Intel® Server Debug and Provisioning Tool (Intel® SDP Tool)

User Guide Rev 1.1

March 2018

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1 Introduction

The Intel® Server Debug and Provisioning Tool (Intel® SDP Tool) is a single-server tool to debug and provision Intel® Server Boards and Systems through BMC Out-of-band.

SDPTool is designed to work with the following Intel® Server Boards families:

- Intel® Server Board and System S2600WT/S2600WTR family
- Intel® Server Board S2600KP/S2600KPR family
- Intel® Server Board S2600TP/S2600TPR family
- Intel® Server Board S2600CW/S2600CWR family
- Intel® Server Board S2600WFT family
- Intel® Server Board S2600STB family
- Intel® Server Board S2600BP family

1.1 Document Scope

The purpose of this document is to help system/server administrators to install and use the Intel® Server Debug and Provisioning Tool (Intel® SDP Tool). It provides you information on the features and benefits of Intel® SDP Tool and how to use them. It describes the system and software requirements, supported operating systems and platforms. This document also explains the installation and uninstallation process.

1.2 System Requirements

Table 1. Operating Systems and Intel® Server Boards Supported

Intel® Server Boards	Operating Systems Version
Intel® Server Board S2600WT/S2600WTR family Intel® Server Board S2600KP/S2600KPR family Intel® Server Board S2600TP/S2600TPR family Intel® Server Board S2600CW/S2600CWR family Intel® Server Board S2600WFT family Intel® Server Board S2600STB family Intel® Server Board S2600BP family	1) Red Hat Enterprise Linux* 6.8-64bit and 7.3 2) SuSE Linux Enterprise Server* 11 Service Pack 4-64bit and 12 Service Pack 3 3) CentOS 7.3 and CentOS 6.8*

* Refer to the ReleaseNotes for known issues on platforms and during Install.

1.3 Terminology

Table 2. Terminology

Term	Definition
BMC	Baseboard Management Controller
CLI	Command-Line Interface
FRU	Field Replaceable Unit
IPMI	Intelligent Platform Management Interface. Operates independently of the operating system (OS) and allows you to manage a system remotely, even in the absence of the OS.
LAN	Local Area Network
Management Server	Intel® Server System where ISMT is installed. It will be acting as host server which has network connectivity to the rest of the managed servers.
Managed Server	Intel® Server System in a cluster or data center that will be managed by Management Server.
OUT-OF-BAND	Out-of-band managed server refers to any system which is configured with valid IPMI lan channel and logon account to allow remote management via IPMI protocol.
SDR	Sensor Data Record
SEL	System Event Log

1.4 Related Documents

Following are the related documents for reference:

- IPMI-Intelligent Platform Management Interface Specification, 2nd Generation, v2.0 (available here)

1.5 Intel® Support

Visit http://www.intel.com/p/en_US/support/ to get the latest and most complete technical support information.

For an updated support contact list, see http://www.intel.com/support/9089.htm/.

2 Get Started

2.1 Prerequisites for Installation

The following is the list of tools that are required for the functioning of the Intel® SDP Tool, These have to be installed prior to the installation of the Intel® SDP Tool. The Intel® SDP Tool is a RPM based package and will fail to install if these packages are not already installed. The packages required are part of the standard distribution CD/DVD or .iso.

Table 3. Required tools for Intel® SDP Tool

Required Packages	Management Server
Python 2.7.5, Python 2.6.9	√
Ipmitool 1.8.13	√
curl 7.29.0	√
Openssl 1.0.0x above	√
Wget 1.16 above	√
SDPTool_x.xx.tar.gz	√
Java OpenJDK/Oracle version 1.7 and above 64bit	√

2.2 Installation Steps

To install Intel® SDP Tool,

Step 1. On Management Server, copy the Intel® SDP Tool installer <.tar.gz file> to target machine.

Step 2. Untar the tar.gz file.

