authentication User Name (max 32 chars) {} (Optional)
[-pass]	(IP only) Authentication Password (max 32 chars) {} (Optional)
[-displayuser]	(IP only) Display User Name (max 32 chars) {} (Optional)
[-imsauth]	(IP only) IMS Authentication String (max 32 chars) {} (Optional)
[-regip]	(IP only) Registration IP Address (Optional)
[-regport]	(IP only) Registration Port {5060} (Optional) 1024 to 65535
[-regexp]	(IP only) Registration Expiration (min) {10} (Optional) 1 to 255
[-regint]	(IP only) Registration Interval (sec) {30} (Optional) 1 to 50
[-regname]	(IP only) Registration Server Name (Optional)
[-prack]	(IP only) RFC-3262 Support (PRACK) (Optional)
[-keepalive]	(IP only) RFC-4028 Send Keep Alive (UPDATE) (Optional)
[-keepaliveupd]	(IP only) Send Update Session Expires (min) {60} (Optional) 1 to 255
[-keepalivebye]	(IP only) Requested Expiration Time (min) {60} (Optional) 1 to 255
[-bye]	(IP only) Number of "BYE" or "CANCEL" upon disconnect {1} (Optional) 1 to 6

```
[-dur]              Test Duration (sec) {0(forever)} (Optional) 0 to 30000
[-avg]              Measure Average Window(s) {3} (Optional) 1 to 9999
```

pesqtx

PESQ Transmit Test

Create a PESQ Transmit test (default: responder)

Command syntax:

```
pesqtx [-dn] [-sn] -if [-rn] [-mod] [-log] [-dir] [-resp] [-mf] [-
isdnb] [-loadtype] [-loaddelay] [-localip] [-localport] [-localmac] [-
jitter] [-siptos] [-rtptos] [-dip] [-dport] [-dname] [-pktsize] [-
decoder] [-user] [-pass] [-displayuser] [-imsauth] [-regip] [-regport]
[-regexp] [-regint] [-regname] [-prack] [-keepalive] [-keepaliveupd]
[-keepalivebye] [-bye] [-dur]
```

Command options *(no spaces or tabs allowed in parameters):*

```
[-dn]               destination (Optional)

[-sn]               source # (Optional)

-if                 IF# 1 to 10

[-rn]               Resource# (Optional) Comma separated integers 'x' or
                    integer ranges 'x-y' with x and y in [1,255].

[-mod]              Modify existing test parameters (Optional)

[-log]              Log File (Optional)

[-dir]              Be Director: # times to run {0} (Optional) 0 to 999

[-resp]             Be Responder (Optional)

[-mf]               Send MF call setup digits (CAS only) {DTMF} (Optional)

[-isdnb]            ISDN B Channel capability type (ISDN only:
                    56k,64k,speech,udig,rdig,3.1k,udigtone,video) {speech}
                    (Optional)

[-loadtype]         Load Type (fixed or random) {fixed} (Optional)

[-loaddelay]        Load Delay (sec or sec range for 'random') {fixed: 4
                    or random: [4,10]} (Optional) 1 to 999

[-localip]          (IP only) Local IP Address (Optional)

[-localport]        (IP only) Local Port {5060} (Optional) 1024 to 65535

[-localmac]         (IP only) Local MAC Address (Optional)

[-jitter]           (IP only) SIP Jitter Buffer Size {40} (Optional) 10 to
                    100

[-siptos]           (IP only) SIP ToS (8 binary digits) {00000000}
                    (Optional)

[-rtptos]           (IP only) RTP ToS (8 binary digits) {00000000}
                    (Optional)
```

[-dip]	(IP only) Destination / Proxy IP address (Optional)
[-dport]	(IP only) Destination / Proxy Port {5060} (Optional) 1024 to 65535
[-dname]	(IP only) Proxy Server Name (Optional)
[-pktsize]	(IP only) Packet Size (ms) {20} (Optional) 10 to 40
[-decoder]	(IP only) Decoder (PCMu or PCMa) {PCMu} (Optional)
[-user]	(IP only) Authentication User Name (max 32 chars) {} (Optional)
[-pass]	(IP only) Authentication Password (max 32 chars) {} (Optional)
[-displayuser]	(IP only) Display User Name (max 32 chars) {} (Optional)
[-imsauth]	(IP only) IMS Authentication String (max 32 chars) {} (Optional)
[-regip]	(IP only) Registration IP Address (Optional)
[-regport]	(IP only) Registration Port {5060} (Optional) 1024 to 65535
[-regexp]	(IP only) Registration Expiration (min) {10} (Optional) 1 to 255
[-regint]	(IP only) Registration Interval (sec) {30} (Optional) 1 to 50
[-regname]	(IP only) Registration Server Name (Optional)
[-prack]	(IP only) RFC-3262 Support (PRACK) (Optional)
[-keepalive]	(IP only) RFC-4028 Send Keep Alive (UPDATE) (Optional)
[-keepaliveupd]	(IP only) Send Update Session Expires (min) {60} (Optional) 1 to 255
[-keepalivebye]	(IP only) Requested Expiration Time (min) {60} (Optional) 1 to 255
[-bye]	(IP only) Number of "BYE" or "CANCEL" upon disconnect {1} (Optional) 1 to 6
[-dur]	Test Duration (sec) {0(forever)} (Optional) 0 to 30000

owdrx

One Way Delay Receive Test

Create a One Way Delay Receive test (default: director)

Command syntax:

```
owdrx [-dn] [-sn] -if [-rn] [-mod] [-log] [-dir] [-resp] [-mf] [-
isdnb] [-loadtype] [-loaddelay] [-localip] [-localport] [-localmac] [-
jitter] [-siptos] [-rtptos] [-dip] [-dport] [-dname] [-pktsize] [-
decoder] [-user] [-pass] [-displayuser] [-imsauth] [-regip] [-regport]
```

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[-regexp] [-regint] [-regname] [-prack] [-keepalive] [-keepaliveupd]
[-keepalivebye] [-bye] [-dur] [-maxdelay]

Command options *(no spaces or tabs allowed in parameters):*

[-dn]	destination (Optional)
[-sn]	source # (Optional)
-if	IF# 1 to 10
[-rn]	Resource# (Optional) Comma separated integers 'x' or integer ranges 'x-y' with x and y in [1,255].
[-mod]	Modify existing test parameters (Optional)
[-log]	Log File (Optional)
[-dir]	Be Director: # times to run {0} (Optional) 0 to 999
[-resp]	Be Responder (Optional)
[-mf]	Send MF call setup digits (CAS only) {DTMF} (Optional)
[-isdnb]	ISDN B Channel capability type (ISDN only: 56k,64k,speech,udig,rdig,3.1k,udigtone,video) {speech} (Optional)
[-loadtype]	Load Type (fixed or random) {fixed} (Optional)
[-loaddelay]	Load Delay (sec or sec range for 'random') {fixed: 4 or random: [4,10]} (Optional) 1 to 999
[-localip]	(IP only) Local IP Address (Optional)
[-localport]	(IP only) Local Port {5060} (Optional) 1024 to 65535
[-localmac]	(IP only) Local MAC Address (Optional)
[-jitter]	(IP only) SIP Jitter Buffer Size {40} (Optional) 10 to 100
[-siptos]	(IP only) SIP ToS (8 binary digits) {00000000} (Optional)
[-rtptos]	(IP only) RTP ToS (8 binary digits) {00000000} (Optional)
[-dip]	(IP only) Destination / Proxy IP address (Optional)
[-dport]	(IP only) Destination / Proxy Port {5060} (Optional) 1024 to 65535
[-dname]	(IP only) Proxy Server Name (Optional)
[-pktsize]	(IP only) Packet Size (ms) {20} (Optional) 10 to 40
[-decoder]	(IP only) Decoder (PCMu or PCMa) {PCMu} (Optional)
[-user]	(IP only) Authentication User Name (max 32 chars) {} (Optional)
[-pass]	(IP only) Authentication Password (max 32 chars) {} (Optional)
[-displayuser]	(IP only) Display User Name (max 32 chars) {} (Optional)

[-imsauth]	(IP only) IMS Authentication String (max 32 chars) {} (Optional)
[-regip]	(IP only) Registration IP Address (Optional)
[-regport]	(IP only) Registration Port {5060} (Optional) 1024 to 65535
[-regexp]	(IP only) Registration Expiration (min) {10} (Optional) 1 to 255
[-regint]	(IP only) Registration Interval (sec) {30} (Optional) 1 to 50
[-regname]	(IP only) Registration Server Name (Optional)
[-prack]	(IP only) RFC-3262 Support (PRACK) (Optional)
[-keepalive]	(IP only) RFC-4028 Send Keep Alive (UPDATE) (Optional)
[-keepaliveupd]	(IP only) Send Update Session Expires (min) {60} (Optional) 1 to 255
[-keepalivebye]	(IP only) Requested Expiration Time (min) {60} (Optional) 1 to 255
[-bye]	(IP only) Number of "BYE" or "CANCEL" upon disconnect {1} (Optional) 1 to 6
[-dur]	Test Duration (sec) {0(forever)} (Optional) 0 to 999
[-maxdelay]	Maximum Delay (ms) (512, 1024 or 2048) {512} (Optional) 512,1024,2048

owdtx

One Way Delay Transmit Test

Create a One Way Delay Transmit test (default: responder)

Command syntax:

```
owdtx [-dn] [-sn] -if [-rn] [-mod] [-log] [-dir] [-resp] [-mf] [-
isdnb] [-loadtype] [-loaddelay] [-localip] [-localport] [-localmac] [-
jitter] [-siptos] [-rtptos] [-dip] [-dport] [-dname] [-pktsize] [-
decoder] [-user] [-pass] [-displayuser] [-imsauth] [-regip] [-regport]
[-regexp] [-regint] [-regname] [-prack] [-keepalive] [-keepaliveupd]
[-keepalivebye] [-bye] [-dur] [-maxdelay] [-usentp]
```

