

**User Guide  
for  
syscfg.exe**

**Intel<sup>®</sup> DOS-Based Save and Restore  
System Configuration Utility  
For  
SE7500 and SE8500 Based Intel<sup>®</sup> Servers**

**Guide version 1.4.1  
for  
syscfg.exe through v1.2.1**

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# 1. Overview & Quick Clone Instructions

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The System Configuration Utility (syscfg.exe) is a command-line utility that provides the ability to display, configure, save, and restore certain system firmware, BIOS, and Intel® Server Management settings on a single server or across multiple identical model servers (cloning). Possible uses are described in the following sections:

[BIOS](#)

[LAN Channels](#)

[Platform Event Filtering \(PEF\)](#)

[Power](#)

[Serial over LAN \(SOL\)](#)

[Serial/Modem Channel](#)

[Per User Settings for Features](#)

Firmware

Firmware for Intel® Management Module

Advanced Edition

[HTTP and HTTPS](#)

[Telnet](#)

[SMTP Alerting](#)

[SNMP](#)

[Adv. Remote Server Control](#) (ARSC)

Syscfg.exe should be run from the bootable Intel® Deployment Toolkit CD.

Besides cloning, syscfg is useful for making command line changes to the BIOS, the LAN and serial channels for Out of Band Access and for Intel Management Module Configuration.

## Quick Clone: Steps to copy the firmware and BIOS configuration from one system to another

NOTE: Original and target Servers must have **identical versions** of firmware, BIOS, and Intel® Management Modules installed.

1. Run **syscfg.exe /s** on the Original Server to save a subset of firmware and BIOS settings to the NON-editable .scf file. (Default filename syscfg.scf)  
Ex.: `syscfg /s myscfg.scf`
2. Run **syscfg.exe /r** using the Original Server's .scf file on the Target Server to restore those settings to the target system  
Ex.: `syscfg /r myscfg.scf`
3. Rerun syscfg.exe with command line parameters to change settings that cannot be the same on the target(s). For example, the host **IP#** address stored in the firmware cannot be the same on any two servers. Can be run with /r in Step 2.  
Ex.: `syscfg /r myscfg.scf /bap 123 /le 7 static 198.45.23.70  
255.255.255.0`

Syscfg.exe -s saves the following information into the non editable .scf file:

- BIOS and BMC version information
- The Server Management information (controller and module types)
- BIOS CMOS settings
- Additional settings as listed in Appendix A

## 2. Using the System Configuration Utility

This utility must be run from the bootable Deployment Toolkit CD. Running syscfg from within an operating system is not supported.

### Syntax

The basic command-line format is:

**syscfg /option(s) [arguments]**

where

< > indicates a required argument

[ ] indicates an optional argument

/ and – are interchangeable e.g. ‘-option(s)’ may be substituted for ‘/option(s)’

The command-line arguments and switches are not case-sensitive.

All command-line arguments and switches must be entered as a single command-line not to exceed 127 characters.

Some arguments must be in string format. They must start and end with double quote marks (“”). A blank string must also be enclosed in double quotes.

Do not use double quote marks within any string for any other purpose.

Numeric arguments may be required in hex or in decimal depending on the argument. Default is decimal.

Typing only syscfg will show version information.

Any invalid arguments or switches will show an error message and the program will exit with an error code. [See Appendix C.](#)

If a command is entered with options or arguments that are not supported on that Server, an error message will indicate that the command is not valid.

If any illegal **values** are detected, an error message is displayed.

If the command line is longer than 127 characters, there will be an error message and no action.

If an error occurs during a write operation, processing stops at the error point and an error message is displayed. When this occurs, some data on a command line will be written to the hardware, but other data will not.

***Original and target Servers must have identical versions of firmware, BIOS, and Intel® Management Modules installed.***

The file format used by this utility is a non-editable, proprietary binary file. The file name extension of this binary file must be .scf. The files and command lines are compatible with the EFI syscfg utility (see Appendix B), but cannot be used as SCW (Server Configuration Wizard) files.

It is presumed that IPMI channel 4 is a serial channel, and IPMI channels 1 and 3 are LAN channels. Actual channel numbers may vary for a specific platform.