Prompt #> tar -xvzmf SDPTool-<ver>.tar.gz

Step 3. Go to untarred SDPTool-<ver> directory folder. Run sdptool_install.sh to install the package, example below :-

Prompt #> cd <path/to/SDPTool-1.1-1>

Prompt #> ./sdptool_install.sh

If an older version is present, uninstall it first. Use the command below:-

Prompt #> ./sdptool_uninstall.sh

Step 4. Go to your Web browser and configure proper proxy settings, below is an example for Firefox Browser :-

a. Goto Firefox browser > setting > advance > network settings > select auto-detect proxy settings for this network (*This step is only required for launching KVM)

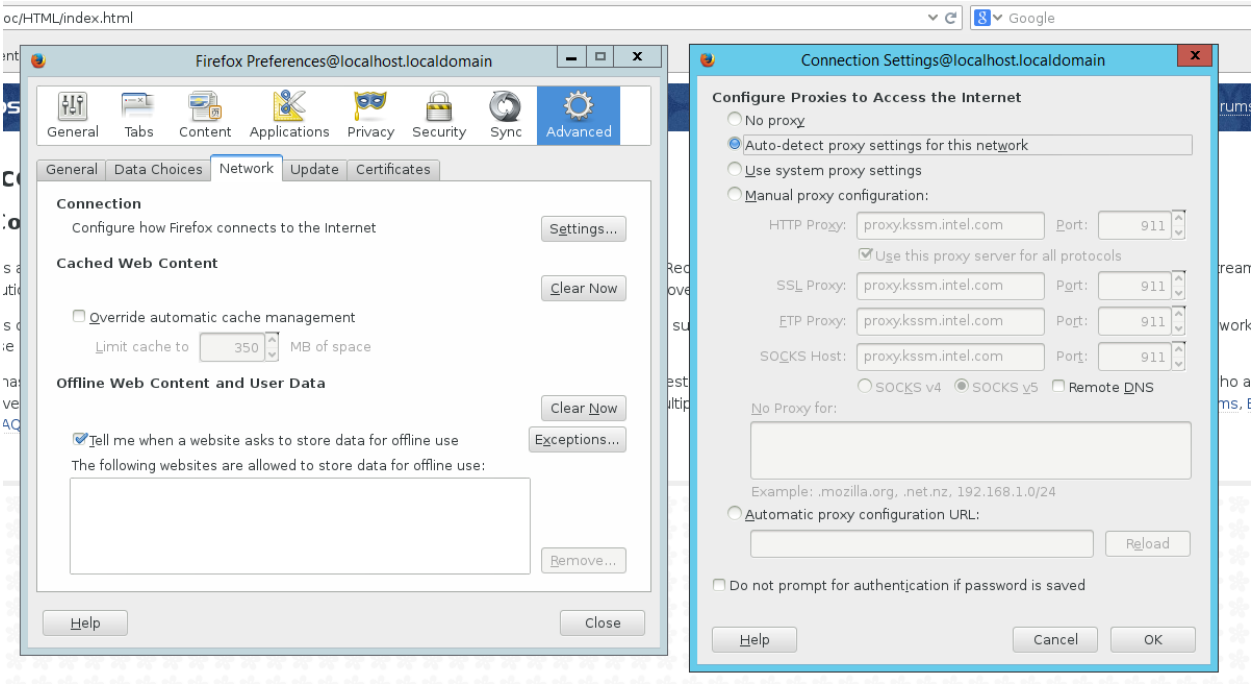

Figure 1

2.3 Uninstalltion Steps

To Uninstall the package use the following command :-

Prompt #> cd <path/to/sdptool-1.1-1>

Prompt #> ./sdptool_uninstall.sh

2.4 Update Steps

To update the package use the following commands:-

Prompt #> cd <path/to/sdptool-1.1-1>

Prompt #> ./sdptool_update.sh

Update script will uninstall any previous versions of the package and then install the latest version contained in the package.

3 Feature Script

Intel® SDP Tool script is the main engines of Intel® SDP Tool OOB features. This section explains the ways to execute Intel® SDP Tool features, and the objectives the user can accomplish by using them.

3.1 General Rules

SDPTool

- To display usage menu

  Example: SDPTool -h

- Each valid operation run will create logs in ./Logfiles/<ip>/<operation>

  Example: after running "SDPTool 192.168.1.10 bmcuser bmcpw powerstatistics"

  There will be log(s) in /var/log/SDPTool/Logfiles/192_168_1_10/powerstatistics.log

- Any failure will generate a *.err log file. Meaning of error code will be as attached in Section 5.

- For reboot features, it is restricted to run on one IP at any given time. Any other SDPTool reboot features execution on similar IP will have unexpected issue since it will interfere with current operation for that IP.

