

Supermicro SuperDoctor 5

User's Guide

Version 1.9a

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Part 1 Background

1 Supermicro SuperDoctor 5 Overview

Supermicro SuperDoctor 5 (SD5) is an agent system that runs on monitored hosts designed by Supermicro to provide local system health and information. SD5 supports a Web-based interface program and a command line interface program for server management.

1.1 Key Features

- Supports monitoring, control, and management functions.
    - Hardware Monitoring: fan speed, temperature, voltage, chassis intrusion, redundant power failure, power consumption, disk health, raid health, and memory health.
    - 20 Types of system information: BIOS, Baseboard, Chassis, Computer System, Disk Drives, Memory, Network, Printer, Processor, System Slot, BMC, Power Supply, Account, Operating System, Process, Service, Share, Time Zone, OEM Strings, and System Cfg Options.
- Provides SNMP extensions for network management system.
- Easy to use Web-based and command line interfaces.
- Notifications sent via email and SNMP traps.
- Easy to customize:
    - Pluggable hardware and software monitoring plug-ins.
    - Compatible with Nagios plug-ins.
- Supports Windows and Linux platforms.

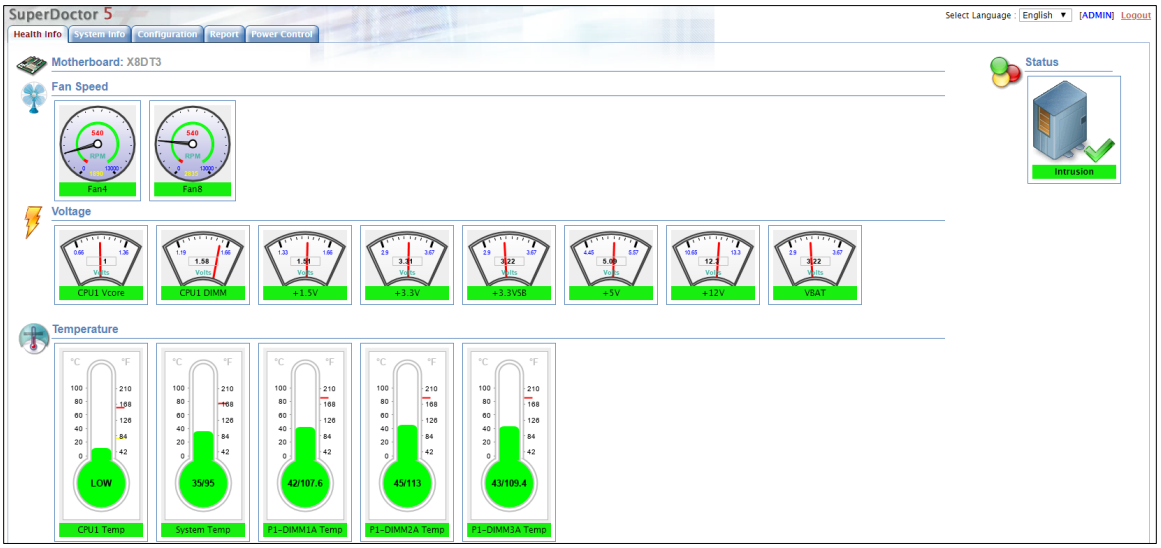


Figure 1-1: SD5 Web-based Console



Notes:

- Monitoring memory health by Supermicro SuperDoctor 5 is not available on Supermicro desktop motherboards. In addition, not all Supermicro servers support the function of monitoring memory health. Please refer to the Supermicro web site for an up-to-date list of supported products.
- Monitoring SMART health supports non-RAID internal hard drives and does not support USB hard drives and flash drives. **To use this function, install the smartctl utility program first.**
- Monitoring RAID health is available on LSI MegaRAID 2108, 2208 and 3108 controllers and later generations such as 3908 and 3916. LSI MegaRAID 2008, LSI Fusion-MPT based and Intel Rapid Storage Technology controllers are not supported.
- The system information is platform dependent. Types include Desktop Monitor, Floppy, Keyboard, Port Connector, Parallel Port, Pointing Device, Serial Port, Computer Summary, Startup Command, and Video Controller, which are supported on Windows platforms only.
- The BIOS flashing function supports Supermicro X9 series motherboards and later on both Windows and Linux platforms. Please refer to the Supermicro website for an up-to-date list of supported products.
- The system tray function is supported on Windows platforms only.

1.2 Minimum System Requirements

- Hardware
  - Supermicro servers
  - 200 MB free disk space
  - 64 MB available RAM
  - An Ethernet network interface card
- Operating System
  - Red Hat Enterprise Linux Server 6.x (64-bit), 7.x (64-bit), 8.x (64-bit), 9.x (64-bit)
  - SUSE Linux Enterprise 12.x (64-bit), 15.x (64-bit)
  - Windows Server 2012 R2 64-bit
  - Windows Server 2016 64-bit
  - Windows Server 2019 64-bit
  - Windows Server 2022 64-bit



Notes:

- To have complete Supermicro SuperDoctor 5 support on Linux, you must perform a full (not minimum) installation of Linux.
- Supermicro SuperDoctor 5 might be run on the operating systems not in the support list but not fully validated by Supermicro.

- Browser
  - Microsoft Edge 79.x or later version
  - Firefox 68.x or later version
  - Google Chrome 75.x or later version
- Screen resolution
  - 1024 x 768 or higher resolution

1.3 Default TCP/UDP Ports

Port Number	Port Type	Direction	Description
5333, 5666, and 5999	TCP	In	This port is used for communications between SSM and Supermicro SuperDoctor 5. (See *3.2 Connection Modes* for more information)
8444	TCP	In	This port is used for the HTTPS protocol.
161	UDP	In	This port is used to support the SNMP GET function.
162	UDP	Out	This port is used to support the SNMP trap function.

2 Setting Up SD5

2.1 Installing SD5

SD5 provides installers for both Windows and Linux platforms. A user can run the installers in either of two modes: GUI interactive mode and text-console mode. The text-console mode can be run with either interaction or silence. If a user wants to deploy SD5 to a large number of hosts, installing with the text-console mode in silence is particularly useful.

2.1.1 Windows Installation

1. Execute the SD5 installer. **Note that you must have Administrator privileges to install and run SD5.**
2. Click the **Next** button to continue.

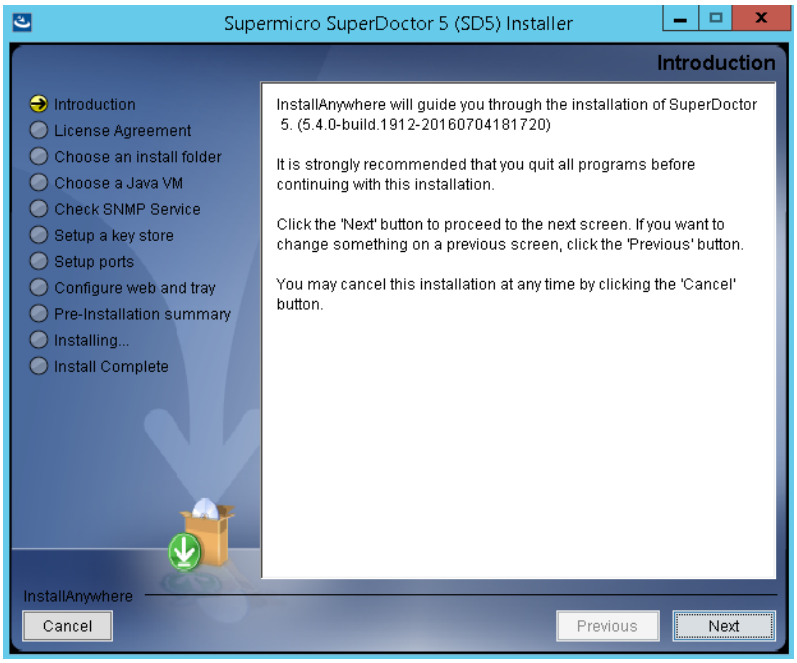


Figure 2-1

3. Select the “I accept the terms of the License Agreement” option and click the **Next** button to continue.

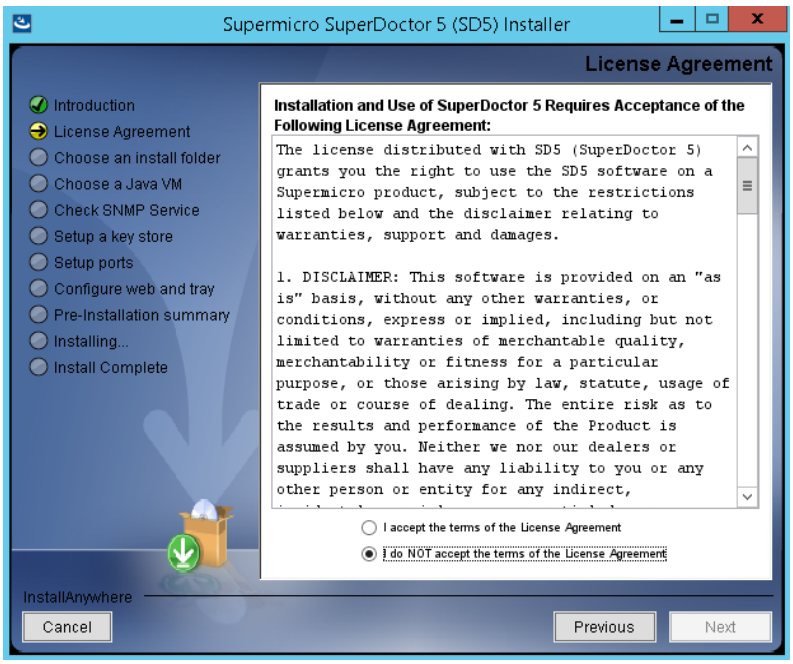


Figure 2-2

4. Click the **Choose** button to select a directory to install Supermicro SuperDoctor 5 and click the **Next** button to continue.