Command options *(no spaces or tabs allowed in parameters):*

[-dn]	destination (Optional)
[-sn]	source # (Optional)
-if	IF# 1 to 10
[-rn]	Resource# (Optional) Comma separated integers 'x' or integer ranges 'x-y' with x and y in [1,255].
[-mod]	Modify existing test parameters (Optional)

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[-log]	Log File (Optional)
[-dir]	Be Director: # times to run {0} (Optional) 0 to 999
[-resp]	Be Responder (Optional)
[-mf]	Send MF call setup digits (CAS only) {DTMF} (Optional)
[-isdnb]	ISDN B Channel capability type (ISDN only: 56k,64k,speech,udig,rdig,3.1k,udigtone,video) {speech} (Optional)
[-loadtype]	Load Type (fixed or random) {fixed} (Optional)
[-loaddelay]	Load Delay (sec or sec range for 'random') {fixed: 4 or random: [4,10]} (Optional) 1 to 999
[-localip]	(IP only) Local IP Address (Optional)
[-localport]	(IP only) Local Port {5060} (Optional) 1024 to 65535
[-localmac]	(IP only) Local MAC Address (Optional)
[-jitter]	(IP only) SIP Jitter Buffer Size {40} (Optional) 10 to 100
[-siptos]	(IP only) SIP ToS (8 binary digits) {00000000} (Optional)
[-rtptos]	(IP only) RTP ToS (8 binary digits) {00000000} (Optional)
[-dip]	(IP only) Destination / Proxy IP address (Optional)
[-dport]	(IP only) Destination / Proxy Port {5060} (Optional) 1024 to 65535
[-dname]	(IP only) Proxy Server Name (Optional)
[-pktsize]	(IP only) Packet Size (ms) {20} (Optional) 10 to 40
[-decoder]	(IP only) Decoder (PCMu or PCMa) {PCMu} (Optional)
[-user]	(IP only) Authentication User Name (max 32 chars) {} (Optional)
[-pass]	(IP only) Authentication Password (max 32 chars) {} (Optional)
[-displayuser]	(IP only) Display User Name (max 32 chars) {} (Optional)
[-imsauth]	(IP only) IMS Authentication String (max 32 chars) {} (Optional)
[-regip]	(IP only) Registration IP Address (Optional)
[-regport]	(IP only) Registration Port {5060} (Optional) 1024 to 65535
[-regexp]	(IP only) Registration Expiration (min) {10} (Optional) 1 to 255
[-regint]	(IP only) Registration Interval (sec) {30} (Optional) 1 to 50
[-regname]	(IP only) Registration Server Name (Optional)

```
[-prack]          (IP only) RFC-3262 Support (PRACK) (Optional)

[-keepalive]      (IP only) RFC-4028 Send Keep Alive (UPDATE) (Optional)

[-keepaliveupd]   (IP only) Send Update Session Expires (min) {60}
                  (Optional) 1 to 255

[-keepalivebye]   (IP only) Requested Expiration Time (min) {60}
                  (Optional) 1 to 255

[-bye]            (IP only) Number of "BYE" or "CANCEL" upon disconnect
                  {1} (Optional) 1 to 6

[-dur]            Test Duration (sec) {0(forever)} (Optional) 0 to 999

[-maxdelay]       Maximum Delay (ms) (512, 1024 or 2048) {512}
                  (Optional) 512,1024,2048

[-usentp]         Use NTP based reference signal (Optional)
```

pass

Display and configure the PASS server connection settings

With no arguments, the PASS configuration parameters are returned along with the current PASS server connection state.

With any argument, the PASS connection is restarted with the specified values.

Command syntax:

```
pass [-enable] [-server] [-port]
```

Command options *(no spaces or tabs allowed in parameters):*

```
[-enable]         Enable PASS (Optional) no,yes

[-server]         PASS Server Domain name or IP address (Optional)

[-port]           PASS TCP/IP Port {9351} (Optional) 1024 to 65535
```

pcmcap

Control PCM Data Capture

Control the capture PCM data as a .WAV file for each 96X interface. Only a single capture can be active on a specified resource for each interface. The command can be run without any options to display the current PCM capture state. An optional trigger can be requested to start the capture on a specified signal level and with up to 1 second of pre-trigger data saved.

If the -modify option is not specified, then all capture parameters are reset to default values before any changes are made.

If the filename has a '.wav' extension then the audio data is stored in 'WAV' format, otherwise the audio data is stored in its raw PCM format.

Note that the PCM data is buffered and stored to the specified file on a low priority basis. The percentage of capture 'Done' reflects how much data has been stored to the file and the time required can significantly lag behind real time depending on the 96X load.

Command syntax:

```
pcmcap [-if] [-modify] [-rn] [-dur] [-mode] [-trigger] [-triglevel] [-
trigtime] [-filename] [-start] [-stop]
```

Command options *(no spaces or tabs allowed in parameters):*

[-if]	Interface Number (Optional) 1 to 10
[-modify]	Modify Current Settings (Optional)
[-rn]	Resource Number (Optional) 1 to 255
[-dur]	Capture Duration (sec) {10} (Optional) 1 to 999
[-mode]	Capture Mode (tx, rx, or both) {both} (Optional) tx,rx,both
[-trigger]	Use Capture Start Trigger {no} (Optional) no,yes
[-triglevel]	Trigger Level (dBm) {-10} (Optional) -30 to -3
[-trigtime]	Pre-Trigger Capture Time (ms) {500} (Optional) 0 to 1000
[-filename]	Capture File Name (use .wav or .raw extension) (Optional)
[-start]	Start Capture (Optional)
[-stop]	Stop Capture (Optional)

pvit

PVIT Test

Create a PVIT Test (default: director)

Command syntax:

```
pvit [-dn] [-sn] -if [-rn] [-mod] [-log] [-logfreq] [-dir] [-resp] [-
mf] [-isdnb] [-loadtype] [-loaddelay] [-dur] [-mask] [-txonly] [-
rxonly] [Tx Level (dBM)]
```

Command options *(no spaces or tabs allowed in parameters):*

[-dn]	destination (Optional)
[-sn]	source # (Optional)
-if	IF# 1 to 10
[-rn]	Resource# (Optional) Comma separated integers 'x' or integer ranges 'x-y' with x and y in [1,255].
[-mod]	Modify existing test parameters (Optional)
[-log]	Log File (Optional)

[-logfreq]	Log frequency - N (every N [1,1000]), Ns (every N seconds [3,1000]), or final (final result only) {1} (Optional)
[-dir]	Be Director: # times to run {0} (Optional) 0 to 999
[-resp]	Be Responder (Optional)
[-mf]	Send MF call setup digits (CAS only) {DTMF} (Optional)
[-isdnb]	ISDN B Channel capability type (ISDN only: 56k,64k,speech,udig,rdig,3.1k,udigtone,video) {speech} (Optional)
[-loadtype]	Load Type (fixed or random) {fixed} (Optional)
[-loaddelay]	Load Delay (sec or sec range for 'random') {fixed: 4 or random: [4,10]} (Optional) 1 to 999
[-dur]	Test Duration (s) {0} (Optional) 0 to 1000
[-mask]	Mask (ms) {0} (Optional) 0 to 1000
[-txonly]	Transmit only (Optional)
[-rxonly]	Receive only (Optional)
[Tx Level (dBM)] (Optional) -20 to 0	

Discussion:

PVIT stands for Packet-Voice-Impairments-Test or Packet-Voice-Integrity-Test. It is one of a series of VQT (Voice-Quality-Test) tests designed by Sage to specifically address the next generation VoP (Voice-over-Packet) applications. Other related VQT tests available from Sage are SMOS and Echo Sounder. PVIT measures such packet network impairments as packet loss, voice clipping, jitter and comfort noise level. Unlike other impairments such as delay, echoes and lossy voice compression/transcoding which are static in nature and are not necessarily unique to VoP (PSTN also has these problems), the packet loss, voice clipping and jitter type of impairments are unique to VoP and are dynamic in nature. By using PVIT to objectively monitor these dynamic impairments at a regular basis, one can assure the consistence of QoS (Quality-of-Service).

For meaningful PVIT results, the receiver must detect a valid PVIT signal. This can be from another PVIT transmitter or its own signal looped back. The transmitter is off by default but is enabled when a send level is specified.

See also the 'Packet Voice Impairment Test White Paper' available via www.sageinst.com

Examples:

Create a PVIT test responder that sends at -10dBm (and receives) the signal on interface #2 resources 11-18:

        pvit -resp -if 2 -rn 11-18 -10

Create a PVIT test director that calls 782-9293 using interface #3 resource #13, sends the PVIT signal at -12 dBm for 15 seconds and logs to pvit.csv. Repeats 5 times.

```
pvit -dir 5 -dur 15 -if 3 -rn 13 -dn 7829293 -log pvit.csv -12
```

remctrl

Control remote access to unit

Allows switching between telnet / HTTP access and Windows GUI. HTTPS (SSL) can be enabled / disabled and the server SSL certificate to be used for HTTPS can be loaded.

Command syntax:

```
remctrl [-bootui] [-enablessl] [-sslcert] [-restartweb] [-forcesecure]
```

Command options *(no spaces or tabs allowed in parameters)*:

[-bootui]	Enter standalone UI Remote Control Mode (Optional) NO,YES
[-enablessl]	Enable web server HTTPS / SSL access (Optional) NO,YES
[-sslcert]	Load SSL certificate and key (.DER and .PVK file base name) (Optional)
[-restartweb]	Restart web server (Optional)
[-forcesecure]	Configure firewall to allow access via HTTPS / SSH ONLY (Optional) NO,YES

Discussion:

If this unit is optioned to run via the 960 user interface PC application, the -bootui command option will cause the unit to reboot and be accessible only through the 960 user interface application. The 960 user interface application has provisions to return the unit to command line mode.