  For example: SDPTool 192.168.1.10 bmcuser bmcpw getini

  SDPTool 192.168.1.10 bmcuser bmcpw custom_deploy customdeployfolder/

  should not run at the same time since both will reboot the system and interrupt with each other in rebooting the managed system

3.2 Update Firmware

SDPTool <ipv4> <username> <password> update <SUP folder> [-no_user-interaction] [-softreset]

- To update BIOS/ME/BMC/SDR system firmware. SUP package must be used instead of FSUP, the feature makes use of Utilities within SUP package.

- -no_user-interaction: flag to reboot the system without prompt; -softreset: flag to soft reboot the system in case the system is in OS

  Example: SDPTool 192.168.1.10 admin admin123 update SUP/S2600WT

- Firmware package (**SUP**) needed

3.3 Custom Deploy

SDPTool <ipv4> <username> <password> custom_deploy <folder name which containing deploy.nsh> <"argument(s) for deploy.nsh"> [-no_user-interaction] [-softreset]

- To deploy user customized script, the customized script must start from deploy.nsh script. (*Require reboot and EFI mailbox will be cleared)
- deploy_result.log – the output from deploy.nsh can be redirected to this filename; the file will be saved to Logfiles/ip folder and content will be displayed to terminal after custom_deploy script with extra argument(s) being executed
- deploy_details.log – the details from deploy.nsh can be redirected to this filename; the file will be saved to Logfiles/ip folder after custom_deploy script with extra argument(s) being executed
- -no_user-interaction: flag to reboot the system without prompt; -softreset: flag to soft reboot the system in case the system is in OS

  Example: SDPTool 192.168.1.10 admin admin123 custom_deploy folder_with_nsh_file

  Example: SDPTool 192.168.1.10 admin admin123 custom_deploy folder_with_nsh_file "argument1 argument2 argument3"

3.4 Set Options

SDPTool <ipv4> <username> <password> setoptions <"syscfg arguments"> [-no_user-interaction] [-softreset]

- To configure BIOS/BMC settings by executing syscfg command line arguments (*Require reboot and EFI mailbox will be cleared)
- -no_user-interaction: flag to reboot the system without prompt; -softreset: flag to soft reboot the system in case the system is in OS
- Example: SDPTool 192.168.1.10 admin admin123 setoptions /i

3.5 Deploy Options

SDPTool <ipv4> <username> <password> deployoptions <restore filename> [-no_user-interaction] [-softreset]

- To configure BIOS/BMC settings by using syscfg ini method. (*Require reboot and EFI mailbox will be cleared)
- -no_user-interaction: flag to reboot the system without prompt; -softreset: flag to soft reboot the system in case the system is in OS

  Example: SDPTool 192.168.1.10 admin admin123 deployoptions sysconfig.ini

3.6 Get Bios Options

SDPTool <ipv4> <username> <password> getbiosoptions <"option to retrieve"> [-no_user-interaction] [-softreset]

- To get the value of a particular bios settings which is supported by syscfg utility

(*Require reboot and EFI mailbox will be cleared)

- -no_user-interaction: flag to reboot the system without prompt; -softreset: flag to soft reboot the system in case the system is in OS

  Example: SDPTool 192.168.1.10 admin admin123 getbiosoptions "Quiet Boot"

3.7 Get INI

SDPTool <ipv4> <username> <password> getini [-no_user-interaction] [-softreset]

- To get BIOS/BMC settings by using syscfg /save .ini file method (*Require reboot and EFI mailbox will be cleared)
- -no_user-interaction: flag to reboot the system without prompt; -softreset: flag to soft reboot the system in case the system is in OS

  Example: SDPTool 192.168.1.10 admin admin123 getini

3.8 KVM

SDPTool <ipv4> <username> <password> kvm launch

- To launch kvm windows for remote control

  Example: SDPTool 192.168.1.10 admin admin123 kvm launch

3.9 Vmedia

SDPTool <ipv4> <username> <password> vmedia <IMAGE/ISO>

- VMedia allows to add a Virtual Media in .img/.iso format to the remote machine.
- Add virtual media by redirecting image/iso file specified