### 3. Quick Reference – For explanations, see Linked Sections

/bap, /bup, /bht, /bcr, /bqb, /bbo, /bhd	<a href="#">See section 4</a>	Set BIOS Admin and User Passwords, Hyper-threading, Console Redirection, Quiet boot, or boot order. (/bhd n/a on HW4)
/c [<chID> <p#> <value>]	1=basic LAN; 2=Adv. LAN; 4=Serial	<a href="#">Configures the Channels</a> . Multiple options available. Channel 2 and 4 not available on PC87431M.
/d <component> [options]	See <a href="#">section 5</a> . Apx. D has sample	Shows the current configurations. Can be done for a given component - See /h for list.
/eac, /eae, /eam	<a href="#">SMTP setup</a>	Setup E-mail alert message configuration and the send/ receive addresses Advanced Module only.
<b>/h</b> <b>[component]</b>	<b>Displays help.</b> <b>Press &lt;ESC&gt; to exit</b>	[component]=bios   channel   lan   pef   power   serial   sol   advancedfwcfg or display (Display is available for SE85xx only)
/hc	<a href="#">Configure HTTP</a>	Setup web services ports. Advanced Module Only
/i [filename.scf]	<a href="#">See Appendix. D</a>	Shows file information. If no filename entered, displays FW Boot code, Op code, PIA version, & BIOS version.
/kc	<a href="#">Configure ARSC</a>	Set up remote Keyboard, Video, Monitor timing and control. Advanced Module only.
/lac, /lae, /lc, /le	<a href="#">Set up LAN channels</a>	Configure NIC1 and/or GCM NIC of Advanced Module. Also enable alerts or email.
/mc	<a href="#">Modem Strings</a>	Set up modem on Serial Channel.
/pefc, /peff, /pefp	<a href="#">Alert Policies Event Filters</a>	Platform Event Filtering . Sets up the filters and Alert Policies including power policy.
/prp	<a href="#">Power Restore</a>	Set which Power Restore Policy to use.
<b>/r [filename]</b> <b>[options]</b>	<b>See <a href="#">Quick Clone</a> for instructions.</b>	Loads settings from syscfg.scf or <i>filename.scf</i> . List filename first. Ex. syscfg /r myfile.scf /f
<b>/s [filename]</b>	Additional options for HW4 only: /f firmware only /b bios only	Saves to syscfg.scf or filename.scf. Will check for existing file. Ex. syscfg /s myfile.scf /f
/sds, /se /spc, /spe	<a href="#">Serial Configuration</a>	Enable and configure Serial Channel 4 for alert paging over Modem
/snc	<a href="#">SNMP from Adv.</a>	SNMP setup port#. Advanced Module only.
/sole	<a href="#">Redirect to NIC 1</a>	Serial over LAN enabling
/tc	<a href="#">Telnet from Adv.</a>	telnet setup port#. Advanced Module only.
/te	<a href="#">Terminal Emulatn</a>	Setup Terminal Emulation thru Serial Channel
/u, /ue, /up; <a href="#">/uf</a>	<a href="#">Per User configs</a>	Enable User and set name, password, access /uf – Advanced Module per feature setup.

## 4. Configuring the BIOS

Syntax : `syscfg /bnn <parameters> [options]`

Command	Description
<code>/bap old_password [new_password]</code>	Sets the BIOS <b>administrator</b> password. Must be less than 8 characters. If password is null, use “ ”. Also use “ ” for new password to clear password. Old password must be given to change password or to restore on system with existing password.
<code>/bup old_password &lt;new_password&gt;</code>	Set the BIOS <b>user</b> password. Must be less than 8 characters. Must enter old password to change a password. Use “ ” for null or to clear. Note: No other BIOS options can be changed that were enabled when the User password was set.
<code>/bht &lt;enable disable&gt;</code>	Enable or disable hyper-threading.
<code>/bcr port baud_rate flow_control terminal_type</code>	Sets various settings related to console redirection. port : disable, COM1, or COM2 baud_rate: 9600, 19200, 38400, 57600, or 115200 flow_control : none, CTS (CTS/RTS), XON (XON/XOFF), or CTSCD (for CTS/RTS+CD) terminal_type: PCANSI, VT100 (VT100+), or VTUTF8 If console redirect is enabled, quiet boot can only be enabled on HW4
<code>/bqb &lt;enable disable&gt;</code>	Enable or Disable Quiet boot (not with console redirection except on HW4).
<code>/bbo or /bhd /bbo dev1 dev2...</code>	Display or set the BIOS boot order . List in desired boot order. Do not list non available numbers or list a device more than once. /bhd is not supported on SE85xx platforms.

Examples:

```
syscfg /bap "" tt44      Change the BIOS admin password from null to tt44:
syscfg /bbo 2 1 3 4     Make the second boot device the first to boot.
```

## 5. Displaying the Settings

Syntax : `syscfg /d <configuration Module> [options]`

[See Appendix D for an example of /d output.](#)

<code>/d bios</code>	Shows BIOS configuration
<code>/d channel &lt;channel ID&gt;</code>	Shows Channels
<code>/d &lt;ch ID&gt; &lt;User ID&gt; &lt;SMTP Cfg Index&gt; fwadvcfg</code>	Shows Adv. Config
<code>/d lan &lt;ch ID&gt; &lt;LAN Alert Dest Index&gt;</code>	Shows LAN config
<code>/d pef &lt;Fil table Idx&gt; &lt;Poltable index&gt;</code>	Shows filters and table
<code>/d power</code>	Shows power policy
<code>/d serial &lt;chID&gt;&lt;DialStrIdx&gt;&lt;PgDestSel&gt;&lt;DlSl&gt;</code>	Serial port (modem) settings
<code>/d sol &lt;channel ID&gt;</code>	Serial over LAN config
<code>/d user &lt;user ID&gt;</code>	Config per User

## 6. Configuring IPMI (Channels)

The IPMI configuration options are used to configure the server management settings maintained by the server management controller on the server (BMC). IPMI version 1.5 or 2.0 is required. If a setting is stored in both volatile and non-volatile memory, it will be set in both.