HTTPS (SSL) can be enabled with '-enablessl yes' only if a SSL certificate and key is or has been previously specified. The SSL certificate consists of two parts: a public certificate in 'DER' format and a matching private key in 'PVK' format. Two files of these types with extensions '.DER' and '.PVK' should be uploaded to the 966 and the common base file name should be supplied to the '-sslcert' command line option.

The open source tool OPENSSL can be used to generate these files.

Note that once the SSL certificate and key have been loaded, the files can be deleted. Also SSL can be disabled and reenabled without reloading the certificate and key.

The -restartweb command line option will terminate existing web sessions and restart the web server without disturbing any other 966 functions (such as this telnet session). A web server restart is required when enabling or disabling HTTPS (SSL).

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The following is a sample OPENSSL session on a Windows computer (NOT 966 telnet command line) which generates sage966ssl.der and sage966ssl.pvk for use as an SSL key:

```
openssl req -x509 -newkey rsa:1024 -keyout skey.pem -out cert.pem
-days 365

openssl x509 -inform PEM -outform DER -in cert.pem -out
sage966ssl.der

pvk -topvk -exc -nocrypt -in skey.pem -out sage966ssl.pvk
```

The user is prompted for the certificate details which will be presented to HTTPS client browsers. When prompted for the 'Common Name' attribute, the response should match the IP address or equivalent domain name that web clients specify in the URL to access the 966. The certificate generated in this manner is self-signed and will generate a warning to this effect to HTTPS client users. Avoiding this warning requires a 'Certificate Authority' (e.g. Verisign) signed certificate. The pvk.exe tool may be obtained from http://www.drh-consultancy.demon.co.uk/pvktool.zip though it is claimed that OPENSSL 0.9.9 will contain the equivalent functionality when this version is available.

The -forcesecure command line option is used to control the 966 firewall. If secure mode is set then only the default ports for SSH (22) and HTTPS (443) will be opened for the 966. The normal ports for telnet (23), FTP (21), and HTTP (80) will be blocked and no client access will be possible directly through these ports. For this reason it is HIGHLY recommended that HTTPS has already been enabled for the 966 and that -forcesecure setting is only enabled when the Administrator is accessing the unit through an SSH or HTTPS session. An SSH host key is provided - 'ssh_host_dsa_key' in the Sage directory; a unique key for a specific host can be generated on a machine configured with the ssh-keygen program using:

```
ssh-keygen -t dsa -f ssh_host_dsa_key -N ""
```

and replacing the supplied key file.

Examples:

Reboot the 966 and allow access only through the 960 user interface application:

```
remctrl -bootui yes
```

Install the HTTPS (SSL) certificate and key and enable HTTPS:

```
remcrtl -sslcert sage966ssl -enablessl yes
```

Restart the web server terminating any current sessions:

```
remctrl -restartweb
```

Require SSH or HTTPS access ONLY to the 966 after this command and a reboot:

```
remctrl -forcesecure yes
```

Sage CLI Command Reference

remaudio

Remote Audio Test

Command syntax:

```
remaudio [-dn] [-sn] -if [-rn] [-mod] [-log] [-dir] [-resp] [-mf] [-
isdnb] [-monif] [-monrn] [-monmode] [-ftalk]
```

Command options *(no spaces or tabs allowed in parameters):*

```
[-dn]            destination (Optional)

[-sn]            source # (Optional)

-if              IF# 1 to 10

[-rn]            Resource# (Optional) Comma separated integers 'x' or
                 integer ranges 'x-y' with x and y in [1,255].

[-mod]           Modify existing test parameters (Optional)

[-log]           Log File (Optional)

[-dir]           Be Director: # times to run {0} (Optional) 0 to 999

[-resp]          Be Responder (Optional)

[-mf]            Send MF call setup digits (CAS only) {DTMF} (Optional)

[-isdnb]         ISDN B Channel capability type (ISDN only:
                 56k,64k,speech,udig,rdig,3.1k,udigtone,video) {speech}
                 (Optional)

[-monif]         Interface to Monitor {1} (Optional) 1 to 10

[-monrn]         Resource to Monitor {1} (Optional) 1 to 99

[-monmode]       Monitor Mode (off, tx, rx, or both) {both} (Optional)

[-ftalk]         Force Talk {false} (Optional)
```

Discussion:

> Force Talk will cause the test to start in 'talk mode', replacing the target test's transmitted audio with the 'talk' audio.

rename

Rename / move a file or directory

Command syntax:

```
rename [-force] source file or directory destination file or directory
```

Command options *(no spaces or tabs allowed in parameters):*

```
[-force]   Force remove when possible (Optional)

source file or directory

destination file or directory
```

report

Report the latest results for the specified test

With the -c option results are displayed at the specified interval in seconds until any character is pressed.

Command syntax:

```
report [-s] [-c] [-type] TestId | IF# [Resource#]
```

Command options *(no spaces or tabs allowed in parameters):*

[-s]	Summary Results Only (Optional)
[-c]	Repeat result output interval (sec) (Optional) 0 to 1000
[-type]	Result type (vf, sip, or both) {both} (Optional)
TestId	IF#	1 to 2147483647
[Resource#]	(Optional) 1 to 64

rfc2833

RFC 2833 Monitor

Monitor RTP payload telephony signals (IP Only).

Command syntax:

```
rfc2833 [-dn] [-sn] -if [-rn] [-mod] [-log] [-dir] [-resp] [-mf] [-isdnb] [-target] [-jitter] [-nopktto]
```

Command options *(no spaces or tabs allowed in parameters):*

[-dn]	destination (Optional)
[-sn]	source # (Optional)
-if	IF# 1 to 10
[-rn]	Resource# (Optional) Comma separated integers 'x' or integer ranges 'x-y' with x and y in [1,255].
[-mod]	Modify existing test parameters (Optional)
[-log]	Log File (Optional)

[-dir]	Be Director: # times to run {0} (Optional) 0 to 999
[-resp]	Be Responder (Optional)
[-mf]	Send MF call setup digits (CAS only) {DTMF} (Optional)
[-isdnb]	ISDN B Channel capability type (ISDN only: 56k,64k,speech,udig,rdig,3.1k,udigtone,video) {speech} (Optional)
[-target]	(IP only) Target IP Address (0.0.0.0 means any) {0.0.0.0} (Optional)
[-jitter]	(IP only) RTP Jitter Buffer Size {40} (Optional) 10 to 100
[-nopktto]	(IP only) No Packet Timeout (s) {30} (Optional) 1 to 999

rmdir

Delete a directory

Command syntax:

    rmdir [-force] directory

Command options *(no spaces or tabs allowed in parameters):*

    [-force] Force remove when possible (Optional)

    directory

shutdown

Shut down the unit controller in preparation for power cycling

Shut down the unit controller and the interface boards dropping all tests and sessions in progress. The unit should then be power-cycled to continue operation. Use of this command before power-cycling helps ensure file system integrity.

Command syntax:

    shutdown

sipmon

SIP Monitor Test

Create an SIP Monitor Test. IP interfaces ONLY.

Command syntax:

```
sipmon -if [-rn] [-log] [-target]
```

Command options *(no spaces or tabs allowed in parameters):*

-if	IF# 1 to 10
[-rn]	Resource# (Optional) Comma separated integers 'x' or integer ranges 'x-y' with x and y in [1,255].
[-log]	Log File (Optional)
[-target]	Target IP Address (0.0.0.0 means any) {0.0.0.0} (Optional)

smosd

SMOS Director Test

Create a SMOS director test that calls a SMOS responder.

Command syntax:

```
smosd [-dn] [-sn] -if [-rn] [-mod] [-log] [-dir] [-resp] [-mf] [-
isdnb] [-loadtype] [-loaddelay] [-localip] [-localport] [-localmac] [-
jitter] [-siptos] [-rtptos] [-dip] [-dport] [-dname] [-pktsize] [-
decoder] [-user] [-pass] [-displayuser] [-imsauth] [-regip] [-regport]
[-regexp] [-regint] [-regname] [-prack] [-keepalive] [-keepaliveupd]
[-keepalivebye] [-bye] [-dur]
```

Command options *(no spaces or tabs allowed in parameters):*

[-dn]	destination (Optional)
[-sn]	source # (Optional)
-if	IF# 1 to 10
[-rn]	Resource# (Optional) Comma separated integers 'x' or integer ranges 'x-y' with x and y in [1,255].
[-mod]	Modify existing test parameters (Optional)
[-log]	Log File (Optional)
[-dir]	Be Director: # times to run {0} (Optional) 0 to 999
[-resp]	Be Responder (Optional)
[-mf]	Send MF call setup digits (CAS only) {DTMF} (Optional)
[-isdnb]	ISDN B Channel capability type (ISDN only: 56k,64k,speech,udig,rdig,3.1k,udigtone,video) {speech} (Optional)
[-loadtype]	Load Type (fixed or random) {fixed} (Optional)
[-loaddelay]	Load Delay (sec or sec range for 'random') {fixed: 4 or random: [4,10]} (Optional) 1 to 999