  Example: SDPTool 192.168.1.10 admin admin123 vmedia image.img

  SDPTool 192.168.1.10 admin admin123 vmedia image.iso

3.10 IPMI

SDPTool <ipv4> <username> <password> ipmi <ipmitool arguments>

- ipmi command followed by arguments allows to execute ipmitool supported commands

  Example: SDPTool 192.168.1.10 admin admin123 ipmi lan print

3.11 Power

SDPTool <ipv4> <username> <password> power <status | on | off | cycle | reset>

- To get/set power status of a server

  Example: SDPTool 192.168.1.10 admin admin123 power status

3.12 Sensor

SDPTool <ipv4> <username> <password> sensor

- To display sensors information of a server

  Example: SDPTool 192.168.1.10 admin admin123 sensor

3.13 SEL

SDPTool <ipv4> <username> <password> sel [-f <filename to save sel-log>] [-c] [-w] [-i] [-no_user-interaction]

- To retrieve SEL log (* -i = information, -c = critical, -w = warning #-f = specific a filename to save the SEL log)
- -no_user-interaction: flag to overwrite the file save without prompt

  Example: SDPTool 192.168.1.10 admin admin123 sel –w –I –f save_log.txt

3.14 Set LAN

SDPTool <ipv4/ipv6> <username> <password> setlan <channel> <ipv4> <mask> <gateway> <primary dns> <secondary dns>

- To configure BMC LAN IP ipv4 address of a particular LAN channel

  Example: SDPTool 192.168.1.10 admin admin123 setlan 2 192.168.1.12 255.255.255.0 192.168.1.1 8.8.8.8 0.0.0.0

3.15 Disable LAN

SDPTool <ipv4/ipv6> <username> <password> disablelan <channel>

- To disable a BMC LAN channel of a server of a particular LAN channel

  Example: SDPTool 192.168.1.10 admin admin123 disablelan 2

3.16 Set LAN IPV6

For S2600WT/S2600WTR/S2600KP/S2600KPR/S2600TP/S2600TPR/S2600CW/S2600CWR family

SDPTool <ipv4/ipv6> <username> <password> setlanipv6 <channel> <ipv6> <prefix length[32|64|128]> <ipv6 gateway>

- To configure BMC LAN IP ipv6 address of a particular LAN channel

  Example: SDPTool 192.168.1.10 admin admin123 setlanipv6 2 fe80::12 64 fe80::1

For S2600WF/S2600WFR/S2600SW/S2600SWR/S2600BP/S2600BPR family

SDPTool <ipv4/ipv6> <username> <password> setlanipv6 <channel> <ipv6> <prefix length[32|64|128]> <ipv4/6 gateway> <ipv4/6 primary dns> <ipv4/6 secondary dns>

- To configure BMC LAN IP ipv6 address of a particular LAN channel

  Example: SDPTool 192.168.1.10 admin admin123 setlanipv6 2 fe80::12 64 192.168.1.1 0.0.0.0 0.0.0.0

3.17 Disable LAN IPV6

SDPTool <ipv4/ipv6> <username> <password> disablelanipv6 <channel>

- To disable BMC ipv6 LAN of a particular LAN channel

  Example: SDPTool 192.168.1.10 admin admin123 disablelanipv6 2

3.18 LAN Fail Over

SDPTool <ipv4> <username> <password> failover < status | enable | disable>

- To get/set/disable LAN fail over

  Example: SDPTool 192.168.1.10 admin admin123 failover status

3.19 Node Position

SDPTool <ipv4> <username> <password> nodeposition

- To display node position in a chassis. Only supports half-width SKU (*support available for select multi-node systems only)

  Example: SDPTool 192.168.1.10 admin admin123 nodeposition

3.20 System Info

SDPTool <ipv4> <username> <password> systeminfo

- Displays the system information related to BMC and baseboard, which includes and not limited to BMC version, BIOS version, Serial number, etc.