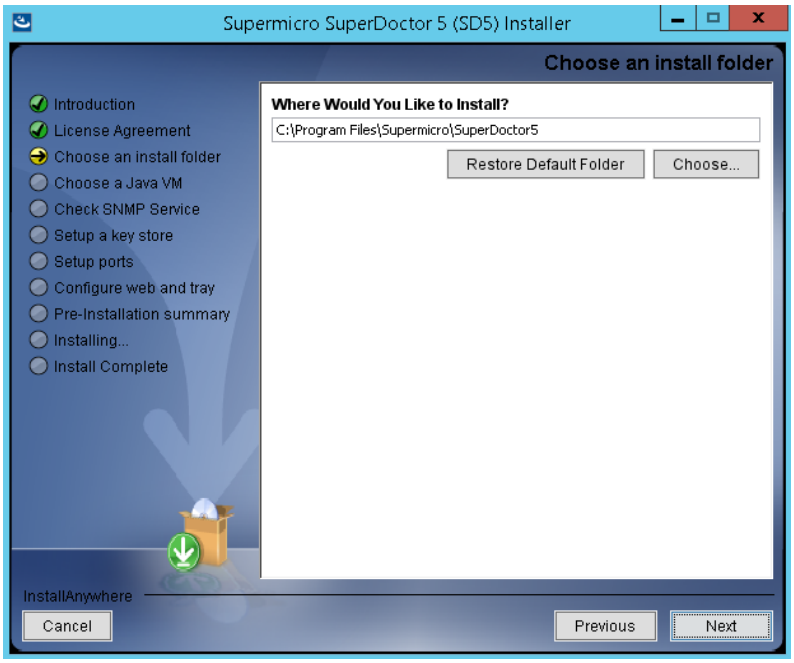


Figure 2-3

5. Select “Built-in” built-in Java VM and click the **Next** button.

Note: If you select "Choose a Java VM", the architecture of the selected Java VM must be compatible with the installer. For example, to use an x86 version of Supermicro SuperDoctor 5, you need to select an x86 version of Java VM. Also note that only JVM version newer than 1.8.0 is supported.

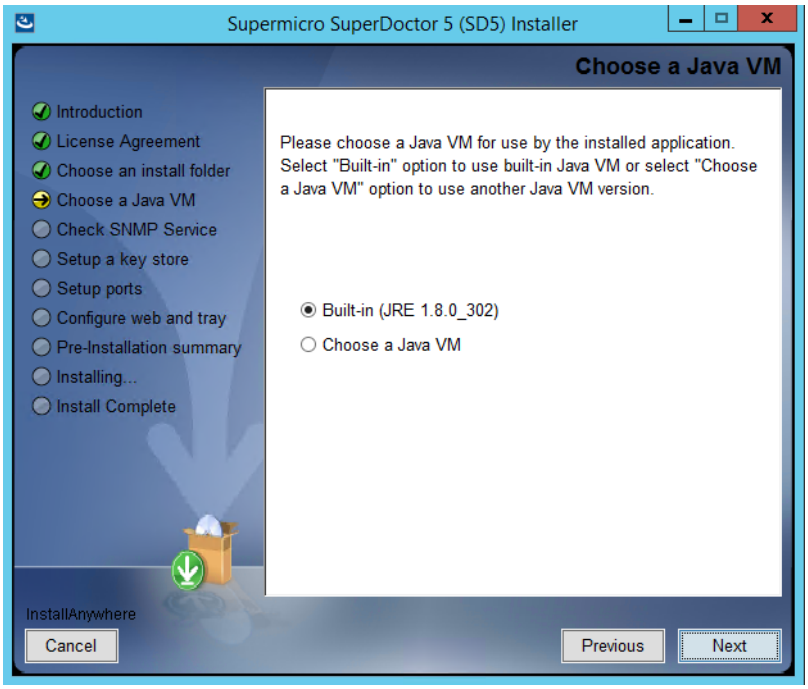


Figure 2-4

6. In this step, users can decide whether to install Supermicro SuperDoctor 5 SNMP extension or not. Supermicro SuperDoctor 5 contains an SNMP extension module that should be plugged in into the Microsoft Windows SNMP service. Users can therefore query the readings of monitored items via SNMP. To install the SNMP extension, the Microsoft Windows SNMP service must be installed first.

If the Microsoft Windows SNMP service is not installed, you can either:

- exit the installation program to manually install the Microsoft Windows SNMP service,

or

- install Supermicro SuperDoctor 5 without the SNMP extension.

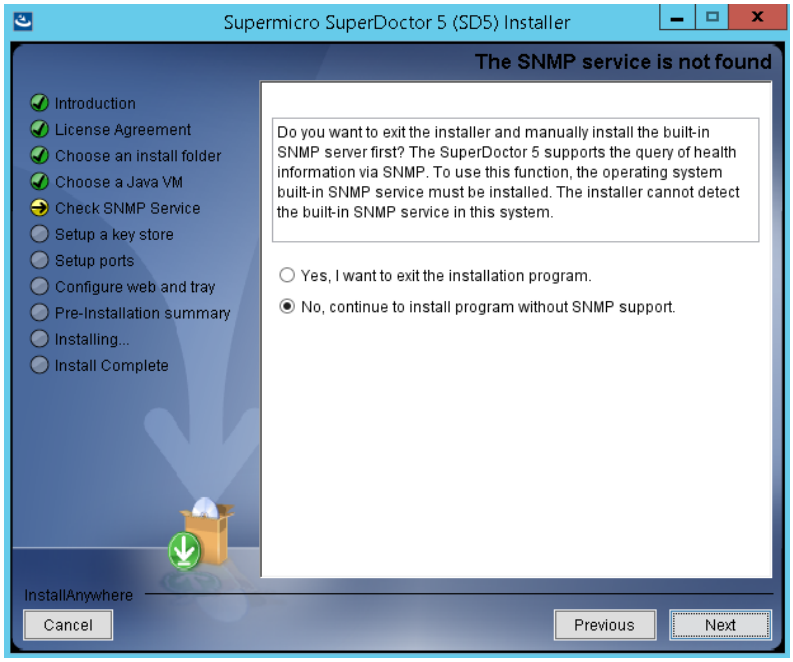


Figure 2-5

If the Microsoft Windows SNMP service is installed and started, you can either

- install Supermicro SuperDoctor 5 and the SNMP extension,

or

- install Supermicro SuperDoctor 5 without the SNMP extension.

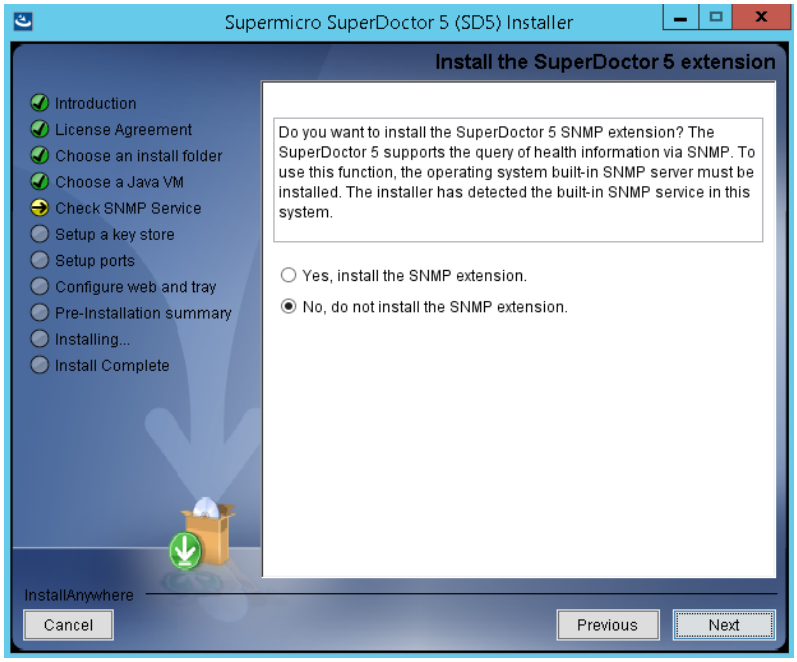


Figure 2-6

7. Select **Yes** to use the default key stores and click the **Next** button to continue. For more information on how the keystores are used, see *9 SSM Certification* in this manual.

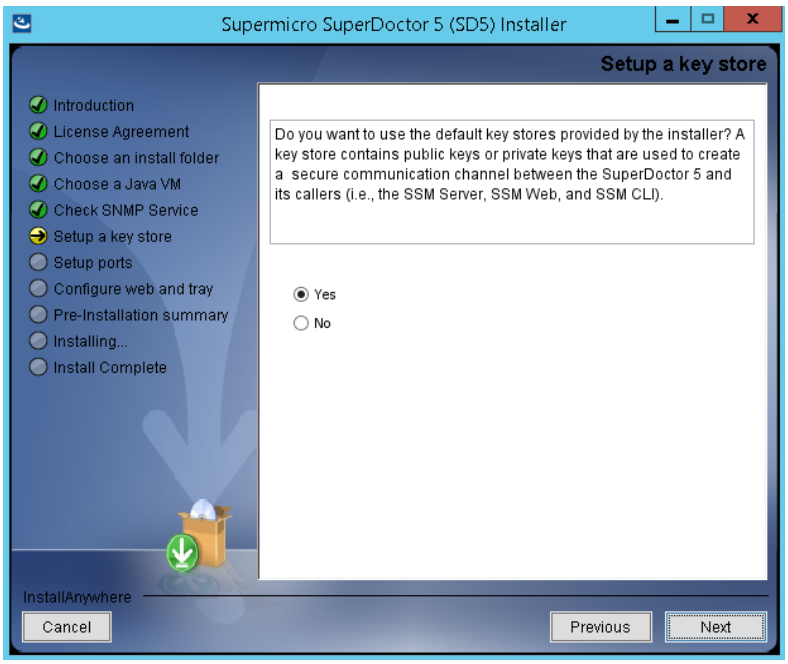


Figure 2-7

8. Three communication modes are supported in Supermicro SuperDoctor 5. See *3.2 Connection Modes* for more information. By default, Mode B (SSL) and Mode C (Keypair) are enabled when Supermicro SuperDoctor 5 is installed. You can configure the port numbers. Click the **Next** button to continue.