### 6a. Configuring IPMI Channel Settings

Syntax : `syscfg /c [<channel ID> <p#> <value>]`  
 or `syscfg /channel [<channel ID> <p#> <value>]`

**Ex.** `syscfg /c 4 3 MD5` *sets Serial channel to authenticate Operators with MD5*

Sets up privileges and access modes per user type and per channel

**Channel ID** should be the decimal of the channel number to be configured. By default:

Channel 1= LAN (basic)

Channel 2= LAN (Web services, Telnet, SNMP, and SMTP alerts)

Channel 4= Serial (Basic), Not supported on the PC87431M (mBMC).

p#	Valid Values	Description
1	None, Straight, MD5, MD2	Authentication types for <b>callback</b> ; can enable multiple authentication types by separating the possible <b>values</b> with a plus sign ('+'). No spaces around plus signs. Any type not enabled, is disabled regardless of current state. PC87431M supports only Straight and MD5 authentication, no callbacks. .
2	None, Straight, MD5, MD2	Authentication types for <b>user</b> ; see description for parameter 1.
3		Authentication types for <b>operator</b> ; see description for parameter 1.
4		Authentication types for <b>administrator</b> ; see the description p# 1.
5	Enable, Disable	Per Message Authentication
6		User Level Authentication
7	Disabled, PreBoot, Always, Shared	Access Mode. Sets when the Channel will be available. Disabled – not available. PreBoot will be available at power. Always – always available. “preboot” and “shared” are only valid for serial channels.
8	Callback, User, Operator, Admin	Minimum Privilege Level required to access the channel. Overrides individual’s privileges. Note: The PC87431M supports only User, Operator, and Admin
9	Enable, Disable	Turn on PEFilters for a channel. Only some platforms.

**Ex:** `syscfg /c 1 1 none+md5 /c 1 2 none+md5 /c 1 3 md5+md2 /c 1 4 md5+md2`

*Enables only channel 1 for callback and user to have MD5 & None and operator and admin MD2,MD5.*



## 6b. Configure LAN Channels (NIC 1 on Ch1 or GCM NIC on Ch2)

```

/lanEnable      /le
/lanAlertEnable /lae
/lanAlertConf   /lac
/lanConf        /lc
  
```

For additional LAN Configurations see [Appendix B](#) and [SOL](#)

### Shared Common Parameters:

Parameter	Values	Description
<ch ID>	Decimal 1-4, Default=1	Channel to be configured
<IP# source>	'DHCP' or 'static'	Use DHCP is BIOS/FW sets IP#.
<host IP#>	IP # - nn-nn-nn-nn-nn format	IP address of that system
<subnetmask>	Mask # -nnn.nnn.nnn.nnn format	Subnet mask number
<GW IP#>	Gateway # - nnn.nnn.nnn.nnn format	IP address of that subnet's gateway
<GW MAC #>	nn-nn-nn-nn-nn-nn or nn:nn:nn:nn:nn:nn	MAC number of the gateway.

```
syscfg /le <ch ID> <IP# source> <host IP#> <subnet mask #>
```

**Ex.** syscfg /le 1 dhcp Channel 1 enabled for LAN with addressing set via DHCP.  
Enables LAN NIC1 or NIC3 for OOB access and sets it's IP addresses.

```
syscfg /lae <ch ID> <GW IP#> <GW MAC#> <commString> <bkup GWIP#> [bkup GWM #]
```

**Ex.** syscfg /lae 1 10.1.1.1 0F-31-FC-8F-91-BB "pub 1" 10.1.1.5 0F-34-32-AA-A8-9B  
Sets up the path for Lan Alerts and lists the Community String to include in the alert.

```
syscfg /lac <ch ID> <alertDestIndex> <alertdestIP#> <alert MAC#> <bkup GW state>
<alert acknowledge state> <retry count> <retry interval>
```

**Ex.** syscfg /lac 1 1 10.78.211.40 03-FE-EF-02-41-F3 disable disable 0 1  
Sets NIC1 to send alerts to 10.x.x.40 with the GW and acknowledgements disabled, no retries.  
Used to configure the destinations and retry attempts for LAN alerts.

<ch ID>	Decimal 1-4	Channel to be configured
AlertDestIndex	Decimal 0 to 0xF	As allowed by BMC, mBMC=1
AlertDestIP#	IP # nnn.nnn.nnn.nnn format	IP address of the receiving system
Alert MAC#	12 digit # nn-nn-nn-nn-nn-nn Resolve (Not Avail on mBMC) Broadcast	Destination MAC address Software finds the MAC# or sends error Sets dest MAC# to FF-FF-FF-FF-FF-FF
Backup Gateway State	Enabled   Disabled	Not supported on PC87431M
Alert Acknowledge State	Enabled   Disabled	Determines whether to reply to Alerts
Retry Count	0-7 Not on PC87431M	Number of retries
Retry Interval	1-255. Not on PC87431M	Time in seconds between retries.