  Example: SDPTool 192.168.1.10 admin admin123 systeminfo

3.21 FRU

SDPTool <ipv4> <username> <password> fru {print | set <param> <value>}

- To display fru information

  Example: SDPTool 192.168.1.10 admin admin123 fru print

- To set fru

  Example: SDPTool 192.168.1.10 admin admin123 fru set <param> <value>

3.22 Memory Info

SDPTool <ipv4> <username> <password> memoryinfo

- To show memory info

  Example: SDPTool 192.168.1.10 admin admin123 memoryinfo

3.23 CPU Info

SDPTool <ipv4> <username> <password> cpuinfo

- To show CPU info

  Example: SDPTool 192.168.1.10 admin admin123 cpuinfo

3.24 Memory Temperature

SDPTool <ipv4> <username> <password> memorytemp

- To display temperature of system memory

  Example: SDPTool 192.168.1.10 admin admin123 memorytemp

3.25 Power Statistics

SDPTool <ipv4> <username> <password> powerstatistics

- To display system power statistics

  Example: SDPTool 192.168.1.10 admin admin123 powerstatistics

3.26 Set LAN DHCP

SDPTool <ipv4/ipv6> <username> <password> setlandhcp <channel>

- To set BMC LAN ipv4 to dhcp of a particular LAN channel

  Example: SDPTool 192.168.1.10 admin admin123 setlandhcp 2

3.27 Set LAN DHCP IPV6

SDPTool <ipv4/ipv6> <username> <password> setlandhcpipv6 <channel>

- To set BMC LAN ipv6 to dhcp of a particular LAN channel

  Example: SDPTool 192.168.1.10 admin admin123 setlandhcpipv6 2

3.28 Set LAN Stateless ICMPV6

SDPTool <ipv4/ipv6> <username> <password> setlanicmpv6 <channel>

To set BMC LAN ipv6 to stateless ICMP (*This operation supports on *S2600WT/S2600WTR/S2600KP/S2600KPR/S2600TP/S2600TPR/S2600CW/S2600CWR family* only)

Example: SDPTool 192.168.1.10 admin admin123 setlanicmpv6 2

3.29 Debug Log

SDPTool <ipv4> <username> <password> debuglog <filename> [-force]

- Fetches the BMC debug log in zip file format

Example: SDPTool 192.168.1.10 admin admin123 debuglog debug_log.zip

- [-force] will force the BMC transfer mode to exit when the command is executed.

4 Troubleshooting Tips

This section lists the possible errors you may encounter during the use of this product, and workarounds to address the errors.