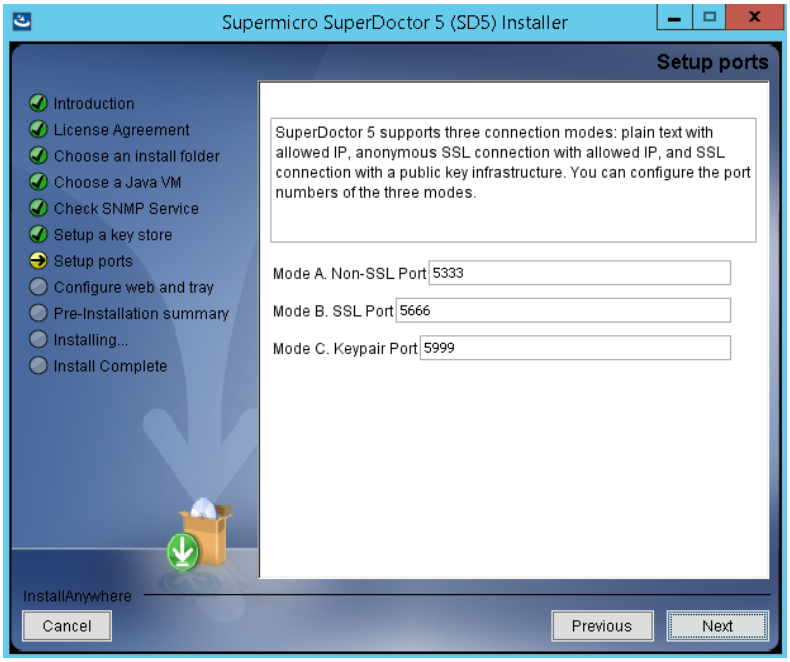


Figure 2-8

9. Supermicro SuperDoctor 5 provides the Web console "SD5 Web" (see *4 SD5 Web* in this manual for more information). Select **Yes** to enable the SD5 Web. You can also configure the default HTTPS port number, login user name, and password to access the SD5 Web. When completed, click the **Next** button to continue. For SD5 Tray, select **Yes** to enable the SD5 Tray as well (see *7 SD5 Tray* in this manual for details).

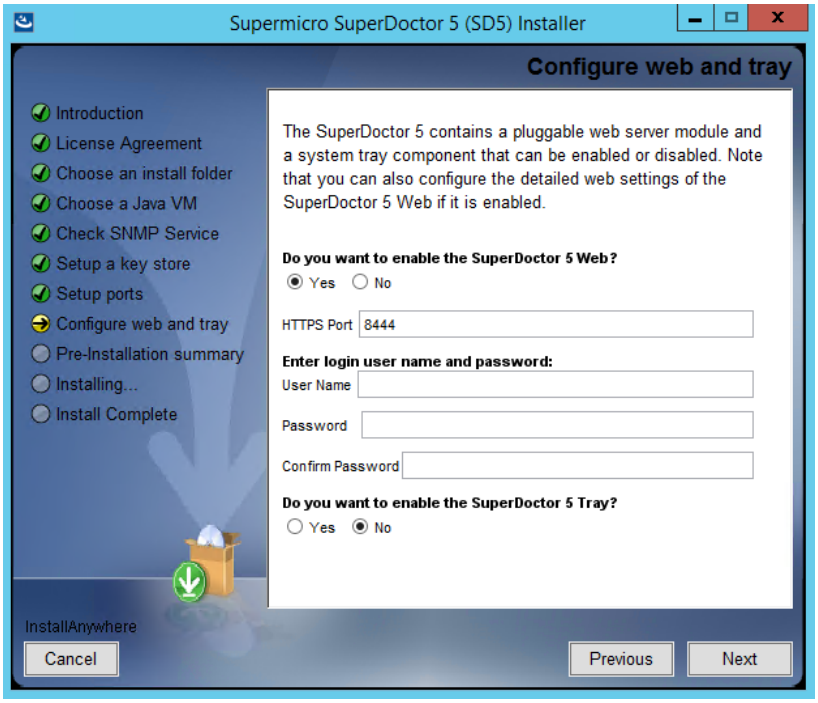


Figure 2-9

10. Click the **Install** button to install the Supermicro SuperDoctor 5 software on your computer.

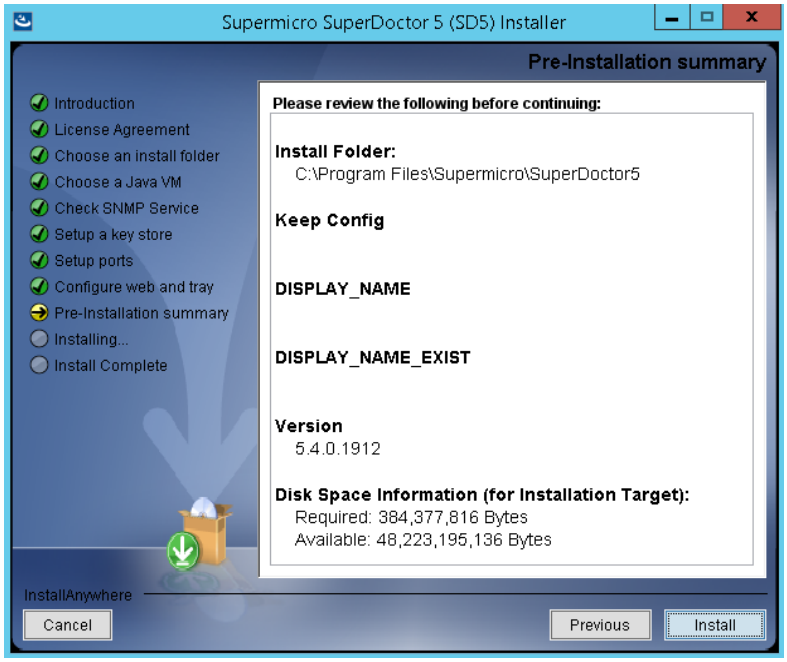


Figure 2-10

11. The installation is complete. Note that you do not need to reboot your computer to use SD5. Click the **Done** button to exit.

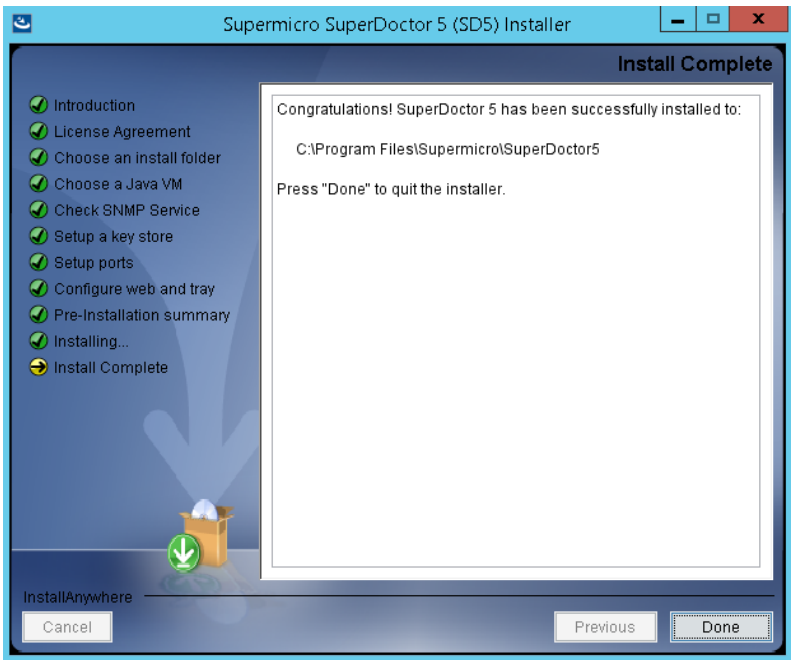


Figure 2-11

2.1.2 Linux Installation

1. Execute the Supermicro SuperDoctor 5 installer. **Note that you must have root privileges to install and run SD5**.

Note: For Linux users who treat the default /tmp folder as a vulnerability and configure the folder to be read-only, you can set the IATEMPDIR environment variable to an existing folder, for example:

- export IATEMPDIR=/opt/tmp, then the designated folder can be accessed by the SD5 installer during installation.