Sage CLI Command Reference

```
[-localip]        (IP only) Local IP Address (Optional)

[-localport]      (IP only) Local Port {5060} (Optional) 1024 to 65535

[-localmac]       (IP only) Local MAC Address (Optional)

[-jitter]         (IP only) SIP Jitter Buffer Size {40} (Optional) 10 to
                  100

[-siptos]         (IP only) SIP ToS (8 binary digits) {00000000}
                  (Optional)

[-rtptos]         (IP only) RTP ToS (8 binary digits) {00000000}
                  (Optional)

[-dip]            (IP only) Destination / Proxy IP address (Optional)

[-dport]          (IP only) Destination / Proxy Port {5060} (Optional)
                  1024 to 65535

[-dname]          (IP only) Proxy Server Name (Optional)

[-pktsize]        (IP only) Packet Size (ms) {20} (Optional) 10 to 40

[-decoder]        (IP only) Decoder (PCMu or PCMa) {PCMu} (Optional)

[-user]           (IP only) Authentication User Name (max 32 chars) {}
                  (Optional)

[-pass]           (IP only) Authentication Password (max 32 chars) {}
                  (Optional)

[-displayuser]    (IP only) Display User Name (max 32 chars) {}
                  (Optional)

[-imsauth]        (IP only) IMS Authentication String (max 32 chars) {}
                  (Optional)

[-regip]          (IP only) Registration IP Address (Optional)

[-regport]        (IP only) Registration Port {5060} (Optional) 1024 to
                  65535

[-regexp]         (IP only) Registration Expiration (min) {10}
                  (Optional) 1 to 255

[-regint]         (IP only) Registration Interval (sec) {30} (Optional)
                  1 to 50

[-regname]        (IP only) Registration Server Name (Optional)

[-prack]          (IP only) RFC-3262 Support (PRACK) (Optional)

[-keepalive]      (IP only) RFC-4028 Send Keep Alive (UPDATE) (Optional)

[-keepaliveupd]   (IP only) Send Update Session Expires (min) {60}
                  (Optional) 1 to 255

[-keepalivebye]   (IP only) Requested Expiration Time (min) {60}
                  (Optional) 1 to 255

[-bye]            (IP only) Number of "BYE" or "CANCEL" upon disconnect
                  {1} (Optional) 1 to 6

[-dur]            Duration (sec) {9} (Optional) 0 to 255
```

Sage CLI Command Reference

Discussion:

SMOS stands for Sage (Instruments) Mean Opinion Score. SMOS provides an automated, fast, convenient and accurate end-to-end assessment of voice quality for any VoX applications. SMOS follows the automated responder test format and employs robust in-band telemetry and synchronization with true real-time processing. The test can be conveniently used in both laboratory environments as well as across a real telephone network with literally the simple press of one button. SMOS was developed largely out of Sage's prior experience with PSQM and PVIT. SMOS provides an accurate MOS score that truly matches human perception even in a live VoP network where certain impairments such as voice jitters (sudden delay variations or frame slips) and attenuation distortion may render other voice quality tests such as PSQM inapplicable. SMOS contains a reliable Bark-domain partial equalization along with asymmetric masking to properly account for attenuation distortion, and a robust de-jittering algorithm to remove and simultaneously measure any voice jitters (sudden delay variations). The psychoacoustic core is based on the work of Wang et al, Zwicker et al and Sage's own internal research. Besides the MOS number, SMOS also provides a set of other 'orthogonal' measurements that are vitally important in determining the overall voice quality of a network, or trouble-shooting the configuration and traffic engineering of a problematic network. These measurements are orthogonal to MOS because they are not properly reflected in the MOS number, yet they are also important indicators of the overall QoS of the network. These other measurements are round-trip delay, codec type, effective bandwidth, voice-band gain, silence noise level, total amount of compressive jitters (positive frame slips or shortening of delays) and the total amount of expansive jitters/frame slips (lengthening of delays).

SMOS measures an objective Mean-Opinion-Score between 1 and 5. 5 means perfect and 1 means the worst. For all practical measurements, the upper limit of MOS will be between 4.5 and 4.6.

Measurement type	Range	Precision
MOS	[1.00, 4.60]	+-0.05
Delay	[0.0, 5000.0] ms	+-0.125 ms
Codec type	[2.4,64]kbps codecs	PCM,ADPCMs,VCDs
Compressive jitter	[3,2000] ms	+-1 ms
Expansive jitter	[-2000,-3] ms	+-1 ms
Effective bandwidth	[0.00,1.00]	+-0.01
Gain	[-80,20] dB	+-1 dB
Silence noise	[0,90] dBrnC	+-1 dB

A MOS number between 3.0 to 4.0 is considered to be communication quality (intelligible but unnatural, or could be annoying and lack of speaker recognition, etc.). A MOS number below 3.0 is unacceptable for voice communication. In a typical VoP (Voice-over-Packet) network, the measured MOS number largely reflects speech degradation caused by the following likely impairments:

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1. Lossy voice coder compression.

2. Packet loss and voice clipping.

3. Voice jitters in active voice period.

4. Interference signal and noise.

5. Excessive attenuation distortion.

See 'SMOS (Sage Mean Opinion Score) White Paper' via www.sageinst.com for more detailed information.

Examples:

Create a smosd test director that runs 10 times on interface 4 resource 14, calls 234-234-8873, and logs the results to smos.csv:

```
smosd -dir 10 -if 4 -rn 14 -dn 2342348873 -log smos.csv
```

smosr

SMOS Responder Test

Create a SMOS Responder test that waits for calls from a SMOS Director.

Command syntax:

```
smosr [-dn] [-sn] -if [-rn] [-mod] [-log] [-dir] [-resp] [-mf] [-
isdnb] [-localip] [-localport] [-localmac] [-jitter] [-siptos] [-
rtptos] [-dip] [-dport] [-dname] [-pktsize] [-decoder] [-user] [-pass]
[-displayuser] [-imsauth] [-regip] [-regport] [-regexp] [-regint] [-
regname] [-prack] [-keepalive] [-keepaliveupd] [-keepalivebye] [-bye]
[-tptdur]
```

Command options *(no spaces or tabs allowed in parameters)*:

[-dn]	destination (Optional)
[-sn]	source # (Optional)
-if	IF# 1 to 10
[-rn]	Resource# (Optional) Comma separated integers 'x' or integer ranges 'x-y' with x and y in [1,255].
[-mod]	Modify existing test parameters (Optional)
[-log]	Log File (Optional)
[-dir]	Be Director: # times to run {0} (Optional) 0 to 999
[-resp]	Be Responder (Optional)
[-mf]	Send MF call setup digits (CAS only) {DTMF} (Optional)
[-isdnb]	ISDN B Channel capability type (ISDN only: 56k,64k,speech,udig,rdig,3.1k,udigtone,video) {speech} (Optional)

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```
[-localip]        (IP only) Local IP Address (Optional)

[-localport]      (IP only) Local Port {5060} (Optional) 1024 to 65535

[-localmac]       (IP only) Local MAC Address (Optional)

[-jitter]         (IP only) SIP Jitter Buffer Size {40} (Optional) 10 to
                  100

[-siptos]         (IP only) SIP ToS (8 binary digits) {00000000}
                  (Optional)

[-rtptos]         (IP only) RTP ToS (8 binary digits) {00000000}
                  (Optional)

[-dip]            (IP only) Destination / Proxy IP address (Optional)

[-dport]          (IP only) Destination / Proxy Port {5060} (Optional)
                  1024 to 65535

[-dname]          (IP only) Proxy Server Name (Optional)

[-pktsize]        (IP only) Packet Size (ms) {20} (Optional) 10 to 40

[-decoder]        (IP only) Decoder (PCMu or PCMa) {PCMu} (Optional)

[-user]           (IP only) Authentication User Name (max 32 chars) {}
                  (Optional)

[-pass]           (IP only) Authentication Password (max 32 chars) {}
                  (Optional)

[-displayuser]    (IP only) Display User Name (max 32 chars) {}
                  (Optional)

[-imsauth]        (IP only) IMS Authentication String (max 32 chars) {}
                  (Optional)

[-regip]          (IP only) Registration IP Address (Optional)

[-regport]        (IP only) Registration Port {5060} (Optional) 1024 to
                  65535

[-regexp]         (IP only) Registration Expiration (min) {10}
                  (Optional) 1 to 255

[-regint]         (IP only) Registration Interval (sec) {30} (Optional)
                  1 to 50

[-regname]        (IP only) Registration Server Name (Optional)

[-prack]          (IP only) RFC-3262 Support (PRACK) (Optional)

[-keepalive]      (IP only) RFC-4028 Send Keep Alive (UPDATE) (Optional)

[-keepaliveupd]   (IP only) Send Update Session Expires (min) {60}
                  (Optional) 1 to 255

[-keepalivebye]   (IP only) Requested Expiration Time (min) {60}
                  (Optional) 1 to 255

[-bye]            (IP only) Number of "BYE" or "CANCEL" upon disconnect
                  {1} (Optional) 1 to 6

[-tptdur]         TPT Retry Duration (sec) {0} (Optional) 0 to 60
```

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Discussion:

See 'help smosd' for detailed information.

Examples:

Create a SMOS responder that answers incoming calls on interface #1 resources 1-5:

```
smosr -if 1 -rn 1-5
```

smtone

Send/Measure Tone Test

Create a Measure Tone test (default: director) that optionally sends a tone or noise. Note that the PVIT signal is only available on the IP Interface. For all signals other than single-tone, use -nlevel to indicate the signal level.

Command syntax:

```
smtone [-dn] [-sn] -if [-rn] [-mod] [-log] [-logfreq] [-dir] [-resp]
[-mf] [-isdnb] [-loadtype] [-loaddelay] [-localip] [-localport] [-
localmac] [-jitter] [-siptos] [-rtptos] [-dip] [-dport] [-dname] [-
pktsize] [-decoder] [-user] [-pass] [-displayuser] [-imsauth] [-regip]
[-regport] [-regexp] [-regint] [-regname] [-prack] [-keepalive] [-
keepaliveupd] [-keepalivebye] [-bye] [-dur] [-type] [-nlevel] [-wav]
[-encoder] [Tx Freq for tone] [Tx Level for tone]
```

Command options *(no spaces or tabs allowed in parameters):*

[-dn]	destination (Optional)
[-sn]	source # (Optional)
-if	IF# 1 to 10
[-rn]	Resource# (Optional) Comma separated integers 'x' or integer ranges 'x-y' with x and y in [1,255].
[-mod]	Modify existing test parameters (Optional)
[-log]	Log File (Optional)
[-logfreq]	Log frequency - N (every N [1,1000]), Ns (every N seconds [3,1000]), or final (final result only) {1} (Optional)
[-dir]	Be Director: # times to run {0} (Optional) 0 to 999
[-resp]	Be Responder (Optional)
[-mf]	Send MF call setup digits (CAS only) {DTMF} (Optional)
[-isdnb]	ISDN B Channel capability type (ISDN only: 56k,64k,speech,udig,rdig,3.1k,udigtone,video) {speech} (Optional)
[-loadtype]	Load Type (fixed or random) {fixed} (Optional)

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[-loaddelay]	Load Delay (sec or sec range for 'random') {fixed: 4 or random: [4,10]} (Optional) 1 to 999
[-localip]	(IP only) Local IP Address (Optional)
[-localport]	(IP only) Local Port {5060} (Optional) 1024 to 65535
[-localmac]	(IP only) Local MAC Address (Optional)
[-jitter]	(IP only) SIP Jitter Buffer Size {40} (Optional) 10 to 100
[-siptos]	(IP only) SIP ToS (8 binary digits) {00000000} (Optional)
[-rtptos]	(IP only) RTP ToS (8 binary digits) {00000000} (Optional)
[-dip]	(IP only) Destination / Proxy IP address (Optional)
[-dport]	(IP only) Destination / Proxy Port {5060} (Optional) 1024 to 65535
[-dname]	(IP only) Proxy Server Name (Optional)
[-pktsize]	(IP only) Packet Size (ms) {20} (Optional) 10 to 40
[-decoder]	(IP only) Decoder (PCMu or PCMa) {PCMu} (Optional)
[-user]	(IP only) Authentication User Name (max 32 chars) {} (Optional)
[-pass]	(IP only) Authentication Password (max 32 chars) {} (Optional)
[-displayuser]	(IP only) Display User Name (max 32 chars) {} (Optional)
[-imsauth]	(IP only) IMS Authentication String (max 32 chars) {} (Optional)
[-regip]	(IP only) Registration IP Address (Optional)
[-regport]	(IP only) Registration Port {5060} (Optional) 1024 to 65535
[-regexp]	(IP only) Registration Expiration (min) {10} (Optional) 1 to 255
[-regint]	(IP only) Registration Interval (sec) {30} (Optional) 1 to 50
[-regname]	(IP only) Registration Server Name (Optional)
[-prack]	(IP only) RFC-3262 Support (PRACK) (Optional)
[-keepalive]	(IP only) RFC-4028 Send Keep Alive (UPDATE) (Optional)
[-keepaliveupd]	(IP only) Send Update Session Expires (min) {60} (Optional) 1 to 255
[-keepalivebye]	(IP only) Requested Expiration Time (min) {60} (Optional) 1 to 255
[-bye]	(IP only) Number of "BYE" or "CANCEL" upon disconnect {1} (Optional) 1 to 6

```
[-dur]              Test Duration(s) {0} (Optional) 0 to 86400

[-type]             Data Type (tone, white, Hoth, ERL, SRLlow, SRLhigh,
                    PVIT, THD, IMD4, IMD2) {tone} (Optional)

[-nlevel]           Noise Level (Optional) -60 to 3

[-wav]              8 kHz WAV/PCM File Maximum Length 32 sec (Optional)

[-encoder]          Encoder (PCMu or PCMa) {PCMu} (Optional)

[Tx Freq for tone] (Optional) 20 to 7960

[Tx Level for tone] (Optional) -60 to 3
```

Examples:

Create a smtone responder on interface #2, resource #3 that answers a call, sends a
tone at 1004Hz at -12 dBm until the far end hangs up.

```
smtone -if 2 -rn 3 -resp 1004 -12
```

Create a smtone responder on interface #2, resource #3 that answers a call, sends white
noise at -12 dBm until the far end hangs up.

```
smtone -if 2 -rn 3 -resp -type white -nlevel -12
```

Create a smtone responder on interface #2, resource #3 that answers a call, sends a
tone at 1004Hz at -12 dBm for 20 seconds and then hangs up.

```
smtone -if 2 -rn 3 -resp -dur 20 1004 -12
```

Create a smtone director on the first available resource of interface #1 that calls '831-
761-1000', sends tone for 12 seconds at 440Hz, -3 dBm and logs any measured
(returned) tone to mtone.log.

```
smtone -if 1 -dn 8317611000 -dur 12 -log mtone.log 440 -3
```

Create a smtone director on the first available resource of interface #1 that calls '831-
761-1000' and logs any measured tone to mtone.log for 12 seconds. No tone sent.

```
smtone -if 1 -dn 8317611000 -dur 12 -log mtone.log
```

spesqd

SPESQ Director Test

Create a SPESQ director test that calls a SPESQ responder.

Command syntax:

```
spesqd [-dn] [-sn] -if [-rn] [-mod] [-log] [-dir] [-resp] [-mf] [-
isdnb] [-loadtype] [-loaddelay] [-localip] [-localport] [-localmac] [-
jitter] [-siptos] [-rtptos] [-dip] [-dport] [-dname] [-pktsize] [-
decoder] [-user] [-pass] [-displayuser] [-imsauth] [-regip] [-regport]
[-regexp] [-regint] [-regname] [-prack] [-keepalive] [-keepaliveupd]
[-keepalivebye] [-bye] [Duration (sec) {9}]
```

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Command options *(no spaces or tabs allowed in parameters):*

```
[-dn]           destination (Optional)

[-sn]           source # (Optional)

-if             IF# 1 to 10

[-rn]           Resource# (Optional) Comma separated integers 'x' or
                integer ranges 'x-y' with x and y in [1,255].

[-mod]          Modify existing test parameters (Optional)

[-log]          Log File (Optional)

[-dir]          Be Director: # times to run {0} (Optional) 0 to 999

[-resp]         Be Responder (Optional)

[-mf]           Send MF call setup digits (CAS only) {DTMF} (Optional)

[-isdnb]        ISDN B Channel capability type (ISDN only:
                56k,64k,speech,udig,rdig,3.1k,udigtone,video) {speech}
                (Optional)

[-loadtype]     Load Type (fixed or random) {fixed} (Optional)

[-loaddelay]    Load Delay (sec or sec range for 'random') {fixed: 4
                or random: [4,10]} (Optional) 1 to 999

[-localip]      (IP only) Local IP Address (Optional)

[-localport]    (IP only) Local Port {5060} (Optional) 1024 to 65535

[-localmac]     (IP only) Local MAC Address (Optional)

[-jitter]       (IP only) SIP Jitter Buffer Size {40} (Optional) 10 to
                100

[-siptos]       (IP only) SIP ToS (8 binary digits) {00000000}
                (Optional)

[-rtptos]       (IP only) RTP ToS (8 binary digits) {00000000}
                (Optional)

[-dip]          (IP only) Destination / Proxy IP address (Optional)

[-dport]        (IP only) Destination / Proxy Port {5060} (Optional)
                1024 to 65535

[-dname]        (IP only) Proxy Server Name (Optional)

[-pktsize]      (IP only) Packet Size (ms) {20} (Optional) 10 to 40

[-decoder]      (IP only) Decoder (PCMu or PCMa) {PCMu} (Optional)

[-user]         (IP only) Authentication User Name (max 32 chars) {}
                (Optional)

[-pass]         (IP only) Authentication Password (max 32 chars) {}
                (Optional)

[-displayuser]  (IP only) Display User Name (max 32 chars) {}
                (Optional)

[-imsauth]      (IP only) IMS Authentication String (max 32 chars) {}
                (Optional)
```

```
[-regip]            (IP only) Registration IP Address (Optional)

[-regport]          (IP only) Registration Port {5060} (Optional) 1024 to
                    65535

[-regexp]           (IP only) Registration Expiration (min) {10}
                    (Optional) 1 to 255

[-regint]           (IP only) Registration Interval (sec) {30} (Optional)
                    1 to 50

[-regname]          (IP only) Registration Server Name (Optional)

[-prack]            (IP only) RFC-3262 Support (PRACK) (Optional)

[-keepalive]        (IP only) RFC-4028 Send Keep Alive (UPDATE) (Optional)

[-keepaliveupd]     (IP only) Send Update Session Expires (min) {60}
                    (Optional) 1 to 255

[-keepalivebye]     (IP only) Requested Expiration Time (min) {60}
                    (Optional) 1 to 255

[-bye]              (IP only) Number of "BYE" or "CANCEL" upon disconnect
                    {1} (Optional) 1 to 6

[Duration (sec) {9}] (Optional) 0 to 255
```

spesqr

SPESQ Responder Test

Create a SPESQ Responder test that waits for calls from a SPESQ Director.

Command syntax:

```
spesqr [-dn] [-sn] -if [-rn] [-mod] [-log] [-dir] [-resp] [-mf] [-
isdnb] [-localip] [-localport] [-localmac] [-jitter] [-siptos] [-
rtptos] [-dip] [-dport] [-dname] [-pktsize] [-decoder] [-user] [-pass]
[-displayuser] [-imsauth] [-regip] [-regport] [-regexp] [-regint] [-
regname] [-prack] [-keepalive] [-keepaliveupd] [-keepalivebye] [-bye]
```

Command options *(no spaces or tabs allowed in parameters):*

```
[-dn]               destination (Optional)

[-sn]               source # (Optional)

-if                 IF# 1 to 10

[-rn]               Resource# (Optional) Comma separated integers 'x' or
                    integer ranges 'x-y' with x and y in [1,255].