`syscfg /lc <ch ID> <p#> <value>`

**Ex:** `syscfg /lc 1 2b none+straight+md2+md5` would set LAN User all authenticates.  
Used to set values one at a time. Matches 'Get/Set LAN' of IPMI.

p#	value	Description
2a	<a href="#">See Section on IPMI Channels</a>	Callback Authentication Types
2b,c,d		User, Operator, and Admin Auth.
3	Nnn.nnn.nnn.nnn	IP Address Number
4	Static or DHCP	Addressing Method
5	Nn:nn:nn:nn:nn:nn	MAC Address #
6	Nnn.nnn.nnn.nnn	Subnet Mask #
10	Enable   Disable	gratuitous ARP on/off.
11	0-127500	Gratuitous ARP interval ~ 500ms.
12	Nnn.nnn.nnn.nnn	Gateway IP Number
13	Nn:nn:nn:nn:nn:nn	Gateway MAC Number
14	Nnn.nnn.nnn.nnn	Backup GW IP #. Not on mBMC
15	Nn:nn:nn:nn:nn:nn	Backup GW MAC #. Not on mBMC
16	Place in double quotes if spaces	Community String

## 6c. Configuring Serial Over LAN (SOL) (not on PC87431M systems)

`syscfg /sole <ch ID> <SOL state> <privLevel> <baud> <retry> <retry interval>`

**Ex.** `syscfg /sole 1 enable admin 19200 0 10` enable SOL for only the administrator level

SOL state	Enable, Disable	Turns on Serial over LAN
Privilege Level	User, Operator or Admin	Minimum level to access
Baud Rate	9600, 19200, 38400, 57600, 115200	bps
Retry Count	0-7. Not on PC87431M	Number of retries
Retry Interval	0-255. Not on PC87431M	milliseconds between tries.

## 6d. Configuring the Serial/Modem Channel (Default Channel 4)

`/serialEnable`      `/se`              `/modemConf`        `/mc`  
`/serialPageEnable`   `/spe`              `/termEnable`        `/te`  
`/serialDialString`   `/sds`              `/serialPageConf`   `/spc`  
`/serialConf`         `/sc`

`syscfg /se <ch ID> <privlevel limit> <conn mode> <baud rate>`

**Ex.** `syscfg /se 4 admin modem 19200` Enables ch 4 for 19200bps modem with admin priv.

Enables a serial/modem channel

Privilege level	Callback , User , Operator, or Admin	Sets minimum privileges
Connection Mode	Modem or Direct	Hooked to another system or to external modem
Baud Rate	9600, 19200, 38400, 57600, 115200 bps	

`syscfg /mc <chID> <initstrg> <Esc> <hangup> <dial> <RdeadTime> <Rlength> <Local ph#>`

**Ex.** `syscfg /mc 4 ATE1Q0V1X4&D2&C1S0=0 +++ ATH ATD 3000 7000 555551212`

Sets modem channel 4 by providing the required modem strings and phone number.

InitString	32-48 byte ASCII string	initiates modem
Modem Escape Sequence	max 5 byte ASCII string	Lists escape code
Hang-up Sequence	max 8 byte ASCII string	Hangup code
Dial – Up Sequence	max 8 byte ASCII string	Dialing code
Ring Dead Time	500-8000	in milliseconds
Ring Duration Time	0-31000	in milliseconds
Phone Number	Numeric string max 32 bytes	Allowed: 0-9, “,”, “-“, “.”

`syscfg /spe <ch ID> <page blackout> <community string>`

**Ex:** `syscfg /spe 4 3 “modem public”` Sets Modem channel 4 to blackout in 4 minutes

Enables serial paging on channel 4.

Page Blackout	0-255	Time in minutes
Community String	max 18 byte ASCII string	SNMP community field

`syscfg /te <ch ID> <edit state> <delete> <echostate> <handshake> <output> <input>`

**Ex:** `syscfg /te 4 enable DEL enable enable lfcr cr` enables terminal mode over serial channel 4 with echo and handshake enabled, DEL as delete code, defines line control

Enables terminal mode on the serial channel and sets characters.

Edit State	Enable , Disable	Allows enable
Delete	<b>BSB   DEL</b>	Sets delete trigger
Echo State	Enable , Disable	Allows enable
Handshake	Enable , Disable	Allows enable
Output New Line Return	CRLF, NULL, CR, LFCR, LF	Line Feed Type
Input New Line Return	CR or LF	Line Feed Type

`syscfg /sds <ch ID> <dial string index> <dial string>`

**Ex.** `syscfg /sds 4 2 P@S=8005551212,@` Sets 2 dialstrings to go out pulse dial after waiting for quiet to phone #800-555-1212 and then pauses for 2 seconds

Defines the destination dial strings for alerts sent over modem..

Dial String Index	0-n	n is supported number of Dial Strings
Dial String	dial string 0-9, ABCDPTRSW, special * # @ ! , ;	<b>P</b> ulse, <b>T</b> one, <b>R</b> everse frequencies, <b>S</b> =n phone# <b>W</b> ait for dialtone, <b>@</b> wait for quiet, “,” pause 2 seconds, “;” return to command line after dialing; “!” flash switch hook

`syscfg /spc <chID> <PageDest> <dialStrSel> <stop bits> <data bits> <parity> <baud>`

**Ex.** `syscfg /spc 4 2 4 2 8 none 19200` dial string for entry #2 written to fw dial string #4

Configures serial pages on a channel

Page Destination Selector	0-n, n=#of page destinations supported	Depends on system
Dial String Selector	0-m, m=# of strings supported.	
Stop Bits	1, 2	See Modem or Serial Port Documentation
Data Bits	7, 8	
Parity	None, Odd, Even	
Baud Rate (bps)	9600, 19200, 38400, 57600, 115200	

`syscfg /sc <ch ID> <par#> <value>`

Sets a single option only. Matches “get/Set Serial Modem” IPMI spec.