2. Press the **Enter** key (on your keyboard) to continue.

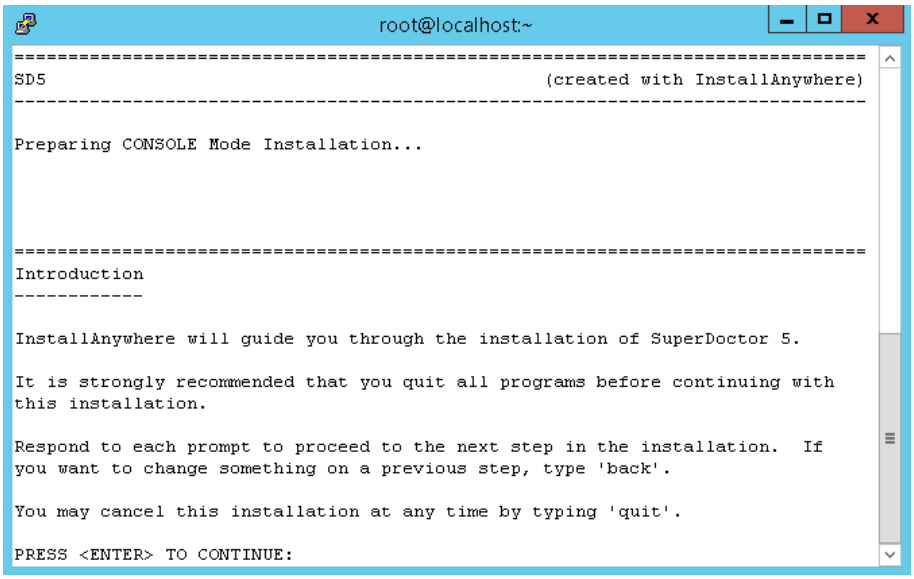


Figure 2-12

3. Accept the license agreement and press the Enter key to continue.

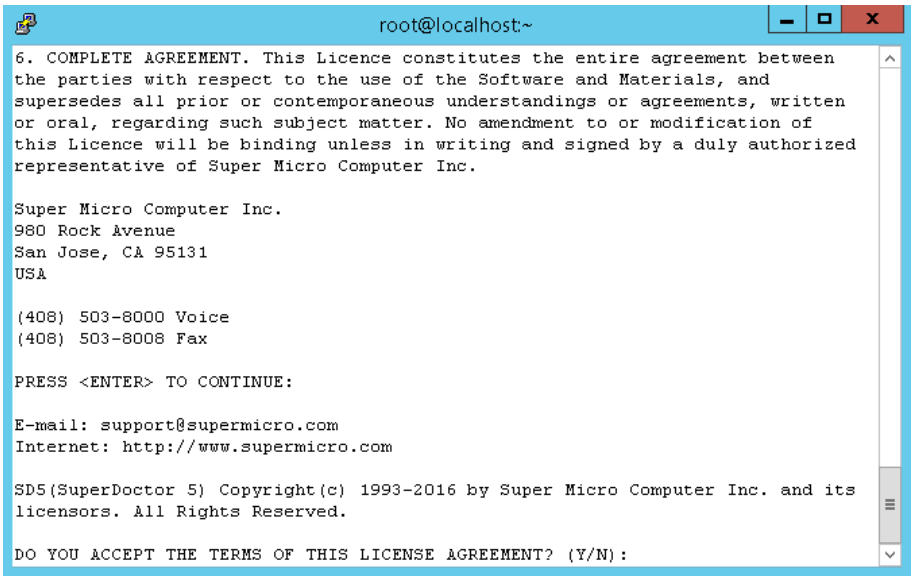


Figure 2-13

4. Enter a directory to install Supermicro SuperDoctor 5 and press the Enter key to continue. We recommend installing Supermicro SuperDoctor 5 to the default folder (/opt/Supermicro/SuperDoctor5).

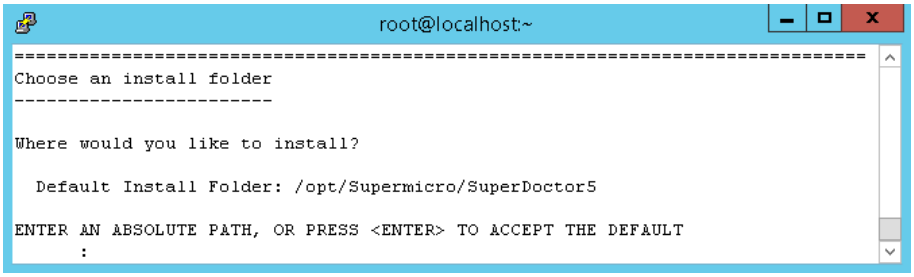


Figure 2-14

5. Use the built-in Java VM and press the Enter key to continue.

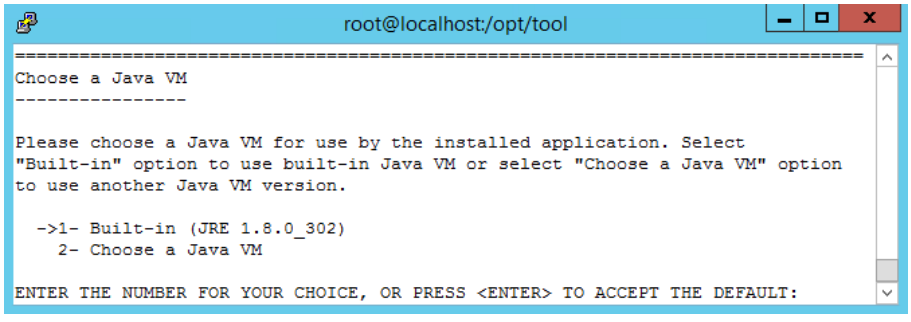


Figure 2-15

Note: If you select "Choose a Java VM" option, the architecture of the selected Java VM must be compatible with the installer. For example, to use an x86 version of Supermicro SuperDoctor 5, you need to select an x86 version of Java VM. Also note that only JVM version newer than 1.8.0 is supported.

6. Use the default key stores and press the Enter key to continue. For more information on how the keystores are used, see *9 SSM Certification* in this manual.

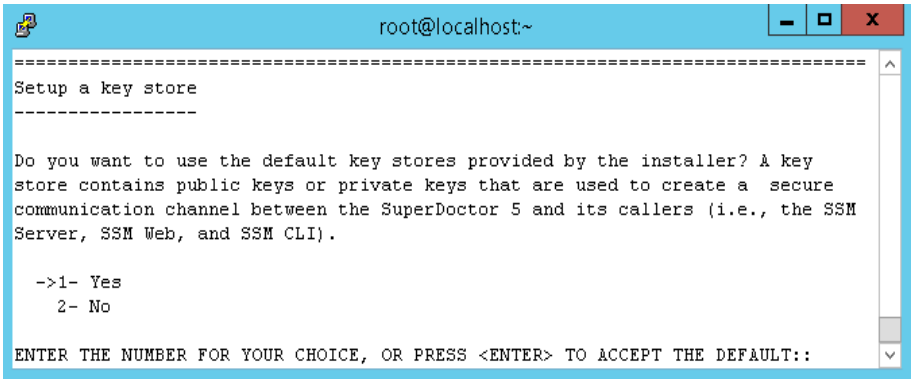


Figure 2-16

7. Three communication modes are supported in Supermicro SuperDoctor 5. See *3.2 Connection Modes* in this manual for more information. By default, Mode B (SSL) and Mode C (Keypair) are enabled when SD5 is installed. You can configure the port numbers. Press the **Enter** key to continue.

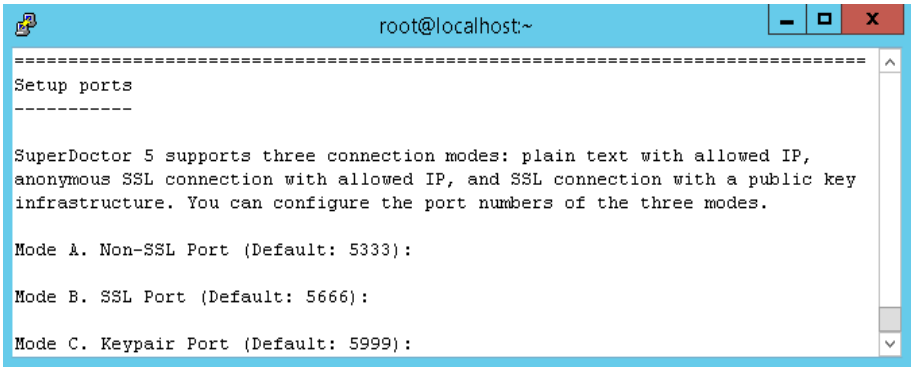


Figure 2-17

8. Supermicro SuperDoctor 5 provides the Web console “SD5 Web” (see *4 SD5 Web* in this manual for more information). Select **1** (Yes) to enable the SD5 Web. You can also configure the default HTTPS port number to access the SD5 Web. When completed, press the **Enter** key to continue.