[-mod]              Modify existing test parameters (Optional)

[-log]              Log File (Optional)

[-dir]              Be Director: # times to run {0} (Optional) 0 to 999

[-resp]             Be Responder (Optional)

[-mf]               Send MF call setup digits (CAS only) {DTMF} (Optional)
```

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[-isdnb]	ISDN B Channel capability type (ISDN only: 56k,64k,speech,udig,rdig,3.1k,udigtone,video) {speech} (Optional)
[-localip]	(IP only) Local IP Address (Optional)
[-localport]	(IP only) Local Port {5060} (Optional) 1024 to 65535
[-localmac]	(IP only) Local MAC Address (Optional)
[-jitter]	(IP only) SIP Jitter Buffer Size {40} (Optional) 10 to 100
[-siptos]	(IP only) SIP ToS (8 binary digits) {00000000} (Optional)
[-rtptos]	(IP only) RTP ToS (8 binary digits) {00000000} (Optional)
[-dip]	(IP only) Destination / Proxy IP address (Optional)
[-dport]	(IP only) Destination / Proxy Port {5060} (Optional) 1024 to 65535
[-dname]	(IP only) Proxy Server Name (Optional)
[-pktsize]	(IP only) Packet Size (ms) {20} (Optional) 10 to 40
[-decoder]	(IP only) Decoder (PCMu or PCMa) {PCMu} (Optional)
[-user]	(IP only) Authentication User Name (max 32 chars) {} (Optional)
[-pass]	(IP only) Authentication Password (max 32 chars) {} (Optional)
[-displayuser]	(IP only) Display User Name (max 32 chars) {} (Optional)
[-imsauth]	(IP only) IMS Authentication String (max 32 chars) {} (Optional)
[-regip]	(IP only) Registration IP Address (Optional)
[-regport]	(IP only) Registration Port {5060} (Optional) 1024 to 65535
[-regexp]	(IP only) Registration Expiration (min) {10} (Optional) 1 to 255
[-regint]	(IP only) Registration Interval (sec) {30} (Optional) 1 to 50
[-regname]	(IP only) Registration Server Name (Optional)
[-prack]	(IP only) RFC-3262 Support (PRACK) (Optional)
[-keepalive]	(IP only) RFC-4028 Send Keep Alive (UPDATE) (Optional)
[-keepaliveupd]	(IP only) Send Update Session Expires (min) {60} (Optional) 1 to 255
[-keepalivebye]	(IP only) Requested Expiration Time (min) {60} (Optional) 1 to 255
[-bye]	(IP only) Number of "BYE" or "CANCEL" upon disconnect {1} (Optional) 1 to 6

Sage CLI Command Reference

start

Start specified test(s)

Must be test owner or Admin; test must be disabled. Interface and resource #s can be specified with positional or named option parameters.

Command syntax:

```
start [-if] [-rn] [-a] [-m] [TestId | IF#] [Resource#]
```

Command options *(no spaces or tabs allowed in parameters):*

[-if]	IF# (Optional) Comma separated integers 'x' or integer ranges 'x-y' with x and y in [1,10].
[-rn]	Resource# (Optional) Comma separated integers 'x' or integer ranges 'x-y' with x and y in [1,255].
[-a]	All (Optional)
[-m]	Manual Mode (Optional)
[TestId	IF#]	(Optional) 1 to 2147483647
[Resource#]	(Optional) Comma separated integers 'x' or integer ranges 'x-y' with x and y in [1,255].

stop

Stop specified test(s)

Must be test owner or Admin; test must be enabled. Interface and resource #s can be specified with positional or named option parameters.

Command syntax:

```
stop [-if] [-rn] [-a] [-m] [TestId | IF#] [Resource#]
```

Command options *(no spaces or tabs allowed in parameters):*

[-if]	IF# (Optional) Comma separated integers 'x' or integer ranges 'x-y' with x and y in [1,10].
[-rn]	Resource# (Optional) Comma separated integers 'x' or integer ranges 'x-y' with x and y in [1,255].
[-a]	All (Optional)
[-m]	Manual Mode (Optional)
[TestId	IF#]	(Optional) 1 to 2147483647
[Resource#]	(Optional) Comma separated integers 'x' or integer ranges 'x-y' with x and y in [1,255].

Sage CLI Command Reference

10xd

10x Director Test

Create a 100, 102, or 105 Director Test.

Command syntax:

```
10xd [-dn] [-sn] -if [-rn] [-mod] [-log] [-logfreq] [-dir] [-resp] [-
mf] [-isdnb] [-loadtype] [-loaddelay] [-all] [-gsl] [-loss01004] [-
loss404] [-loss1004] [-loss2804] [-cmsg] [-cnotch] [-erl] [-srl] [-
srh] [-comlvl] [-pause] [-tptwait] [-t100] [-t102]
```

Command options *(no spaces or tabs allowed in parameters):*

[-dn]	destination (Optional)
[-sn]	source # (Optional)
-if	IF# 1 to 10
[-rn]	Resource# (Optional) Comma separated integers 'x' or integer ranges 'x-y' with x and y in [1,255].
[-mod]	Modify existing test parameters (Optional)
[-log]	Log File (Optional)
[-logfreq]	Log frequency - N (every N [1,1000]), Ns (every N seconds [3,1000]), or final (final result only) {1} (Optional)
[-dir]	Be Director: # times to run {0} (Optional) 0 to 999
[-resp]	Be Responder (Optional)
[-mf]	Send MF call setup digits (CAS only) {DTMF} (Optional)
[-isdnb]	ISDN B Channel capability type (ISDN only: 56k,64k,speech,udig,rdig,3.1k,udigtone,video) {speech} (Optional)
[-loadtype]	Load Type (fixed or random) {fixed} (Optional)
[-loaddelay]	Load Delay (sec or sec range for 'random') {fixed: 4 or random: [4,10]} (Optional) 1 to 999
[-all]	Perform All Tests (Optional)
[-gsl]	Perform Gain/Slope Tests (Optional)
[-loss01004]	Perform Loss 1004Hz 0 dBm (Optional)
[-loss404]	Perform Loss 404Hz -16 dBm (Optional)
[-loss1004]	Perform Loss 1004Hz -16 dBm (Optional)
[-loss2804]	Perform Loss 2804Hz -16 dBm (Optional)
[-cmsg]	Perform C-message noise (Optional)
[-cnotch]	Perform C-notch noise (Optional)
[-erl]	Perform ERL (Optional)

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```
[-srl]              Perform SRL (Optional)

[-srh]              Perform SRH (Optional)

[-comlvl]           Comm Level (dB) {-10} (Optional) -20 to 0

[-pause]            Inter-Test pause (ms) {100} (Optional) 10 to 1000

[-tptwait]          TPT Wait time (ms) {15000} (Optional) 1000 to 60000

[-t100]             100-type Director {105} (Optional)

[-t102]             102-type Director {105} (Optional)
```

Discussion:

An implementation of the 100, 102, & 105 tests described in the AT&T 'Compatibility Bulletin No. 106' (aka CB106) of December, 1981.

The standard 105 test includes the following 9 individual user selectable tests:

1. Loss at 1004 Hz with 0 dBm TX level

2. Loss at 404 Hz with -16 dBm TX level (a 'gain/slope' test)

3. Loss at 1004 Hz with -16 dBm TX level (a 'gain/slope' test)

4. Loss at 2804 Hz with -16 dBm TX level (a 'gain/slope' test)

5. C-message filter-weighted noise measurement.

6. C-message filter-weighted and tone-notched noise measurement.

7. ERL: echo return loss

8. SRL: singing return loss

9. SRH: singing return loss high

If no tests are specified then all standard 105 tests are run. Type 100 & 102 directors will ignore any selected tests, performing as dictated by CB106:

Type 100 measures loss, C-notch, Cmsg, ERL, SRL and SRH

Type 102 measures (repeatedly) loss, C-notch and Cmsg

A parameter is provided to adjust the director-responder communication (telemetry) level in the presence excessive gain or attenuation. Also, to inter-operate with responder implementations that are slow to receive subsequent commands, a parameter is exposed to alter the inter-test delay.

Note that due to the required telemetry, results from the far end have the following constraints:

C-Message: >= 15 bBrnC

C-Notch: >= 34 dBrnC

ERL, SRL, SRH: <= 40 dB

In the interests of compatibility & consistency the near end results impose the same constraints, even though our modern precision measurement equipment can do much better

Examples:

Start a 105 Test to destination #332-2345 and run all nine tests on resource #2 of interface #1:

```
10xd -if 1 -rn 2 -dn 3322345 -all
```

10xr

10x Responder Test

Create a 100, 102, 105 (default), or 108 Responder Test.

Command syntax:

```
10xr [-dn] [-sn] -if [-rn] [-mod] [-log] [-logfreq] [-dir] [-resp] [-
mf] [-isdnb] [-t100] [-t102] [-t108] [-comlvl] [-pause] [-tptdur] [-
dur]
```

Command options *(no spaces or tabs allowed in parameters)*:

[-dn]	destination (Optional)
[-sn]	source # (Optional)
-if	IF# 1 to 10
[-rn]	Resource# (Optional) Comma separated integers 'x' or integer ranges 'x-y' with x and y in [1,255].
[-mod]	Modify existing test parameters (Optional)
[-log]	Log File (Optional)
[-logfreq]	Log frequency - N (every N [1,1000]), Ns (every N seconds [3,1000]), or final (final result only) {1} (Optional)
[-dir]	Be Director: # times to run {0} (Optional) 0 to 999
[-resp]	Be Responder (Optional)
[-mf]	Send MF call setup digits (CAS only) {DTMF} (Optional)
[-isdnb]	ISDN B Channel capability type (ISDN only: 56k,64k,speech,udig,rdig,3.1k,udigtone,video) {speech} (Optional)
[-t100]	100-type Responder {105} (Optional)
[-t102]	102-type Responder {105} (Optional)
[-t108]	108-type Responder {105} (Optional)
[-comlvl]	Comm Level (dB) {-10} (Optional) -20 to 0

```
[-pause]        Results pause (ms) {100} (Optional) 10 to 1000
[-tptdur]       Sent TPT Duration (ms) {3500} (Optional) 1000 to 5000
[-dur]          Test Duration (sec) {0(forever)} (Optional) 0 to 1000
```

Discussion:

An implementation of the 105 tests described in the AT&T 'Compatibility Bulletin No. 106' (aka CB106) of December, 1981. Also, implements type 100, 102, 108 responders.