Par#	Valid Values	Description
2a	None, Straight, MD5, MD2	Authentication Types for Callback; see XXX
2b	None, Straight, MD5, MD2	Authentication Types for User; see XXX
2c	None, Straight, MD5, MD2	Authentication Types for Operator, see XXX
2d	None, Straight , MD5 , MD2	Auth Types for Administrator; see XXX
3a	Enable, Disable	Terminal Mode.
3b	Modem, Direct	Connection Mode.
4	0-450, 0=never timeout	Inactivity Timeout in seconds. Rounded by 30 secs.
5	Enable, Disable	Modem Enabled Callback.
6a	Enable, Disable	Close on DCD Loss.
6b	Enable, Disable	Inactivity Timeout Enabled.
7a	9600 19.2 38.4 57.6 115200	Baud Rate bps
7b	Enable, Disable	DTR Hang-up Enable.
7c	None, RTSCTS, XONXOFF	Flow Control.
8a	Enable, Disable	MUX Switch on DCD Loss.
8b	Enable, Disable	MUX Baseboard to BMC Switch on <ESC>
8c	Enable, Disable	MUX BMC to Baseboard Switch on <ESC>
8i	Enable, Disable	Ping Once/Multiple Times Before MUX Switch.
8j	Enable, Disable	Ping Enabled.
8k	Enable, Disable	Ping During Callback.
8l	Enable, Disable	Connection Mode Sharing.
9a	Decimal 500 to 8000;	Ring Dead Time in milliseconds. Rounded ~500ms.
9b	Decimal 0 - 31000;	Ring Duration in milliseconds
10	ASCII 32 – 48 bytes	Modem Init String.
11	ASCII maximum 5 bytes	Modem Escape Command.
12	ASCII maximum 8 bytes	Modem Hang-up Command.
13	ASCII maximum 8 bytes	Modem Dial Command.
14	Decimal 0-255	Page Blackout Interval in minutes.
15	ASCII string up to 18 bytes	Community String.
18	Decimal 0-255	Call Retry Interval in seconds.
29d	Enable, Disable	Terminal Line Edit Enable.
29c	BSB, DEL	Terminal Delete Control.
29b	Enable, Disable	Terminal Echo Enable.
29a	Enable, Disable	Terminal Handshake Enable.
29g	CRLF, NULL, CR, LFCR, LF	Terminal Output Newline Sequence.
29f	CR, NULL	Terminal Input Newline Sequence.
192	Numeric up to 32 bytes+,- ‘ ‘	System Phone Number.

**Note:** The line edit state, echo state, and handshake state settings will be configured only if /te terminal mode is enabled.

# 7. Configuring IPMI (Other Basic)

## 7a. Configuring Platform Event Filtering (PEF)

`/pefConfig`    `/pefc`  
`/pefFilter`    `/peff`  
`/pefPolicy`    `/pefp`

`syscfg /pefc <global PEF state> <global control>`

Ex. `syscfg /pefc enable alert+pdown+reset+pcycle` *PEF on globally; alert, power down, reset, and power cycle actions enabled as events.*

Globally enable/disable power actions. Only modifies last 5 event filter locations. Not on mBMC.

Global PEF State	Enable   Disable	
Global Control	DIAGINT, RESET, PCYCLE, PDOWN, ALERT, NONE	Pdown=power down pcycle = AC power cycle Enter multiple by using + (no spaces)

`syscfg /peff <filter table index> <filter state> <action> <policy#>`

Ex. `syscfg /peff 3 enable pdown 1 /peff 4 enable pdown 1` *associates power off action and policy #1 with Event Filter Table filters 3 and 4.*

Associates an action and policy with specific event filter table filters

Filter Table Index	1-n n=qtyof supported filters	Gives index of an event filter. See Server docs. PC87431M limited to 26-30.
Filter state	Enable   Disable	Turns on a filter (per filter)
Action	DIAGINT, RESET, PDOWN, PCYCLE, ALERT, NONE	Pdown=power down pcycle = AC power cycle
Policy#	1-15, mBMC=1	Maps policy entries in the Alert Policy Table

`syscfg /pefp <ptable index> <ptabIndxState> <p#> <policy> <dest chID> <destTabInd>`

Ex. `syscfg /pefp 1 enable 3 ALWAYS 1 1` *Setup up ptable entry #1 associated with pol#3 – that LAN alert is always sent to the first LAN alert destination if p#4 event occurs.*

Configures the Event Filter policy table entries, sets the actions to take when events occur that are defined by the event filters. PC87431M has 1 entry -send alert via LAN.

Policy Table Index	1-n, n=qty allowed	
PolTable Index State	Enable   Disable	
Policy Number	1-15	policy # associated with table entry
Policy	ALWAYS, NEXT_E, STOP NEXT_C NEXT_T	Alert always sent. Only option for mBMC. <b>if previous destination alert was successful,</b> skip arg#1, go to next ptable entry with same p#. then stop. next ptable entry with same p# but different dest# send alert on different channel to next ptable entry
Destination Ch ID	1-4	Channel to send alerts
Dest Table Index	1-n, mBMC=1	N is the destinations of the policy.