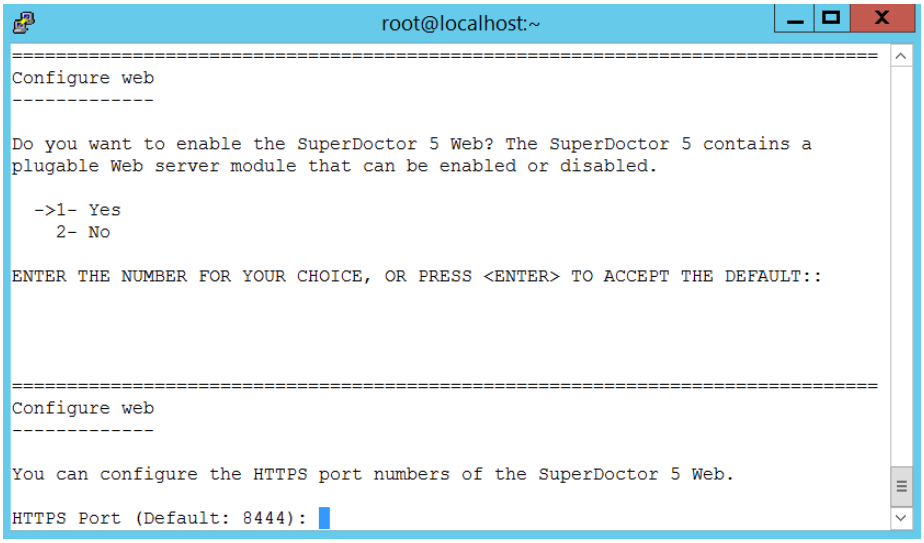


Figure 2-18

9. Enter your login user name and password to access the SD5 Web. When completed, press the <**Enter>** key to continue.

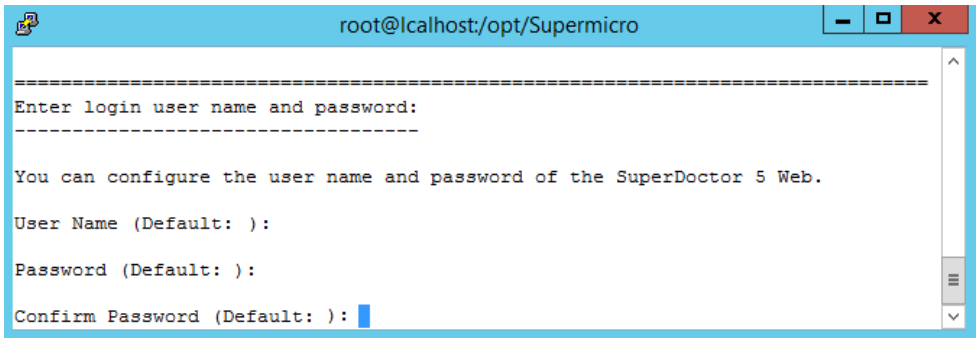


Figure 2-19

10. This step shows the pre-installation summary. Press the **Enter** key to continue.

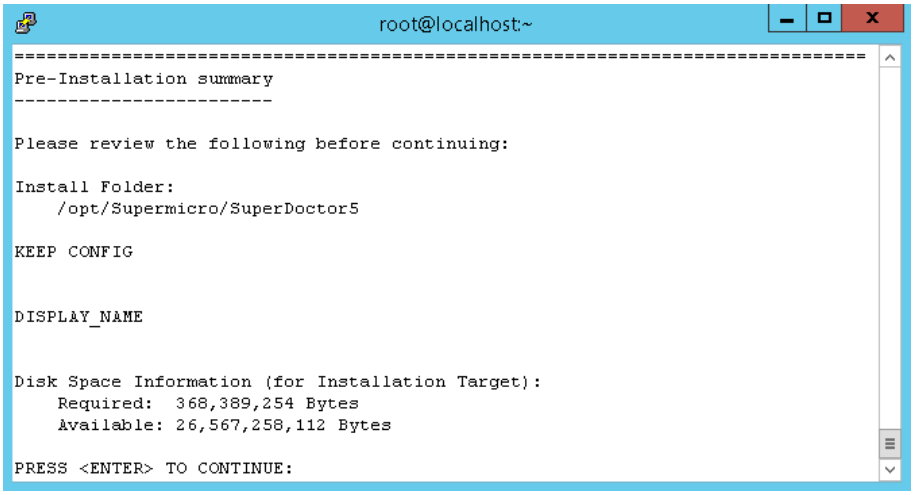


Figure 2-20

11. Press the **Enter** key to install the Supermicro SuperDoctor 5 software on your computer.

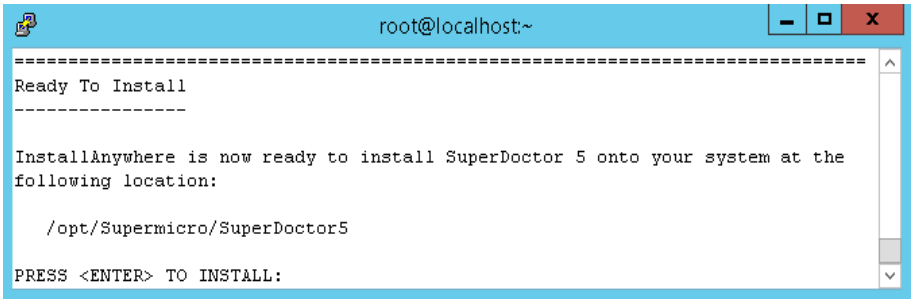


Figure 2-21

12. The installation is complete. Press the **Enter** key to exit the installer. **Note that you do not need to reboot your computer to use SD5.**

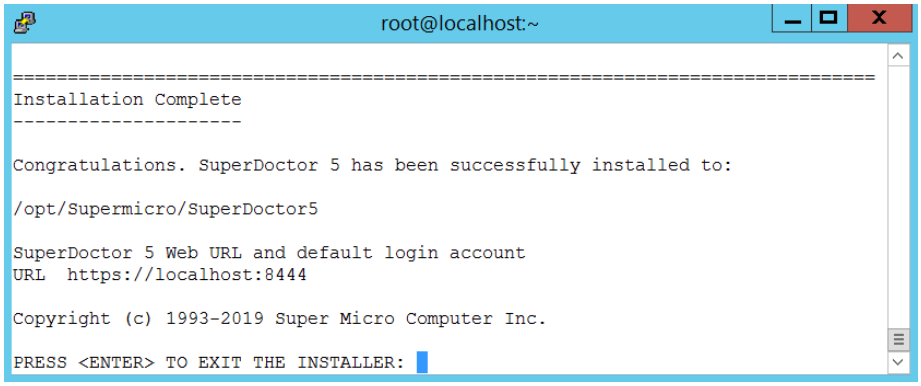


Figure 2-22

13. Supermicro SuperDoctor 5 contains an SNMP extension module that can be plugged in to the default Linux SNMP service. The last step shows how to manually configure the default Linux SNMP service to enable the Supermicro SuperDoctor 5 SNMP extension. To install the SNMP extension, the

default Linux SNMP service must be installed first. The figure below shows the steps to manually plug the Supermicro SuperDoctor 5 SNMP extension in to the default Linux SNMP service.

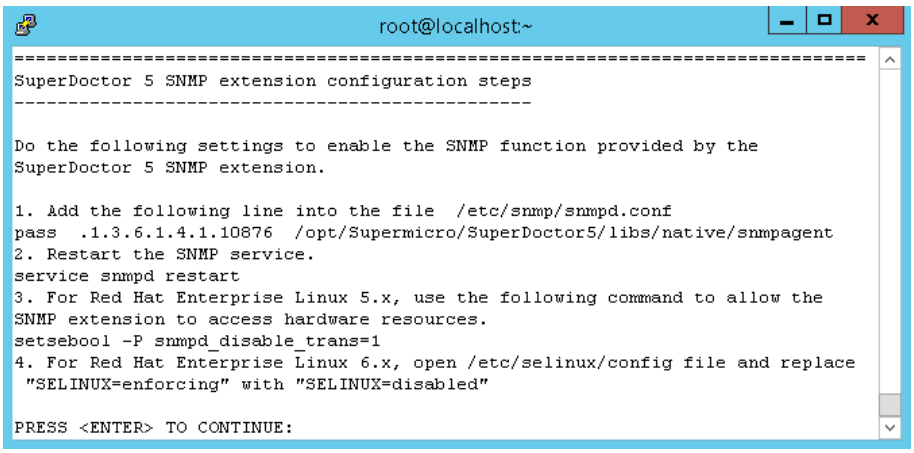


Figure 2-23

2.1.3 Silent Mode Installation

Silent mode installation provides a way to install Supermicro SuperDoctor 5 without interaction from users. This is particularly useful when users want to deploy Supermicro SuperDoctor 5 to a large number of hosts. To use silent mode installation, a property file that contains the necessary Supermicro SuperDoctor 5 installation settings must be provided.

1. Prepare a property file for silent mode installation. All configuration options required by the Supermicro SuperDoctor 5 installer are included in the property file. The example below shows how Supermicro SuperDoctor 5 is installed on a Linux platform. Note that you should carefully trim spaces for the properties in the property file.

```
# This file was built by the Replay feature of InstallAnywhere.
# It contains variables that were set by Panels or Consoles.

#Choose Install Folder
# e.g., C:\\Program Files\\Supermicro\\SuperDoctor5
#        /opt/Supermicro/SuperDoctor5
#---------------------
USER_INSTALL_DIR=/opt/Supermicro/SuperDoctor5


#Choose Install Feature
#---------------------
CHOSEN_INSTALL_FEATURE_LIST=SuperDoctor5

#Choose a Java VM
#----------------------
USE_DEFAULT_JVM=Yes
# INSTALLED_JVM_PATH=/usr/java/jdk1.8.0_77/jre/bin/java
#----------------------
#Setup a keystore
#----------------------
USE_DEFAULT_KEYSTORE=Yes

#AGENT_PRIVATE_KEYSTORE_PATH=/opt/agent.auth
#AGENT_PUBLIC_KEYSTORE_PATH=/opt/agent.trust
#USE_AGENT_DEFAULT_KEYSTORE_PASSWORD=Yes
#AGENT_KEYSTORE_PASSWORD=your-keystore-password

#Setup SNMP on Agent side
#----------------------
# Install SNMP extension
USE_AGENT_SNMP_EXTENSION=No

#Setup Agent connection ports
#----------------------
AGENT_ALLOW_IP=127.0.0.1
AGENT_NO_SSL_PORT=5333
AGENT_SSL_PORT=5666
AGENT_KEYPAIR_PORT=5999

#Setup Agent Web
#----------------------
USE_AGENT_WEB=Yes
AGENT_WEB_HTTPS_PORT=8444
#Uncomment below two statements to create a login account and password for Web.
#AGENT_WEB_USERNAME=yourLoginUserName
#AGENT_WEB_PASSWORD=yourLoginPassword
```

```
### End of file
```

2. Modify the property to meet your needs. Possible attributes and values of the property file are listed below.

Attribute	Description	Option
USER_INSTALL_DIR	Install folder **Note: It's necessary for you to choose the same install folder each time when you install each of these features on a host.**	
CHOSEN_INSTALL_ FEATURE_LIST	Install features **Note: Keep features in one line and be separated by a comma.**	SuperDoctor5
USE_DEFAULT_JVM	Uses default Java VM	Yes | No
INSTALLED_JVM_PATH	JVM path if **USE_DEFAULT_JVM=No**	
USE_AGENT_SNMP_EXTENSION	Installs SNMP extension	No | Yes
USE_DEFAULT_KEYSTORE	Uses default key store	Yes | No
AGENT_PRIVATE_KEYSTORE_PATH	Agent private key store path if **USE_DEFAULT_KEYSTORE=No**	
AGENT_PUBLIC_KEYSTORE_PATH	Agent public key store path if **USE_DEFAULT_KEYSTORE=No**	
USE_AGENT_DEFAULT_KEYSTORE_PASSWORD	Uses default password for agent key store. Note: It's required to set the **USE_DEFAULT_KEYSTORE=No** when you use customized password**.**	Yes | No
AGENT_KEYSTORE_PASSWORD	The password for agent key store if **USE_DEFAULT_KEYSTORE=No** and **USE_AGENT_DEFAULT_KEYSTORE_PASSWORD =No**	Your-password
AGENT_ALLOW_IP	Allows connections to Internet addresses **Note: Internet addresses should be in one line and separated by a comma.**	

AGENT_NO_SSL_PORT	Binds TCP ports for connection with plain text	5333
AGENT_SSL_PORT	Binds TCP ports for Anonymous SSL connection	5666
AGENT_KEYPAIR_PORT	Binds TCP ports for SSL connection with a public key infrastructure	5999
USE_AGENT_WEB	Enables SD5 Web	Yes | No
AGENT_WEB_HTTPS_PORT	SD5 Web secure listen port	8444
AGENT_WEB_USERNAME	Login user name for SD5 Web	
AGENT_WEB_PASSWORD	Login password for SD5 Web	

3. Begin the silent mode installation.

For Windows platforms:

SuperDoctor5Installer.exe –i silent –f [property_file_name]

For Linux platforms:

./SuperDoctor5Installer.bin –i silent –f [property_file_name]



Notes:

- For Linux users who treat the default /tmp folder as a vulnerability and configure the folder to be read-only, you can set the IATEMPDIR environment variables to an existing folder, for example:
  - export IATEMPDIR=/opt/tmp, then the designated folder can be accessed by the SD5 installer during installation.
- Under silent mode there is no error message shown on the console. Once the installation is completed, an **SD5_InstallResult.log** file is generated in the **[install folder]** folder. This file contains installation log data that can be used for debugging purposes.

