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# Intel® Server Debug and Provisioning Tool

## *User Guide*

A setup, usage, and troubleshooting guide for Intel Server Systems

**Rev 1.4.5**

**March 2023**

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## *Document Revisions*

| Date | Revision | Changes |
|---|---|---|
| May 2021 | 1.4-4 | • First release of Intel® SDP Tool for Windows Platform |
| March 2023 | 1.4.5 | • PSIRT fix - Privilege Escalation |

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# 1.    Introduction

The Intel® Server Debug and Provisioning Tool (Intel® SDP Tool) is a tool that runs from a single server to debug and provision multiple Intel server boards and systems through the out of band BMC interface.

The Intel® SDP Tool is designed to work with the following Intel server product families:

- Intel® Server S2600WF/S2600WFR family
- Intel® Server S2600ST/S2600STR family
- Intel® Server S2600BP/S2600BPR family
- Intel® Server System S9200WK family
- Intel® Server D50TNP family
- Intel® Server M50CYP family

## 1.1    Document Scope

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

**Note:** Refer to the *Intel® Server Debug and Provisioning Tool Release Notes* for known issues on platforms and during the installation.

## 1.2    System Requirements

**Table 1. Operating systems and Intel® Server Boards supported**

| Intel® Server Boards | Operating System Version |
|---|---|
| • Intel® Server S2600WF/S2600WFR family<br>• Intel® Server S2600ST/S2600STR family<br>• Intel® Server S2600BP/S2600BPR family<br>• Intel® Server System S9200WK family<br>• Intel® Server D50TNP family<br>• Intel® Server M50CYP family | • Windows* 10<br>• Windows Server* 2016<br>• Windows Server 2019 |

## 1.3    Terminology

**Table 2. Terminology**

| Term | Definition |
|---|---|
| **BMC** | Baseboard Management Controller |
| **CLI** | Command-line interface |
| **FRU** | Field Replaceable Unit |
| **Redfish** | Operates over HTTPs using a REST API independently of the Operating System and allows you to manage a system remotely using basic HTTPS commands like post, get, and patch. |
| **LAN** | Local Area Network |
| **Management Server** | Intel server system where the SDP Tool is installed. It will act as a host server that has network connectivity to the rest of the managed servers. |
| **Managed Server** | Intel server system in a cluster or data center that is managed by the Management Server. |
| **OUT-OF-BAND** | Out-of-band managed server refers to any system that 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    Intel Support

Visit https://www.intel.com/content/www/us/en/support.html for current technical support information and updates.

# 2. Getting Started

## 2.1 Installation Steps

To install the Intel® SDP Tool on the Management Server

1. Download or Copy the Intel® SDP Tool Package 'SDPTool-x.y-z.msi' to the target directory.

2. Open PowerShell as Administrator and navigate to the downloaded location. Run the command below to install Intel® SDP Tool. Please note the below warning regarding invocation of msiexec.exe.

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**Warning:** Use the full path of msiexec when running install/uninstall command in command prompt. The msiexec tool is located at %systemroot%\System32\msiexec.exe. Using msiexec from non-standard path is susceptible to EXE hijacking.

---

```
Prompt #> C:\Windows\System32\msiexec.exe /i SDPTool-x.y-z.msi /quiet
```

3. The tool will be available at the location below. It will also be added to the "Path" Environment Variable: -

   "C:\Program Files\Intel\Intel (R) SDPTool"

## 2.2 Removal Steps

To uninstall the utility, enter the following command (replacing "x.y-z" with the version of SDPTool):

```
Prompt #> C:\Windows\System32\msiexec.exe /x SDPTool-x.y-z.msi /quiet
```

## 2.3 Network Ports

The following network ports are used by the SDP Tool for connecting to the platform:

1. HTTPS: server port outbound **443**

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**Note:** The Intel® SDP Tool may use a combination of these ports to complete an operation.

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# 3.    Feature Script

The Intel® SDP Tool script is the main engine of Intel® SDP Tool OOB features. This section explains the methods to executing Intel® SDP Tool features, and the objectives accomplished by executing them.

## 3.1    General Rules

To display the usage menu, enter -h.

Example: SDPTool -h

Each valid operation run will create logs in C:/SDPTool/Logfiles/<ip>/<operation>

Example, after running: SDPTool 192.168.1.10 bmcuser bmcpw powerstatistics

There are logs in C:/SDPTool/Logfiles/192_168_1_10/powerstatistics.log

Any failure will generate a *.err log file. The specific definition of each error code is available in Section 4.

## 3.2    Update Firmware

```
SDPTool <ipv4> <username> <password> update <SUP folder> [-no_user_interaction]
[-no_reboot]
```

To update the BIOS/ME/BMC/SDR system firmware an SUP package must be used instead of a FSUP package. This feature makes use of flash utilities and images within the SUP package.

- -no_user_interaction: flag to reboot the system without prompt.
- -no_reboot: flag will not reboot the system immediately after an update is performed.