## 7b. Configuring Users – name, password, and privilege level

**/user**                    **/u**  
**/userprivilege**        **/up**  
**/userenable**            **/ue**

**syscfg /u <user ID> <user name> <password>**

Ex. `syscfg /user 3 BobT gofps user 3`                    *set to BobT and with password “gofps”*

Enables and configures up to 4 users with a password.

User ID	1-4. mBMC=1	Check number supported by platform. 1 is usually the Anonymous User -required with Advanced Module.
User name	IPMI 1.5 up to 16 bytes	Use "" for null. Ignored by mBMC. Also enables Global User Status.
Password	IPMI 2.0 up to 20 bytes ASCII 0x21-0x73 except [ ]	

**syscfg /up <user ID> <channel ID> <priv level limit> [<payload enables>]**

Ex. `syscfg /up 1 1 admin sol`                    *user 1 is admin on ch1 with rights to send SOL packets*

Sets the user access settings per channel

User ID	1-4 based on platform	mBMC=1
Privilege Level Limit	None, Callback, User, Operator, Admin	None makes system unavailable mBMC odes not support None or Callback
Payload Enables	SOL KVM	Optional, Use both with +. Not available to mBMC or IPMI 1.5. KVM needs AdvModule

**syscfg /ue <user ID> <user state> <channel ID>**

Ex. `syscfg /ue 1 disable 1`                    *disables anonymous user on channel 1*

Enables user per channel

User ID #	1-4.	1=Anonymous User. mBMC=1
User State	Enable or Disable	Also enables Global User Status
<b>Channel ID</b>	1-4	States which Channel User has access to.

## 7c. Configuring Power Settings

**syscfg /prp <power restore policy>**

Ex. `syscfg /prp OFF`                    *stays powered off when power is reapplied*

Configures the power settings in the server management firmware. Not available on mBMC.

Power Restore Policy – Off | On | Restore.

Off = chassis stays powered off when power is reapplied

On = chassis powers up when power is restored

Restore = power is restored to the state system was in when power went off.

## 8. Intel® Management Module - Advanced Ed. Configuration

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[HTTP/HTTPS server](#), [SMTP \(email\) alerting](#), [telnet](#), [SNMP](#), and [KVM](#) – set [per User](#)

Note: These advanced features are not supported on systems that have only a PC87431M management controller nor on systems that have a Professional edition IMM installed.

### 8a. Configuring the HTTP/S Channel – enable, port #, user type

```
syscfg /hc <http type> <ch ID> <http state> <port number>
```

Ex. `syscfg /hc https 3 enable 443` sets *HTTPS server on port 443 of channel 3*

Sets the channel number, port number, and HTTP mode

HTTP type – HTTP | HTTPS

Ch ID – Decimal of the Channel for HTTP (default = 2)

HTTP state – Enable | Disable

Port Number – Decimal 1-65535 sets the port number for HTTP service

### 8b. Configuring SMTP Alerting

```
/emailAlertEnable /eae
```

```
/emailAlertConfig /eac
```

```
/emailAlertMap /eam
```

```
syscfg /eae <sender name>
```

Ex. `syscfg /eae elvis` *sender Server set to Elvis*

Configures name of the managed (sending) server.

Sender Name Up to 64 bytes of ASCII characters

```
syscfg /eac <SMTP Config index> <parameter selector> <ASCII string>
```

Ex. `syscfg /eac 1 2 jane.doe@companyx.com` *enables email alert to jdoe*

Sets send and receive addresses plus subject of the alert. Uses data from alert destination index

Note: SMTP alerts are unacknowledged. Setup is per channel.

SMTP Configuration Index 0-n, Number of email configs in table

SMTP Configurations Send and receive addresses and Subject

Parameter Selector 1 (from), 2 (to), 3 (Subject Line)

ASCII String up to 64 bytes Defines from, to, and subject

```
syscfg /eam <ch ID> <lan alert destination index> <email alert index>
```

Ex. `syscfg /eam 2 3` *maps SMTP configuration entry 3 with LAN alert destination 2:*

Maps LAN alerts to Email alerts.

Lan Alert Dest. Index 0-n Shows number of Alert Destinations

E-mail Alert Index 0-n Shows number of email configurations.

## 8c. Configuring Telnet

`syscfg /tc <channel ID> <telnet state> <port number>`

Ex. `syscfg /tc 3 enable 23` enables telnet on ch 3 on port 23

Enables Telnet port and channel.

Channel ID – 1-4 (default=2)

Telnet State – Enable | Disable

Port Number – 1-65535

## 8d. Configuring the User Feature Interface

`syscfg /uf <channel ID> <user ID> <telnet access> <http access> <https access>`

Ex. `syscfg /uf 1 3 enable enable disable` User1 has telnet, HTTP on ch#3, not HTTPS

Per user per channel enabling. User privilege level must meet feature required level.

Channel ID Default=2 Channel of Advanced LAN

User ID 1-4 Number of users supported

Telnet, HTTP/S Enable | Disable Allows feature access

## 8e. Configuring SNMP

`syscfg /snc <channel ID> <snmp state> <port number>`

Ex. `syscfg /snc 3 enable 161` enables SNMP on channel 3 using port number 161

Configures SNMP port.