You can open the following log files to check whether Supermicro SuperDoctor 5 is installed successfully. Note that these steps are optional and meant for troubleshooting only.

4. Check SD5_InstallResult.log file to make sure Supermicro SuperDoctor 5 is properly installed. Note that no error messages are shown on the console in silent mode. Once the installation is complete,

the SD5_InstallResult.log file is generated in the [install folder] folder. The following SD5_InstallResult.log file shows that Supermicro SuperDoctor 5 is properly installed.

```
Installation Result: Success
```

If a previous version of Supermicro SuperDoctor 5 is detected during the installation process, the log file is shown like this:

```
Installation Time: Tue May 15 09:58:53 CST 2012
Detect previous: 'YES'
Installation Result: Success
```

With the installation log data, you can start troubleshooting.

Step 5: Check SD5_Install_[MM_dd_yyyy_hh_mm_ss].log. The SD5_Install_[MM_dd_yyyy_hh_mm_ss].log file is generated in the [install folder]/Uninstall/Logs folder. This file contains installation log data that can be used for debugging installation process. The following SD5_InstallResult.log file shows an example that guides you to check SD5_Install_[MM_dd_yyyy_hh_mm_ss].log file.

```
Installation Result: Failed
Root Cause: Installation Process Failed


Please open SD5_Install_[MM_dd_yyyy_hh_mm_ss].log to check "WARNING" or "ERROR"
keywords and see if there are problems.
```

After opening the SD5_Install_[MM_dd_yyyy_hh_mm_ss].log, you are able to see warnings or errors in the log file.

```
....
Summary
-------

Installation: Successful

1885 Successes
5 Warnings
0 NonFatalErrors
0 FatalErrors
```

Note that all warnings and errors are logged in the file for reference.

2.1.4 Tips for Deploying a Large Number of SD5s

Suppose that you are going to deploy Supermicro SuperDoctor 5 to a cluster containing 100 Supermicro servers. You can run the Supermicro SuperDoctor 5 installer in silent mode to automate the installation process. Please follow these steps:

1. Prepare the Supermicro SuperDoctor 5 installation program.
2. Prepare a silent mode installation file that will be used by the Supermicro SuperDoctor 5 installer. Please refer to *2.1.3 Silent Mode Installation* to prepare the silent mode installation file.
3. Put the Supermicro SuperDoctor 5 installation program and the silent mode installation file in a shared folder that can be accessed by the 100 Supermicro servers via the network (e.g., use NFS). Alternatively, you can establish an environment so that the 100 Supermicro servers can download the files using the wget program (e.g., put the files in a folder managed by a web server).
4. Write a Linux shell script to install Supermicro SuperDoctor 5. The example below shows how Supermicro SuperDoctor 5 is installed in the /opt folder on a Linux box:

```
cd /opt
echo "Delete the old Supermicro SuperDoctor 5 Installer if there is one"
rm ./SuperDoctor5Installer*.bin

echo "Try to uninstall Supermicro SuperDoctor 5"
 /opt/Supermicro/SuperDoctor5/Uninstall/Uninstall -i silent

echo "Delete /opt/Supermicro/SuperDoctor5 folder"
rm -rf /opt/Supermicro/SuperDoctor5

echo "Download the new Supermicro SuperDoctor 5 Installer"
wget http://your-server.com:8080/SuperDoctor5Installer_5.0.0.bin

echo "Download the silent mode configuration file "
wget http://your-server.com:8080/installer_agent.properties

echo "Install Supermicro SuperDoctor 5"
chmod +x SuperDoctor5Installer*.bin
./SuperDoctor5Installer_5.0.0.bin -i silent -f installer_agent.properties

echo "Check Supermicro SuperDoctor 5 service status"
service sd5 status
```

5. Deploy the script to each of the servers and then run it to install Supermicro SuperDoctor 5.

2.2 Verifying the Installation

You can use the following commands to check whether Supermicro SuperDoctor 5 is installed successfully, and the service is running. Note that these steps are optional and meant for troubleshooting only.

After restarting your Windows system, open a DOS prompt and enter the following commands to make sure the SD5 service has been installed and started.

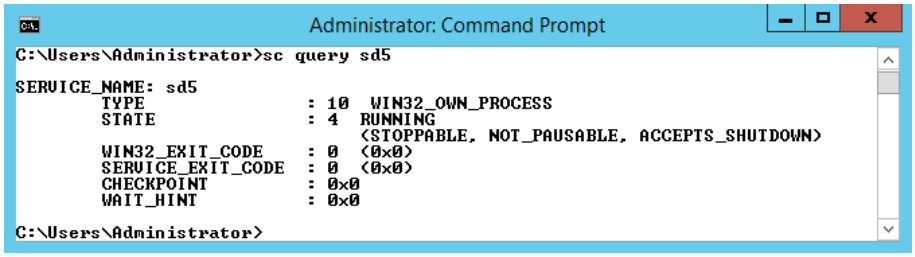


Figure 2-24

For Linux users, use the following commands to check the SD5 service:

```
# service sd5 status
```

RHEL 7.x and SLES 12.x users have additional commands to check SD5 services:

```
# systemctl status sd5
```

2.3 Manually Controlling SD5 Service

If Supermicro SuperDoctor 5 service is not automatically started, you can start and stop the service manually.

For Windows platforms: In the **[install folder] folder**, execute **startSD5Service.bat** and **stopSD5Service.bat** to start and stop the Supermicro SuperDoctor 5 service, respectively.

For Linux platforms: In the **[install folder] folder**, execute **startSD5Service.sh** and **stopSD5Service.sh** to start and stop the SD5 service, respectively.

2.4 Uninstalling SD5

In this section, we will show you how to uninstall SD5 on different platforms.

2.4.1 Uninstalling in Windows

1. Execute the Uninstall.exe in the **[install folder]\Uninstall** folder. **Note that you must have Administrator privileges to uninstall SD5**.
2. Click the **Uninstall** button to continue.