The standard 105 test includes the following 9 individual tests:

1. Loss at 1004 Hz with 0 dBm TX level
2. Loss at 404 Hz with -16 dBm TX level
3. Loss at 1004 Hz with -16 dBm TX level
4. Loss at 2804 Hz with -16 dBm TX level
5. C-message filter-weighted noise measurement.
6. C-message filter-weighted and tone-notched noise measurement.
7. ERL: echo return loss
8. SRL: singing return loss
9. SRH: singing return loss high

The 100-type responder transmits 1004 Hz for 5.5 seconds, the becomes a quiet termination. The 102-type responder transmits 1004 Hz at 0 dBm, 9 seconds on, 1 second off. The 108-type responder is a loopback.

A parameter is provided to adjust the director-responder communication (telemetry) level in the presence excessive gain or attenuation. Also, to inter-operate with director implementations that are slow to receive results, a parameter is exposed to delay sending the results back.

Note that due to the required telemetry, results from the far end have the following constraints:

C-Message: >= 15 bBrnC
C-Notch: >= 34 dBrnC
ERL, SRL, SRH: <= 40 dB

In the interests of compatibility & consistency the near end results impose the same constraints, even though our modern precision measurement equipment can do much better.

Examples:

Start a 105 Responder on resource #2 of interface #1:

```
10Xr -if 1 -rn 2
```

Sage CLI Command Reference

tests

View status of tests

View test status of all tests or specified interface

Command syntax:

```
tests [-o] [-d] [IF#] [Resource#]
```

Command options *(no spaces or tabs allowed in parameters):*

```
[-o]            Owned Tests (Optional)
[-d]            Defined Tests (Optional)
[IF#]           (Optional) 1 to 10
[Resource#]     (Optional) 1 to 64
```

Discussion:

This command shows the tests associated with each resource. Resources without defined tests are considered 'idle'. The command options allow for filtering the (potentially large) results to show tests of interest. If a single resource is specified, the test parameters are shown.

Also see: 'intfc'

Examples:

To view the status of all tests on all interfaces, just use:

```
tests
```

To view the status of all tests on, say, interface 2, use:

```
tests 2
```

To view the status of the test running on, say, interface #3 resource #4, use:

```
tests 3 4
```

To view all the tests on all interfaces that YOU own, use:

```
tests -o
```

To view only resources with defined tests on all interfaces, use:

```
tests -d
```

To view the defined tests on, say, interface #3, use:

```
tests -d 3
```

Sage CLI Command Reference

time

Display, set and configures automatic updates of the system time

With no arguments, the system time and automatic update configuration is returned. Since NTP Servers may be too busy at times to respond, a delay should be expected between time update requests and their fulfillment. The unit time resolution is one second so fractional second accuracy should not be expected. Admin privileges are required to change time settings.

Command syntax:

```
time [-ntpenable] [-ntpperiod] [-ntpservers] [-ntpsync] [-tzset] [-
tzlist] [Time]
```

Command options *(no spaces or tabs allowed in parameters):*

[-ntpenable]	Enable NTP Client (yes, no) {yes} (Optional)
[-ntpperiod]	NTP UpdatePeriod (hours) {8} (Optional) 1 to 999
[-ntpservers]	NTP Servers {time-a.nist.gov;time-b.nist.gov;time.windows.com} (Optional)
[-ntpsync]	Start Update from NTP server now (Optional)
[-tzset]	Set Time Zone (Optional) 1 to 76
[-tzlist]	List Time Zones (Optional)
[Time]	(Optional) HH:MM:SS

tone23

23 Tone Test

Create a 23 Tone Test (default: director).

Command syntax:

```
tone23 [-dn] [-sn] -if [-rn] [-mod] [-log] [-logfreq] [-dir] [-resp]
[-mf] [-isdnb] [-loadtype] [-loaddelay] [-dur] [-cycles] [-txonly] [-
rxonly] [Tx Level (dBM)]
```

Command options *(no spaces or tabs allowed in parameters):*

[-dn]	destination (Optional)
[-sn]	source # (Optional)
-if	IF# 1 to 10
[-rn]	Resource# (Optional) Comma separated integers 'x' or integer ranges 'x-y' with x and y in [1,255].
[-mod]	Modify existing test parameters (Optional)
[-log]	Log File (Optional)

[-logfreq]	Log frequency - N (every N [1,1000]), Ns (every N seconds [3,1000]), or final (final result only) {1} (Optional)
[-dir]	Be Director: # times to run {0} (Optional) 0 to 999
[-resp]	Be Responder (Optional)
[-mf]	Send MF call setup digits (CAS only) {DTMF} (Optional)
[-isdnb]	ISDN B Channel capability type (ISDN only: 56k,64k,speech,udig,rdig,3.1k,udigtone,video) {speech} (Optional)
[-loadtype]	Load Type (fixed or random) {fixed} (Optional)
[-loaddelay]	Load Delay (sec or sec range for 'random') {fixed: 4 or random: [4,10]} (Optional) 1 to 999
[-dur]	Test Duration (s) {0} (Optional) 0 to 1000
[-cycles]	64ms Cycles to Average {10} (Optional) 1 to 100
[-txonly]	Transmit only (Optional)
[-rxonly]	Receive only (Optional)
[Tx Level (dBM)] (Optional) -40 to -6	

Examples:

Create a tone23 director on interface #2, resource #3 that sends and receives the test signal data for 30 seconds.

```
tone23 -if 2 -rn 3 -dur 30
```

type

Display a file

Displays the contents of the specified file.

Command syntax:

```
type filename
```

Command options *(no spaces or tabs allowed in parameters)*:

```
filename
```

unit

Display unit info, activate options, IP addr Cfg, load/save conf file, enable / disable 'ping'

Sage CLI Command Reference

Command syntax:

```
unit [-name] [-key] [-ip] [-loadcfg] [-loadfact] [-savecfgas] [-
savecfg] [-autosave] [-enableping] [-disableping] [-alarm1] [-alarm2]
[-remmsg]
```

Command options *(no spaces or tabs allowed in parameters):*

```
[-name]          New networkname (Optional)

[-key]           New options key (Optional)

[-ip]            Configure IP Address (Optional)

[-loadcfg]       Load config from file (Optional)

[-loadfact]      Load config from factory defaults (Optional)

[-savecfgas]     Save and copy config snapshot to new file (Optional)

[-savecfg]       Save config to current or new file (Optional)

[-autosave]      Automatically save config file (Optional) off,on

[-enableping]    Enable Ping (Optional)

[-disableping]   Disable Ping (Optional)

[-alarm1]        Conditions to trigger Alarm 1 (Optional)

[-alarm2]        Conditions to trigger Alarm 2 (Optional)

[-remmsg]        Enable Telnet / HTTP messages in remctrl mode
                 (Optional) no,yes
```

Additional command option details:

With no parameters, lists detailed unit information. Admin rights are required to modify the unit settings.

The -ip option allows configuration of IP and other network information.

The -loadcfg option loads a config file; if the file doesn't exist an 'Empty' configuration is generated.

The -loadfact option copies the factory.cfg file (FTP accessible) to the specified file and initiates a load from that file; if the file doesn't exist an 'Empty' configuration is generated.

The -savecfgas option saves a copy of the current config file to the specified file. The current active config file remains as before.

The -savecfg option saves the current config to the specified file and changes (if necessary) the current active config file to the specified file. The single character '.' can be used in place of the specified file as a shorthand for the current active config file.

The -autosave option allows control of changes made to the saved config files. If 'on' then the config file is periodically written with the current unit state. If 'off' then the config file is not modified. In either case the config file can be explicitly updated by specifying '-savecfg .'.

Alarms can be defined to monitor system health parameters and trigger relays exposed on the back panel. The alarm1 and alarm2 parameters specify a comma separated list of unit physical parameters which will trigger the alarm when the physical parameters are out of their normal range. The allowed list elements for alarm1 and alarm2 are:

TEMP → temperature above 65 degrees C

FAN1 → fan 1 speed below 250 RPM

FAN2 → fan 2 speed below 250 RPM

3V → 3 volt power outside [3.135,3.465] volts

5V → 5 volt power outside [4.75,5.25] volts

POWER → power is on (other elements ignored)

NONE → disable the alarm (default)

For example, to trigger alarm 2 on temperature or power problems use:

```
unit –alarm2 TEMP,3V,5V
```

The -remmsg option allows Telnet and HTTP client requests to receive a readable message when the unit is in remote control mode. If this value is set to 'no', then the firewall will block these requests and the client will receive a generic system error message.

user

Access user information

With no params, lists the current logged-in user info. Admin rights req'd to view all defined users.

Command syntax:

```
user [-a] [-d] [-tto] [-wto]
```

Command options *(no spaces or tabs allowed in parameters)*:

```
[-a]            List all logged in users (Optional)
[-d]            List defined users (Optional)
[-tto]          Telnet session timeout(min) {10} (Optional) 3 to 1440
[-wto]          Web session timeout(min) {3} (Optional) 3 to 1440
```

useradd

Create a new user (Admin only)

Creates a new user with the specified password, group, and associated directory.

Sage CLI Command Reference

Command syntax:

    useradd username password group

Command options *(no spaces or tabs allowed in parameters):*

    username
    password
    group

Group details:

Group names: ADMINISTRATOR, POWERUSERPLUS, POWERUSER, CRAFTUSER, UPGRADER, FULLRATEBERT.