Channel ID Default =2

SNMP State Enable | Disable

Port # 1-65535 UDP Port# to use for SNMP

## 8f. Configuring Advanced Remote Server Control (ARSC, KVM)

`syscfg /kc <chID> <kvm state> <pkt throt> <Vid throttle> <keyConPol> <keyTimeout>`

Ex. `syscfg /kc 3 enable 2 2 1 120` enables ARSC Ch3, sets throttle delays to 2 ms, any local activity terminates ARSC and local timeout to 2 mins

Enables Keyboard, Video, Mouse remote control. Sets Video delays, local override.

Channel ID	Default=2	
KVM State	Enable Disable	
Video Packet Throttle	0-255 0=no delay	minimum delay in ms between video packets
Video Frame Throttle	0-255 0=no delay	minimum delay in ms between video frames
Local Keyboard Control Policy	0=lets remote console set policy; 1= local keyboard terminates remote keyboard 2=local keyboard use ends access by remote keyboard and mouse.	
Local Keyboard Timeout	0-255 0=immediate	Period of time in seconds the local keyboard will be inactive until ARSC is re-enabled.



# Appendix A: BIOS and Firmware Settings that can be Saved or Restored

Syscfg.exe saves all CMOS variables which can be read and written by the BIOS interface. These variables differ between platforms and are not listed here.

Server Management Firmware Settings: (Some items require IMM-Advanced)

Value	IPMI	PC87431M
Power Restore Policy	Yes	Power on/off only
<b>LAN Channel</b>		
Alert Enable	Yes	No
Per Message Authen.	Yes	Yes
User Level Auth	Yes	No
Access Mode	Yes	Yes
Privilege Level Limit	Yes	Yes
Community String	Yes	Yes
ARP enable	Yes	Yes
ARP interval	Yes	Yes
Authentication Types	Yes	Yes
DHCP enabled	Yes	Yes
Subnet Mask	Yes	Yes
Gateway IP	Yes	Yes
Gateway MAC	Yes	Yes
Backup Gateway IP	Yes	No
Backup GW MAC	Yes	No
<b>LAN Alert Settings</b>		
Alert Ack Enabled	Yes	No
Alert IP	Yes	Yes
Alert MAC	Yes	Yes
Gateway Selector	Yes	Yes
Retry Count	Yes	No
Retry Interval	Yes	No
<b>User Settings</b>		
User Name	Yes	No
User Password	Yes	Only 1 global
Privilege Level Limit	Yes	Yes
Callback Status	Yes	No
Link Authen Enable	Yes	No
IPMI messaging	Yes	No

PEF Settings	IPMI	PC87431M
PEF Enable	Yes	No
Event Message for PEF	No	No
Startup Delay	Yes	No
Alert Startup Delay	Yes	No
Global Control Actions	Yes	Limited
Event Filters - Associated Power Action	Yes	No except for change PowAction
Alert Policies	Yes	Only 1 read
<b>Serial over LAN</b>		
SOL Enable	Yes	No
SOL Privilege Level	Yes	No
SOL Retry Count	Yes	No
SOL Retry Interval	Yes	No
SOL Baud Rate	Yes	No
SOL Authentication	Yes	No
<b>Telnet Settings</b>		
Telnet Enable	Yes	No
TCP Port Number	Yes	No
<b>User Feature</b>		
Telnet Per User	Yes	No
HTTP Per User	Yes	No
HTTPS Per User	Yes	No
<b>SNMP</b>		
SNMP Enable	Yes	No
UDP Port Number	Yes	No
<b>ARSC</b>		
KVM Enable	Yes	No
Video Pkt Throttle	Yes	No
Video Frame Thr	Yes	No
Local Keyboard	Yes	No
Local KeyTimeout	Yes	No

<b>Serial Modem</b>	<b>IPMI</b>	<b>PC87431M</b>
Paging Enable	Yes	No
Per Message Auth	Yes	No
User Level Auth	Yes	No
Access Mode	Yes	No
Privilege Level Limit	Yes	No
Community String	Yes	No
Authentication Types	Yes	No
Connection Mode	Yes	No
Flow Control	Yes	No
Baud Rate	Yes	No
DTR Hang-up Enable	Yes	No
Inactivity Timeout	Yes	No
Inactivity T-out	Yes	No
Connect Mode Sharng	Yes	No
Baseboard > BMC	Yes	No
BMC > Baseboard	Yes	No
Ping Before MUX	Yes	No
Terminal Del Control	Yes	No
Terminal Echo Enable	Yes	No
Terminal Handshake	Yes	No
Terminal Newline Output Sequence	Yes	No
Terminal New line	Yes	No
Dial String Length	Yes	No
Destn Dial Strings	Yes	No
<b>Serial Paging Alerts</b>		<b>PC87431M</b>
Alert Ack Enable	Yes	No
Retry Count	Yes	No
Retry Delay	Yes	No
Paging Flow Control	Yes	No
Paging Baud Rate	Yes	No
Paging Stop Bits	Yes	No

Ping Enabled	Yes	No
Close on DCD Loss	Yes	No
MUX Switch on DCD Loss	Yes	No
Modem Init String	Yes	No
Modem Ring Durtn	Yes	No
Call Retry Interval	Yes	No
Ring Dead Time	Yes	No
Ping During Callback	Yes	No
Modem Enab Callbk	Yes	No
Blackout Interval	Yes	No
Modem Dial CMD	Yes	No
Modem Hang-up	Yes	No
Modem Escape	Yes	No
System Phone #	Yes	No
Terminal Mode Enab	Yes	No
Terminal Line Edit	Yes	No