Example: SDPTool 192.168.1.10 admin admin123 update SUP/S2600WT

**Note:** SUP_Folder–Path to Update Package (SUP) is required and to be provided as argument.

## 3.3    Set BIOS Config

```
SDPTool <ipv4> <username> <password> set_biosconfig <"var new_val"> [-
no_user_interaction] [-no_reboot]
```

This option configures BIOS/BMC settings via Redfish API.

**Note:** A reboot is required for this option.

- -no_user_interaction: flag to reboot the system without prompt and take any input as positive nod to go ahead.
- -no_reboot: flag to make sure the operating system does not reboot. In such a case the BIOS and ME updates cannot reflect until rebooted manually later by the user. '

Example: SDPTool 192.168.1.10 admin admin123 set_biosconfig 'QuietBoot 1'

## 3.4   Set BIOS Config All

```
SDPTool <ipv4> <username> <password> set_biosconfig_all <restore filename> [-
no_user_interaction] [-no_reboot]
```

This option configures BIOS/BMC settings by using the syscfg ini method. Once the .ini file is provided, the user may change many of the BIOS options and set them within one command.

**Note:** A reboot is required for this option.

- -no_user_interaction: flag to reboot the system without prompt and take any input as positive nod to go ahead.
- -no_reboot: flag to make sure the operating system does not reboot. In such a case the BIOS and ME updates cannot reflect until rebooted manually later by the user.

Example: `SDPTool 192.168.1.10 admin admin123 set_biosconfig_all sysconfig.ini`

## 3.5   Get BIOS Config

```
SDPTool <ipv4> <username> <password> get_biosconfig <"option to retrieve">
```

This option returns the value of a specific bios setting via Redfish API.

**Note:**  A reboot is not required.

Example: SDPTool 192.168.1.10 admin admin123 get_biosconfig "QuietBoot"

## 3.6   Get BIOS Config All

```
SDPTool <ipv4> <username> <password> get_biosconfig_all
```

This command returns BIOS/BMC settings by using Redfish API.

**Note:**  A reboot is not required.

Example: SDPTool 192.168.1.10 admin admin123 get_biosconfig_all

## 3.7   Vmedia

```
SDPTool <ipv4> <username> <password> vmedia <smb://user:pass@host/file_name.ISO>
[-no_user_interaction]
```

The VMedia command allows the addition of virtual media in .iso format only to the remote machine samba share. The samba share needs to be in place beforehand for it to work.

Add the relevant virtual media by redirecting the iso file specified.

Example:

SDPTool 192.168.1.10 admin admin123 vmedia smb://user:pass@host/share_dir/image.iso

## 3.8  Power

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

The power command is used to perform following actions: -

1.  Status: Shows status as power on/off
2.  On: Powers on the system
3.  Off: Powers off the system
4.  Cycle: Perform AC power cycle
5.  Reset: Perform power reset

Example: SDPTool 192.168.1.10 admin admin123 power status

## 3.9  Sensor

```
SDPTool <ipv4> <username> <password> sensor
```

The sensor command displays the relevant sensor information of a server.

Example: SDPTool 192.168.1.10 admin admin123 sensor

## 3.10  SEL

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

This command retrieves the SEL log,

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**Note:** -i = information, -c = critical, -w = warning #-f = specifies a file name to save the SEL log.

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

## 3.11  Set LAN

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

The setlan command configures the 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

## 3.12  Disable LAN

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

The disablelan command disables a BMC LAN IP ipv4 address of a particular LAN channel.

Example: SDPTool 192.168.1.10 admin admin123 disablelan 2

### 3.13  System Info

`SDPTool <ipv4> <username> <password> systeminfo`

The systeminfo command displays the system information related to the BMC and baseboard including the BMC version, BIOS version, RMM, etc.

Example: `SDPTool 192.168.1.10 admin admin123 systeminfo`

### 3.14  FRU

`SDPTool <ipv4> <username> <password> fru print`

The fru command displays any relevant fru information.

Example: `SDPTool 192.168.1.10 admin admin123 fru print`

### 3.15  Memory Info

`SDPTool <ipv4> <username> <password> memoryinfo`

The memoryinfo command displays any relevant memory information.

Example: `SDPTool 192.168.1.10 admin admin123 memoryinfo`

### 3.16  CPU Info

`SDPTool <ipv4> <username> <password> cpuinfo`

The cpuinfo command displays any relevant CPU information.

Example: `SDPTool 192.168.1.10 admin admin123 cpuinfo`

### 3.17  Memory Temperature

`SDPTool <ipv4> <username> <password> memorytemp`

The memorytemp command displays the temperature of the system memory.

Example: `SDPTool 192.168.1.10 admin admin123 memorytemp`

### 3.18  Power Statistics

`SDPTool <ipv4> <username> <password> powerstatistics`

The powerstatistic command displays system power statistics.

Example: `SDPTool 192.168.1.10 admin admin123 powerstatistics`

### 3.19  Set LAN DHCP

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

The setlandhcp command sets the BMC LAN ipv4 to the DHCP of a particular LAN channel.

Example: `SDPTool 192.168.1.10 admin admin123 setlandhcp 2`

## 3.20  Unmount

`SDPTool <ipv4> <username> <password> unmount <smb://user:pass@host/file_name.ISO>`

The unmount command allows the unmounting of virtual media in .iso format only from the remote machine samba share via Redfish. The samba share needs to be in place beforehand for it to work.