Privileges by group:

User Group	Privileges
ADMINISTRATOR	ADMIN, CFGINT, WEBMULTITEST
POWERUSERPLUS	CFGINT, WEBMULTITEST
POWERUSER	CFGOWNINT, WEBMULTITEST
CRAFTUSER	--
UPGRADER	UPGRADE
FULLRATEBERT	ADMIN, CFGINT, FULLRATEBERT

Functions by privilege:

Privilege	Function enabled only with this privilege
ADMIN	Set user defined BERT patterns and loop codes
ADMIN	Set date and time
ADMIN	Kill a telnet or HTTP session
ADMIN	Put unit into remote control mode
ADMIN	Start, stop, modify, or delete a test owned by another user
ADMIN	Change unit name, options, or other configuration parameters
ADMIN	Change unit's controlling config file name or save status
ADMIN	Control unit ping status and alarm conditions
ADMIN	Save, restore, or upgrade the unit (CLI upgrade command)
ADMIN	Add a new user, delete, modify group, or change user password
ADMIN	List all defined users
ADMIN	Set global telnet or HTTP session timeouts

ADMIN	Restart the unit
ADMIN	Reset interface test or alarm counters
ADMIN	Display files and directories of other users
ADMIN	Control scheduling of tests owned by another user
CFGINT	Configure interface with resources owned by another user
CFGOWNINT	Configure interface with no resources owned by another user
WEBMULTITEST	Allow multiple test start, stop, delete, and modify in HTML client
FULLRATEBERT	Enable HTML client's full span BERT testing mode
UPGRADE	Allow FTP access to system file directory

userdel

Deletes a user (Admin only)

Deletes an existing user and associated directory. Admin only.

Command syntax:

```
userdel username
```

Command options *(no spaces or tabs allowed in parameters)*:

```
username
```

usergrp

Changes group of specific user (Admin only)

Command syntax:

```
usergrp username group
```

Command options *(no spaces or tabs allowed in parameters)*:

```
username
```
```
group
```

Group details:

Group names: ADMINISTRATOR, POWERUSERPLUS, POWERUSER, CRAFTUSER, UPGRADER, FULLRATEBERT.

Sage CLI Command Reference

Privileges by group:

User Group	Privileges
ADMINISTRATOR	ADMIN, CFGINT, WEBMULTITEST
POWERUSERPLUS	CFGINT, WEBMULTITEST
POWERUSER	CFGOWNINT, WEBMULTITEST
CRAFTUSER	--
UPGRADER	UPGRADE
FULLRATEBERT	ADMIN, CFGINT, FULLRATEBERT

Functions by privilege:

Privilege	Function enabled only with this privilege
ADMIN	Set user defined BERT patterns and loop codes
ADMIN	Set date and time
ADMIN	Kill a telnet or HTTP session
ADMIN	Put unit into remote control mode
ADMIN	Start, stop, modify, or delete a test owned by another user
ADMIN	Change unit name, options, or other configuration parameters
ADMIN	Change unit's controlling config file name or save status
ADMIN	Control unit ping status and alarm conditions
ADMIN	Save, restore, or upgrade the unit (CLI upgrade command)
ADMIN	Add a new user, delete, modify group, or change user password
ADMIN	List all defined users
ADMIN	Set global telnet or HTTP session timeouts
ADMIN	Restart the unit
ADMIN	Reset interface test or alarm counters
ADMIN	Display files and directories of other users
ADMIN	Control scheduling of tests owned by another user
CFGINT	Configure interface with resources owned by another user
CFGOWNINT	Configure interface with no resources owned by another user
WEBMULTITEST	Allow multiple test start, stop, delete, and modify in HTML client
FULLRATEBERT	Enable HTML client's full span BERT testing mode

version

Display the command interpreter version

Script writers should validate that the Command Language version is correct as the first command after logging in.

Command syntax:

```
version
```

vftrans

VF Transient Test

Create a VF Transient test (default: director) that optionally sends a tone. The tone is sent if the frequency is specified.

Command syntax:

```
vftrans [-dn] [-sn] -if [-rn] [-mod] [-log] [-logfreq] [-dir] [-resp]
[-mf] [-isdnb] [-loadtype] [-loaddelay] [-localip] [-localport] [-
localmac] [-jitter] [-siptos] [-rtptos] [-dip] [-dport] [-dname] [-
pktsize] [-decoder] [-user] [-pass] [-displayuser] [-imsauth] [-regip]
[-regport] [-regexp] [-regint] [-regname] [-prack] [-keepalive] [-
keepaliveupd] [-keepalivebye] [-bye] [-dur] [-toneThresh] [-impThresh]
[-impStep] [-impBlk] [-phThresh] [-phBlk] [-gainThresh] [-gainBlk] [Tx
Freq for tone(Hz) {1010}] [Tx Level for tone(dBm) {-10}]
```

Command options *(no spaces or tabs allowed in parameters):*

[-dn]	destination (Optional)
[-sn]	source # (Optional)
-if	IF# 1 to 10
[-rn]	Resource# (Optional) Comma separated integers 'x' or integer ranges 'x-y' with x and y in [1,255].
[-mod]	Modify existing test parameters (Optional)
[-log]	Log File (Optional)
[-logfreq]	Log frequency - N (every N [1,1000]), Ns (every N seconds [3,1000]), or final (final result only) {1} (Optional)
[-dir]	Be Director: # times to run {0} (Optional) 0 to 999
[-resp]	Be Responder (Optional)
[-mf]	Send MF call setup digits (CAS only) {DTMF} (Optional)

[-isdnb]	ISDN B Channel capability type (ISDN only: 56k,64k,speech,udig,rdig,3.1k,udigtone,video) {speech} (Optional)
[-loadtype]	Load Type (fixed or random) {fixed} (Optional)
[-loaddelay]	Load Delay (sec or sec range for 'random') {fixed: 4 or random: [4,10]} (Optional) 1 to 999
[-localip]	(IP only) Local IP Address (Optional)
[-localport]	(IP only) Local Port {5060} (Optional) 1024 to 65535
[-localmac]	(IP only) Local MAC Address (Optional)
[-jitter]	(IP only) SIP Jitter Buffer Size {40} (Optional) 10 to 100
[-siptos]	(IP only) SIP ToS (8 binary digits) {00000000} (Optional)
[-rtptos]	(IP only) RTP ToS (8 binary digits) {00000000} (Optional)
[-dip]	(IP only) Destination / Proxy IP address (Optional)
[-dport]	(IP only) Destination / Proxy Port {5060} (Optional) 1024 to 65535
[-dname]	(IP only) Proxy Server Name (Optional)
[-pktsize]	(IP only) Packet Size (ms) {20} (Optional) 10 to 40
[-decoder]	(IP only) Decoder (PCMu or PCMa) {PCMu} (Optional)
[-user]	(IP only) Authentication User Name (max 32 chars) {} (Optional)
[-pass]	(IP only) Authentication Password (max 32 chars) {} (Optional)
[-displayuser]	(IP only) Display User Name (max 32 chars) {} (Optional)
[-imsauth]	(IP only) IMS Authentication String (max 32 chars) {} (Optional)
[-regip]	(IP only) Registration IP Address (Optional)
[-regport]	(IP only) Registration Port {5060} (Optional) 1024 to 65535
[-regexp]	(IP only) Registration Expiration (min) {10} (Optional) 1 to 255
[-regint]	(IP only) Registration Interval (sec) {30} (Optional) 1 to 50
[-regname]	(IP only) Registration Server Name (Optional)
[-prack]	(IP only) RFC-3262 Support (PRACK) (Optional)
[-keepalive]	(IP only) RFC-4028 Send Keep Alive (UPDATE) (Optional)
[-keepaliveupd]	(IP only) Send Update Session Expires (min) {60} (Optional) 1 to 255

```
[-keepalivebye]    (IP only) Requested Expiration Time (min) {60}
                   (Optional) 1 to 255

[-bye]             (IP only) Number of "BYE" or "CANCEL" upon disconnect
                   {1} (Optional) 1 to 6

[-dur]             Test Duration(s) {0} (Optional) 0 to 86400

[-toneThresh]      Tone On Threshold(dBm) {-30} (Optional) -40 to 10

[-impThresh]       Impulse Noise Threshlold, Low(dBrnC) {56} (Optional)
                   20 to 90

[-impStep]         Impulse Spreading Step Size(dB) {4} (Optional) 1 to 20

[-impBlk]          Impulse Blocking Period(ms) {125} (Optional) 10 to
                   1000

[-phThresh]        Phase Hit Threshlold(deg) {20} (Optional) 1 to 180

[-phBlk]           Phase Hit Blocking Period(ms) {125} (Optional) 10 to
                   1000

[-gainThresh]      Gain Hit Threshlold(dB) {2} (Optional) 1 to 10

[-gainBlk]         Gain Hit Blocking Period(ms) {125} (Optional) 10 to
                   1000

[Tx Freq for tone(Hz) {1010}] (Optional) 1000 to 1020

[Tx Level for tone(dBm) {-10}] (Optional) -30 to 3
```

Examples:

Create a vftrans responder on interface #2, resource #3 that answers a call, sends a tone at 1004Hz at -12 dBm until the far end hangs up.

```
vftrans -if 2 -rn 3 -resp 1004 -12
```

Create a vftrans responder on interface #2, resource #3 that answers a call, sends a tone at 1004Hz at -12 dBm for 20 seconds and then hangs up.

```
vftrans -if 2 -rn 3 -resp -dur 20 1004 -12
```

Create a vftrans director on the first available resource of interface #1 that calls '831-761-1000', sends tone for 12 seconds at 1012Hz, -3 dBm and logs the measured data to vftrans.log.

```
vftrans -if 1 -dn 8317611000 -dur 12 -log vftrans.log 1012 -3
```

Create a vftrans director on the first available resource of interface #1 that calls '831-761-1000' and logs data to vftrans.log for 12 seconds.

No tone sent.

```
vftrans -if 1 -dn 8317611000 -dur 12 -log vftrans.log
```

warmstart

Reboot the unit controller

Reboot the unit controller and the interface boards, dropping all tests and sessions in the progress.

Command syntax:

```
warmstart
```

Discussion:

This reboots the controller board, and could be useful to:

- Kill all network connections to the unit (including this one!!).
- Restart the control SW due to recover from unforeseen defects.
- Boot the unit to a new software load that was ftp'd over.
- Reboot the DSP boards.