Paging Data Bits	Yes	No
Paging Parity	Yes	No
Dial String Selector	Yes	No
<b>HTTP/S Settings</b>		
HTTP Enable	Yes	No
HTTPS Enable	Yes	No
HTTP Port Number	Yes	No
HTTPS Port Number	Yes	No
<b>SMTP Alert Settings</b>		
Sender PC Name	Yes	No
From: Addresses	Yes	No
To: Addresses	Yes	No
Subject Lines	Yes	No
Alert Dest/SNMP Alert Index Mapping	Yes	No

# Appendix B: EFI SysCfg Compatibility

---

Additional Options for both EFI and DOS versions of SysCfg

## LAN Configuration (/lde, /lhi, /lsm, /lgi, /lgm)

Table 1: LAN Configuration Options Supported by DOS and EFI

Options and Arguments	Description
/lde 0 1 0=disable	DHCP enable or disable. Can not be used with setting IP#or MAC numbers. DHCP refers to a BIOS set IP#address. .
/lhi [xxx.xxx.xxx.xxx]	Configures the BMC IP#address (after a restore – to provide unique IP). syscfg /r mycfgfile.scf /lhi 192.168.0.2
/lsm [Mask Address]	Configures the Subnet Mask.
/lgi [IP#Address]	Configures the Default Gateway's IP#address.
/lgm [MAC Address]	Configures the Default Gateway's MAC address.

## User Configuration (/un#, /up#, /ulcp#)

Table 2: User Configuration Options Supported by DOS and EFI

Options and Arguments	Description
/un# [user name]	Assigns a user name for the user ID #, where # is an index to the user table. User ID1 is anonymous with user name NULL. 1 to 16 bytes for User name
/up# [password]	Sets or clears the password for user#, where # is an index to the user table. Clear the password for the given user: syscfg /up2
/ulcp# [privilege level]	Sets the LAN channel privilege level for the user ID #.: User Operator Admin

## Appendix C: Exit Codes

---

The following error codes are useful when executing the Save and Restore System Configuration utility from a script. The error messages displayed provide more information as to the cause of the error.

Table 3: Exit Error Codes

<b>Value</b>	<b>Interpretation</b>
0	Successful termination.
1	Invalid invocation or unknown command-line argument.
2	File was not found.
3	Invalid File.
4	File is not intended for this system or server configuration does not match the file.
5	Firmware interface failed: this error can occur when reading or writing to the BMC or when the BMC returns a completion code other than normal.
6	BIOS interface failed. this error can occur when reading or writing the BIOS or when the BIOS returns an error.
7	The password supplied doesn't match with the system BIOS password.
8	Unknown error.

## Appendix D: Sample Display of /i and /d Options

---

The /i command-line argument allows the user to display system and binary file header information as described the figures below.

```
Save and Restore System Configuration Utility Ver 1.2.1
Copyright (c) Intel Corporation 2005

Binary File Header Information
-----
System Config File Name... syscfg.scf
BIOS Version..... S870BH2A.86B.0113.P02
BMC Version:
  Op Code..... 1.08
  PIA..... 1.07
  Boot Code..... 0.13
```

**Figure 1: Sample Display Binary of File Header Information**

```
Save and Restore System Configuration Utility Ver 1.2.1
Copyright (c) Intel Corporation 2005

System BIOS and FW Versions
-----
BIOS Version..... S870BH2A.86B.0113.P02
BMC Version:
  Op Code..... 1.08
  PIA..... 1.07
  Boot Code..... 0.13
```

**Figure 2: Sample Display of System Information**

```
C:\>syscfg /d user 2 1

User ID Selected: 2
Channel Selected: 1

User Configuration:
User Name: jdoe
User Stats: Enable
Privilege Level Limit: Callback
SOL Enable: Enable
KVM Enable: Disable
```

**Figure 3: Sample Display of /d user option**

## Appendix E: Glossary

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<b>Term</b>	<b>Definition</b>
Authentication	Industry methods of verifying (authenticating) users' rights. (MD5, MD2, etc.)
BIOS	Basic Input Output System
BMC	Baseboard Management Controller. The primary microcontroller that controls the operation of the Intel® Server Management subsystem. Software embedded in the BMC is Firmware.
Console Redirect	Change of console input from local system to a remote system.
CRLF,CF	Carriage Return Line Feed; Carriage Feed. (Ending a line for modem commands)
DNS	Domain name service (name resolution)
FW	Firmware – found on mBMC and BMCs
IMM	Intel® Management Module. An add-on card that contains a BMC. Available in Professional and Advanced levels of server management.
IPMI	Intelligent Platform Management Interface
LF,LFCR	Line Feed, Line Feed Carriage Return (Ending a line for modem commands)
mBMC - PC87431M	A server management controller from National Semiconductor that supports a limited set of BMC capabilities. PC87431M is the default BMC on most SE75xx platforms.
NULL	None. No characters are output.
PEF	Platform Event Filtering
SCF	Syscfg configuration file extension (cannot be changed.)
SM	Server Management
SMU	System Maintenance Utility
SOL	Serial Over LAN (Sending serial stream of data over the network connection).
SW	Software