Eject the relevant virtual media by redirecting the iso file specified.

Example: `SDPTool 192.168.1.10 admin admin123 unmount smb://user:pass@host/share_dir/image.iso`

## 3.21  Storage Info

`SDPTool <ipv4> <username> <password> storageinfo`

The storageinfo command displays the information related to the storage devices present on the platform providing details regarding firmware version, name, etc.

Example: `SDPTool 192.168.1.10 admin admin123 storageinfo`

## 3.22  NIC Info

`SDPTool <ipv4> <username> <password> nicinfo`

The nicinfo command displays the information related to the networks present on the platform providing details regarding firmware version, MAC Address, etc.

Example: `SDPTool 192.168.1.10 admin admin123 nicinfo`

# 4.    Error Codes

**Table 3. Error codes**

| Error Code | Error Type | Error Description |
|:---:|---|---|
| 0 | NoError | Success / No failure |
| 1 | ENoRMM | RMM module absent |
| 2 | ENoIPMI | IPMI module absent |
| 3 | ENoFileCreate | Error creating a file |
| 4 | ENoRetrieve | Error in retrieving the data |
| 5 | ENoProdRetrieve | Error retrieving the Product information |
| 6 | ENoSoftReset | Error trying to soft-reset |
| 7 | ENoJava | Error Java not present |
| 8 | ENoPerm | Error not permitted/ need privileges |
| 9 | ENoConnect | Error trying to connect to the system |
| 10 | ENoRedirection | Error redirecting the image |
| 11 | ENotSupported | Error not supported currently |
| 12 | EUnsupportedPlatform | Platform not supported |
| 13 | EUnsupportedOperation | Operation not supported |
| 14 | ECurrNotSupported | Error currently not supported |
| 15 | EMissingFiles | Missing Required files |
| 16 | EMissingTags | Missing Required tag in XML |
| 17 | EMissingHardware | Missing Required Hardware |
| 18 | EMissingArgs | Missing required arguments |
| 19 | EMissingTools | Missing Required tools |
| 20 | EInterrupt | Process Interrupted |
| 21 | EInvalidArgs | Invalid Arguments |
| 22 | EInvalidIP | Invalid IP |
| 23 | EInvalidChannel | Invalid Channel |
| 24 | EInvalidSubnet | Invalid Subnet mask |

| Error Code | Error Type | Error Description |
|---|---|---|
| 25 | EInvalidFilename | Invalid file name |
| 26 | EInvalidFileExt | Invalid/unexpected file extension |
| 27 | EInvalidPath | Invalid path |
| 28 | EInvalidSMBIOS | Invalid/unsupported BIOS region |
| 29 | EMismatchIPGW | IP address and Gateway are a mismatch |
| 30 | EIPMICmdError | Error running IPMI command |
| 31 | EIPMICmdTimeout | Error IPMI command timed out |
| 32 | EDupVMCLI | VMCLI already running, Duplicate Error |
| 33 | EMount | Error mounting / unmounting the image |
| 34 | EDataConvr | Error converting data |
| 35 | EKVMSessFull | Error launching KVM session is full |
| 36 | EUnknown | Unknown error |
| 37 | ESetoptionSupport | Error trying to set option |
| 38 | EOperationFail | Operation fails or reports error |
| 39 | EcurlCmd | Error from curl process |
| 40 | ESubprocess | Error invoking the process |
| 41 | ECleanupImage | Error cleaning up an Image |
| 42 | ETermDefunc | Error terminating a Defunct process |
| 43 | ETermSuspend | Error terminating a suspended process |
| 44 | EKillCmd | Error trying to kill a command |
| 45 | EStartVMCLI | Unable to start VMCLI |
| 46 | ETestapp | Testapp hits error |
| 47 | ESUPTooLarge | SUP package provided is too large |
| 48 | ESetTransMode | Error Setting transfer mode in BMC |
| 49 | ESingleFile | Error in single File |
| 50 | EFileNotFound | File / path not found |

| Error Code | Error Type | Error Description |
|---|---|---|
| 51 | ESystemError | System gives error |
| 52 | EAbort | Aborted |
| 53 | ESysCfg | Error in using syscfg utility |
| 54 | ERedfish | Redfish general error |
| 55 | ETimedOut | Timed out in trying to establish connection |
| 56 | ERedfishSession | Failure in creating Redfish session |
| 57 | ERedfishResponse | Redfish http response error |
| 58 | ERedfishNoSensor | Sensor not present |
| 59 | ERedfishAuthorization | Wrong username or password or hostname given |
| 60 | ERedfishUnexpected | Unexpected http Redfish error |
| 61 | ERedfishRedirect | Redirection error |
| 62 | ERedfishAttribute | Json key not present |
| 63 | EInvalidLength | Error in FRU fields length |
| 64 | ERedfishSchema | Error in Redfish schema |
| 65 | EVMRedirect | Error in virtual media redirection |
| 66 | ERecursionLimit | Limit the no. of recursive calls to five at most |
| 67 | ENoStorage | No Storage device present |