4.1 SSH command sudo error

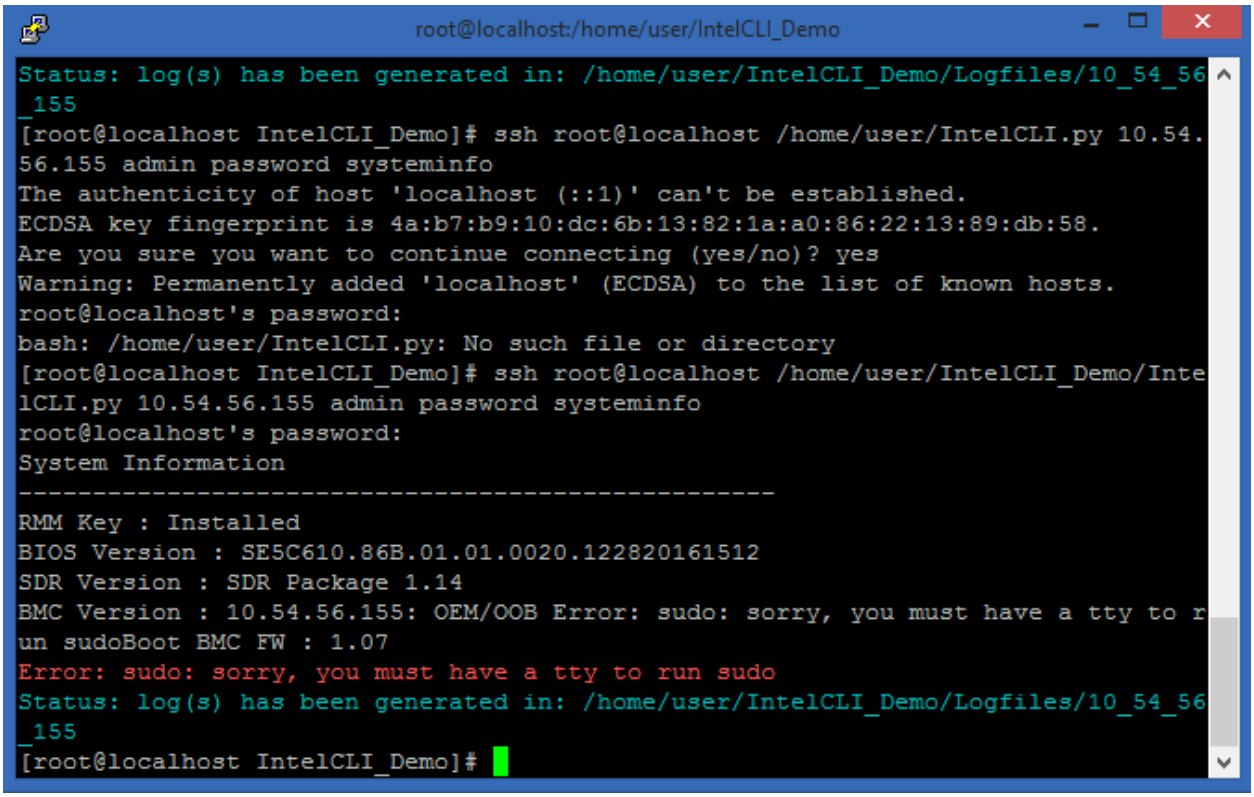

Figure 2

1) To direct using ssh command, you need to add arg –t

   Example: ssh –t root@localhost SDPTool 192.168.1.10 admin admin123 powerstatistics

4.2 Tar time stamp messages

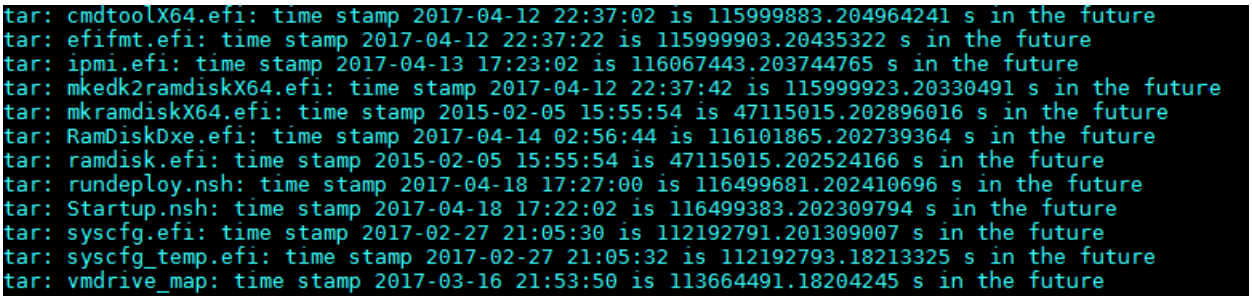

Figure 3

1) This messages doing no harm. To avoid seeing these messages make sure the date-time of managed system is correct.

4.3 Kvm launch glibc version error (SLES 11.4-64bit)

Figure 4

1) Update the glibc with the version mentioned(GLIBC_2.15). ldd –version command can be used to check the glibc version installed on system.

4.4 Reboot features OOB unable to start on S2600WT/ S2600KP/ S2600TP/S2600CW family (SLES11.4-64bit)

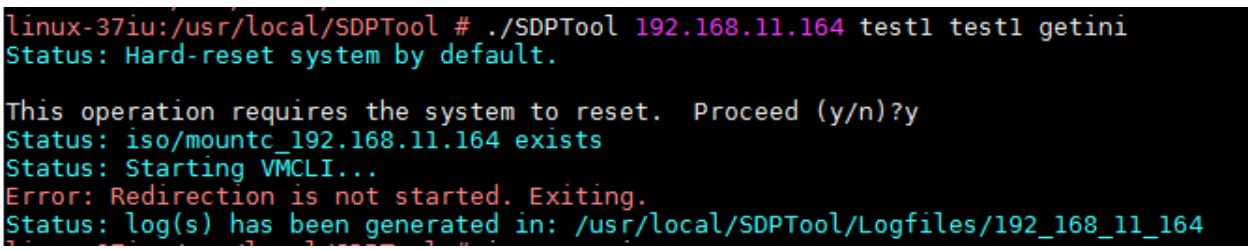

Figure 5

1) Default openssl and wget version in SLES11.4-64bit is unable to support reboot features on S2600WT/ S2600KP/ S2600TP/ S2600CW family platform. Please

follow the steps to remove and upgrade openssl and wget on SLES11.4-64bit management host.