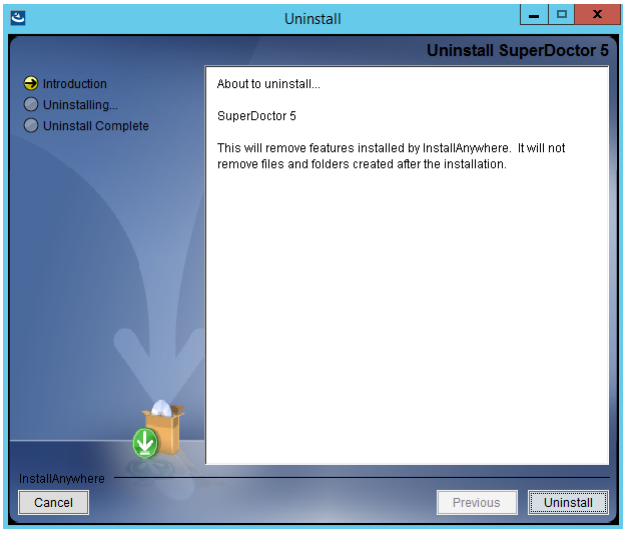


Figure 2-25

3. Please wait while the program uninstalls.

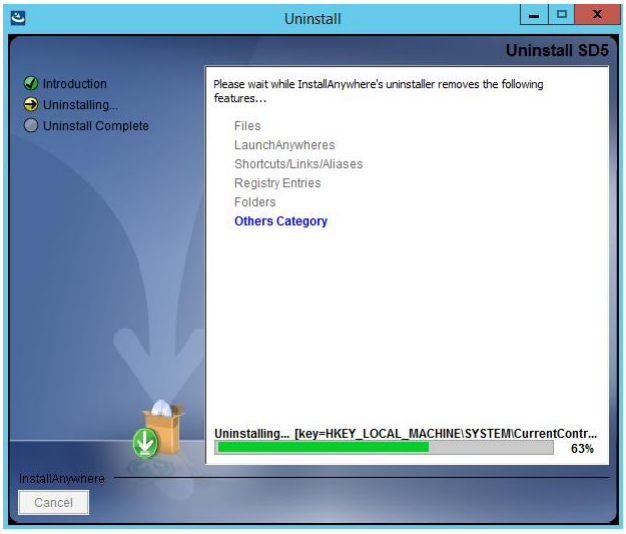


Figure 2-26

4. When the uninstall is complete, click the **Done** button to exit the uninstaller.

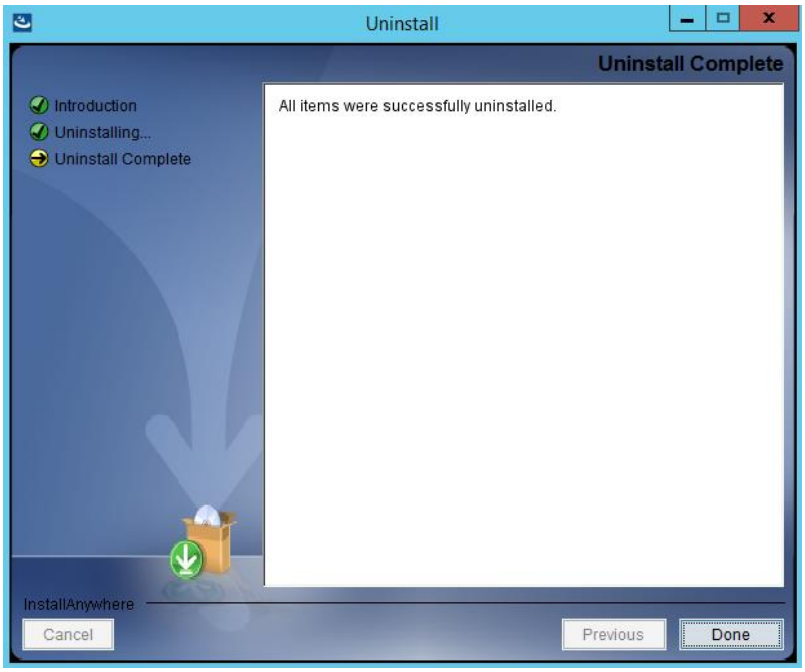


Figure 2-27

Note: Supermicro SuperDoctor 5 and Super Doctor III share the same drivers on Windows platforms. Uninstalling Super Doctor III will remove the shared drivers and damage Supermicro SuperDoctor 5. Please do not install both applications on the same host.

2.4.2 Uninstalling in Linux

Note that you must have root privileges to uninstall SD5. To uninstall SD5 in Linux, follow these steps.

1. Execute the Uninstaller program located in the **[install folder]\Uninstall** folder. Note that if you set the IATEMPDIR environment variable during SD5 installation, now you need to set it again so that it can be used while SD5 is uninstalled.

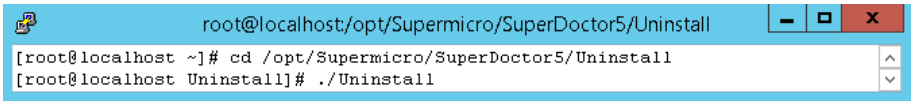


Figure 2-28

2. Press the **Enter** key (on your keyboard) to continue.

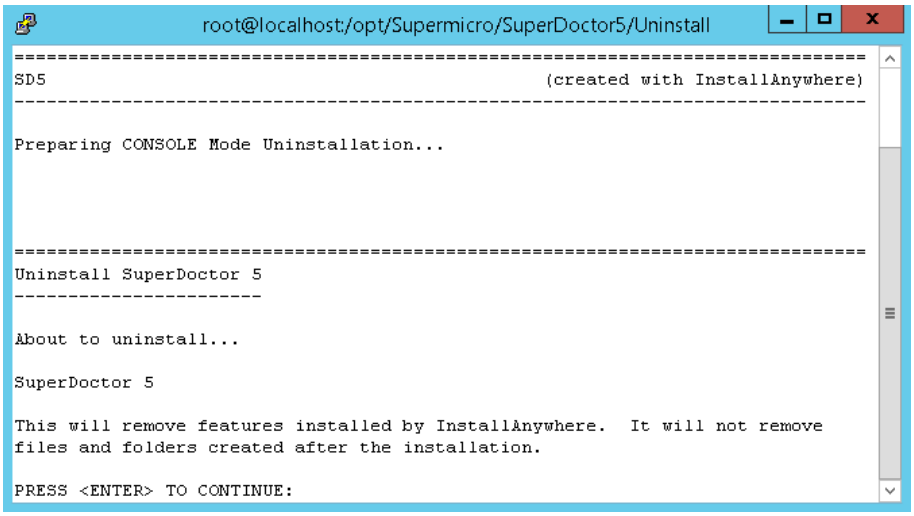


Figure 2-29

3. Please wait while the program uninstalls.

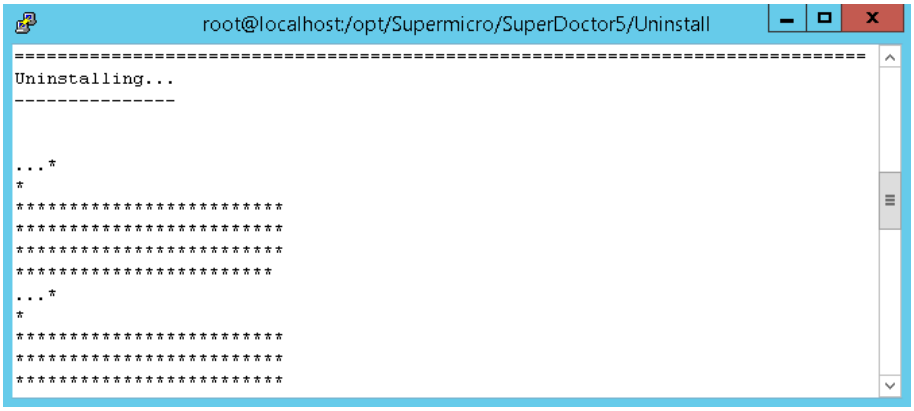


Figure 2-30

4. The uninstall is complete.

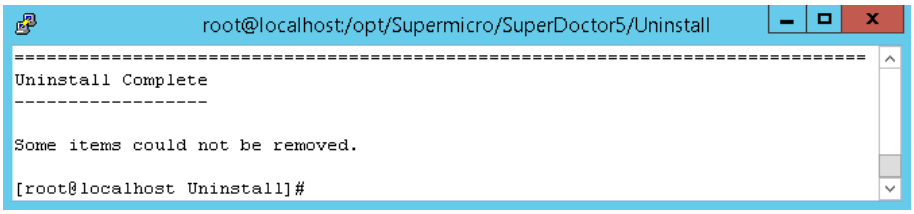


Figure 2-31

2.4.3 Silent Mode Uninstall

Use the following argument to execute the Uninstaller program located in the **[install folder]\Uninstall** folder. **Note that you must have root privileges to uninstall SD5**.

```
Uninstall -i silent
```

Note: For Linux users, if you set the IATEMPDIR environment variable when installing SD5, now you need to set it again to access the designated folder while uninstalling SD5.

Part 2 Supermicro SuperDoctor 5

3 Supermicro SuperDoctor 5 Configurations

Supermicro SuperDoctor 5 needs to be installed on a host to provide in-band management functions. You can customize Supermicro SuperDoctor 5 by modifying its configuration file, which is the agent.cfg file located in the [install folder] folder. Note that you need to manually restart Supermicro SuperDoctor 5 after editing configurations. To restart the service of Supermicro SuperDoctor 5, refer to *2.3 Manually Controlling SD5 Service*. In most situations, you use Supermicro SuperDoctor 5 once it is installed without modifying its configurations. This chapter introduces the working concepts of Supermicro SuperDoctor 5 and the configuration objects it uses.

3.1 Working Concept

When Supermicro SuperDoctor 5 is started, it listens to the TCP/IP ports and waits for requests sent by the SSM Server and SSM Web. Supermicro SuperDoctor 5 supports five configuration objects, which control how Supermicro SuperDoctor 5 functions.

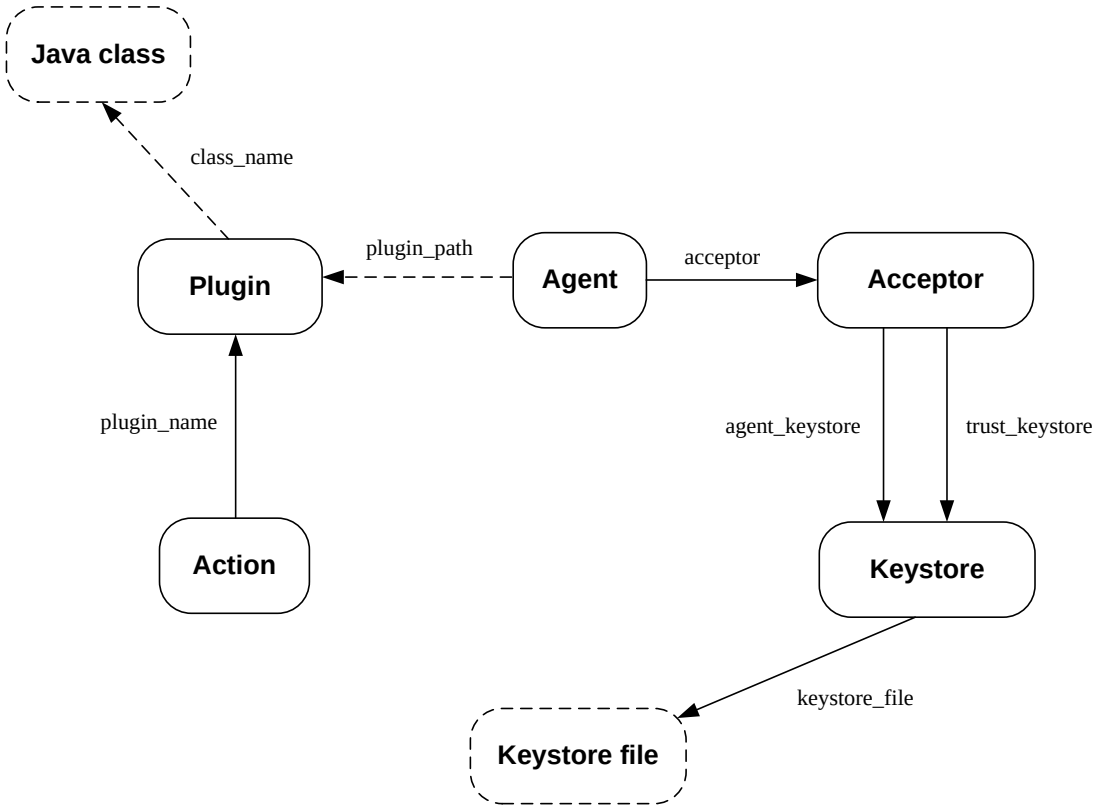


Figure 3-1: The relationships among Supermicro SuperDoctor 5 configuration objects