2) Download openssl source code 1.0.1t - https://www.openssl.org/source/old/1.0.1/
3) Remove existing openssl:

   rpm -ev --nodeps openssl
4) Configure and build:

   tar -xvf openssl-1.0.1t.tar.gz

   cd openssl-1.0.1t

   ./config shared --prefix=/usr --openssldir=/etc/ssl --libdir=/lib

   make && make install
5) Download wget source code - wget http://ftp.gnu.org/gnu/wget/wget-1.15.tar.gz
6) Remove existing wget:

   rpm -ev --nodeps wget
7) Configure and build:

   tar -xvf wget-1.15.tar.gz

   cd wget-1.15

   ./configure --prefix=/usr --sysconfdir=/etc --with-ssl=openssl

   make && make install

4.5 Multithread issue (RHEL 6.8-64bit)

1) RHEL6.8-64bit is set to 1 thread count by default since VMViewer has limited support for supporting multiple thread starting at same time

4.6 Soft-reset issue (SLES 11.4-64bit)

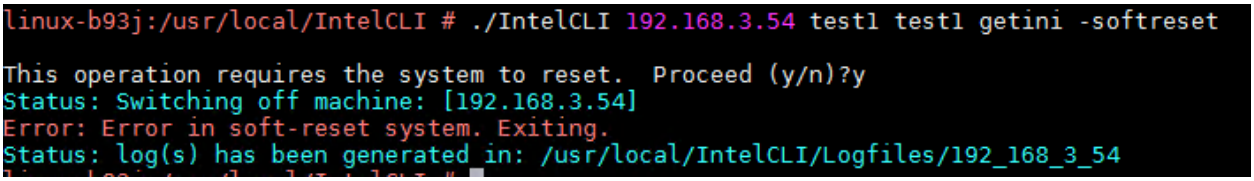

Figure 6

1) SLES 11.4-64bit will have soft-reset issue since the client OS will prompt for root password before shutting down system
2) Please check the client system if the above error appears to make sure the client system is not blocked by OS shutdown prompt

4.7 Java version required (Java 1.7)

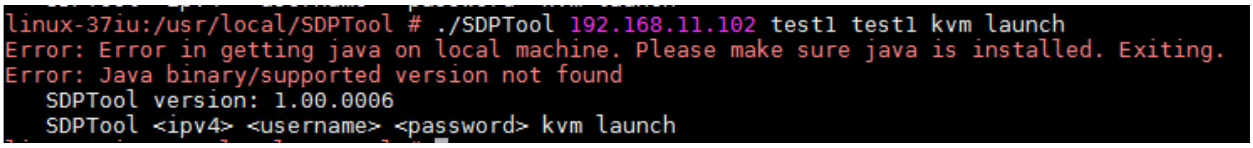

Figure 7

1) OpenJDK/Oracle Java version 1.7 onwards will be required in order to run kvm, update, customdeploy, setoptions, deployoptions, getbiosoptions, and getini
2) To check java version & provider, run:

   java –version

5 Error Codes

Error Code	Interpretation
0	no error
1	user cancel/interupt
2	invalid argument(s)
3	invalid ip
4	Invalid channel entered.
5	no connectivity
6	platform generation not supported
7	missing/unsupported operation
8	invalid subnet mask
9	IP is not same subnet with gateway
10	IP same as gateway
11	invalid filename
12	invalid file extension
13	invalid path
14	missing file(s)
15	Unable to create file path
16	ipmi command error
17	ipmi command timeout
18	duplicate instance of VMCLI
19	Redirection is not started.
20	mounting error
21	data conversion error
22	RMM is not present.
23	KVM Session is full
24	unknown / unspecified error
25	setoption cmd not supported
26	missing/unsupported hardware
27	operation unsuccessful
28	SMBIOS region data not valid
29	curl command error
30	subprocess error
31	cleanup_image error
32	error on terminate defunc
33	error on terminate_suspended_process
34	kill command error
35	error start vmcli
36	error running testapp

37	missing required software/tools
38	SUP package file size too large
39	Error in reading/setting transfer mode.
40	Error: single file size is more than 11MB (update,custom_deploy)
41	Error: Unable to retrieve biggest file_size
42	Error: Unable to retrieve product ID
43	Error: Unable to soft-reset system