- **Agent**: An agent object represents the Supermicro SuperDoctor 5 application, which contains attributes such as **agent_name**, **description**, and **version**. Only one agent object can be defined in the configuration file. By connecting the agent object to acceptor objects, you can define the port number and the connection type (SSL or Non-SSL) that Supermicro SuperDoctor 5 should support.
- **Acceptor**: An acceptor object contains an Internet address, a TCP port number, a connection type (SSL or Non-SSL), and key stores. An acceptor is enabled only when it is connected to an agent object. An agent object can have more than one acceptor object to provide multiple connection channels.
- **Keystore**: When SSL is enabled in an acceptor object, you need to provide keystores to the acceptor to create an SSL connection. A keystore object is used to indicate the location of a keystore on the disk.
- **Plug-in**: Similar to the SSM Server, Supermicro SuperDoctor 5 applies a plug-in architecture and relies on plug-ins to provide management functions. The primary function of a plug-in object is to tell Supermicro SuperDoctor 5 which plug-in main program should be invoked when a request is dispatched to the plug-in.
- **Action**: A Supermicro SuperDoctor 5 plug-in can provide multiple functions that can be called by clients (i.e. the SSM Server and SSM Web). An action object is used to export one function of a plug-in to the clients. A plug-in without defining any action object is useless because it cannot be invoked by the clients.

3.2 Connection Modes

Supermicro SuperDoctor 5 supports three connection modes: plain text with allowed IP, anonymous SSL connection with allowed IP, and SSL connection with a public key infrastructure.

Mode A: Plain text with allowed IP

Mode A provides the best transmission efficiency because data is transmitted as plain text without encryption between the client and Supermicro SuperDoctor 5. To prevent unauthorized access to Supermicro SuperDoctor 5, a connection can be established only if the request comes from an Internet address listed on the allow_ip attribute of the agent object.

Configuration example:

1. Defining a non-SSL acceptor object

The definition of a built-in non-SSL acceptor object is shown below. The **ssl_enabled** attribute is set to **false** and the default port number for the non-SSL connection is 5333.

```
define acceptor {
                acceptor_name       non_SSL
                description         default non ssl port
                port                5333
                ssl_enabled         false
}
```

2. Configuring the agent object

The definition of an agent object configured to use the above non-SSL acceptor is shown below. First, the **acceptor** attribute is set to **non_SSL** (the value of the acceptor_name of the non-SSL acceptor) to tell Supermicro SuperDoctor 5 to enable this acceptor. Second, IP addresses or domain names (in this example, 192.168.12.175.) are added that are allowed to access Supermicro SuperDoctor 5 with the **allow_ip** attribute.

```
define agent{
                agent_name      Agent
                description     Default Agent
                allow_ip        192.168.12.175
                plugin_path     ./plugins
                acceptor        non_SSL
                version         1.0.0
}
```

Mode B: Anonymous SSL connection with allowed IP

Mode B is a trade-off between transmission efficiency and security. In this mode, an anonymous SSL connection is established so that data is encrypted between the client and Supermicro SuperDoctor 5. However, since an anonymous SSL is used, preventing unauthorized access to Supermicro SuperDoctor 5 is still required. Thus, the allow_ip attribute of an agent object is also used in mode B.

Configuration example:

1. Defining an anonymous SSL acceptor

The definition of a built-in anonymous SSL acceptor object is shown below. The **ssl_enabled** attribute is set to **true** and the default port number is **5666**. For establishing anonymous SSL connections, the **agent_keystore** attribute needs to be set to a **keystore** object, which is used to encrypt data.

```
define acceptor {
                acceptor_name       default_acceptor
                description         default ssl port
                port                5666
                ssl_enabled         true
                agent_keystore      default_agent_keystore
}
```

2. Defining a keystore object

The definition of a built-in keystore object is shown below. The keystore contains a Supermicro SuperDoctor 5 private key for encryption. The default keystore is located in the **[install folder]\certificates\agent.auth** file. See *9 SSM Certification* for more information on how to generate new keystores.

```
define keystore{
                keystore_name       default_agent_keystore
                description         keystore
                keystore_file       ./certificates/agent.auth
                keystore_password   <your-keystore-password>
}
```

3. Configuring the agent object

The definition of an agent object configured to use the above anonymous SSL acceptor is shown below. First, the **acceptor** attribute is set to **default_acceptor** (the value of the **acceptor_name** of the anonymous SSL acceptor) to tell Supermicro SuperDoctor 5 to enable this acceptor. Second, IP addresses or domain names (in this example, 192.168.12.175.) are added to the **allow_ip** attribute to access Supermicro SuperDoctor 5.

```
define agent{
                    agent_name          Agent
                    description         Default Agent
                    allow_ip            192.168.12.175
                    plugin_path         ./plugins
                    acceptor            default_acceptor
                    version             1.0.0
}
```

Mode C: SSL encryption with a public key infrastructure

Mode C ensures secure communications and simplifies the authentication configuration with a public key infrastructure (PKI). See *9 SSM Certification* for more information about how the SSM Server and Supermicro SuperDoctor 5 create a secure communication channel with the PKI. Since the PKI is used, the **allow_ip** attribute of an agent object is no longer required for authentication.

Configuration examples:

1. Defining an SSL acceptor supporting PKI

The definition of a built-in SSL acceptor object supporting PKI is shown in the example below. The ssl_enabled attribute is set to true and the default port number is 5999. To establish SSL connections with PKI, the agent_keystore and trust_keystore attributes need to be set to a keystore object.

```
define acceptor{
                    acceptor_name       keypair_acceptor
                    description         default ssl port
                    port                5999
                    ssl_enabled         true
                    agent_keystore      default_agent_keystore
                    trust_keystore      default_trust_keystore
}
```

2. Defining two keystore objects

The definitions of two built-in keystore objects for supporting PKI are shown in the examples below. The default_agent_keystore contains an SD5 private key for encryption and the default_trust_keystore contains a client's public key for decryption.

```
define keystore{
                keystore_name       default_agent_keystore
                description         keystore
                keystore_file       ./certificates/agent.auth
                keystore_password   <your-keystore-password>
}
```

```
define keystore{
                keystore_name       default_trust_keystore
                description         truststore
                keystore_file       ./certificates/agent.trust
                keystore_password   <your-keystore-password>
}
```

3. Configuring the agent object

The definition of an agent object configured to use the above SSL acceptor is shown in the example below. All you need to do is to set the acceptor attribute to keypair_acceptor (the value of the acceptor_name of the SSL acceptor with PKI) so that Supermicro SuperDoctor 5 can enable this acceptor. The allow_ip attribute is not used in this connection mode.

```
define agent{
                agent_name          Agent
                description         Default Agent
                allow_ip
                plugin_path         ./plugins
                acceptor            keypair_acceptor
                version             1.0.0
}
```

Note: By default, only modes B and C are enabled. To enable mode A, please modify the agent object configuration and append **no_SSL** to the acceptor attribute.

```
define agent{
…
acceptor                    default_acceptor, keypair_acceptor, no_SSL
}
```

3.3 Configuration Overview

Two kinds of configuration files are used by an SD5:

- **agent.cfg**: This is the main configuration file of an SD5. Three objects are defined in this file: **Agent**, **Acceptor**, and **Keystore**.
- **plugin.cfg**: This file is used to define Supermicro SuperDoctor 5 plug-ins and their exported actions. The plug-ins located in the same plug-in path specified in the plugin_path attribute of an agent object should define one plugin.cfg file so that Supermicro SuperDoctor 5 can discover how many plug-ins and actions are supported. A subfolder of a **plug-in path** can define its own plugin.cfg file. This file can also be packaged in the same jar file containing the Java bytecode that implements a plug-in.

Note: Multiple plug-ins can be defined in one jar file and Supermicro SuperDoctor 5 will determine how many plug-ins are available according to the content of the plugin.cfg file.

The five object definitions are explained in the following sections.

3.3.1 Agent Object Definition

An agent object represents one Supermicro SuperDoctor 5 program. It includes the information of the agent name, plug-in path and supporting connection modes.

```
define agent{
        agent_name              Agent
        description             Default Agent
        allow_ip                192.168.10.55, ssm.supermicro.com, 127.0.0.1
        plugin_path             ./plugins
        acceptor                default_acceptor, keypair_acceptor
        version                 1.0.0
}
```

agent_name*
The name of the agent object.

description
The description of the agent object.

allow_ip*
The IP addresses or host names allowed to connect to the Agent are defined here. Multiple values should be separated by a comma. This attribute works if a non-SSL or anonymous SSL connection is used.

plugin_path*
The root folder where the plug-ins are located.

acceptor*
The acceptors that are supported by the Agent. Multiple values should be separated by a comma.

Version
The version of the Agent.

(*indicates a required attribute)

3.3.2 Acceptor Object Definition

An acceptor object is used to define the acceptable ways for it to connect to its clients. By defining various Acceptor objects, Supermicro SuperDoctor 5 can support different kinds of connection methods at the same time.

```
define acceptor{
        acceptor_name       keypair_acceptor
        description         default ssl port
        address             *
        port                5999
        ssl_enabled         true
        agent_keystore      default_agent_keystore
        trust_keystore      default_trust_keystore
}
```

acceptor_name*
The name of the acceptor object.

description
The description of the acceptor object.

address
The IP address where the acceptor should receive connections from. If a host has more than one network interface card, Supermicro SuperDoctor 5 can be configured with this attribute to accept connections from particular IP addresses bound to the network interface cards. The acceptor will forward connection requests from all network interface cards if this attribute is not declared or if its value is an asterisk.

port*
The port number the acceptor should listen to.

ssl_enabled*
Enables or disables SSL when a connection is established.

agent_keystore
The private key used by the acceptor. This attribute is required if connection modes B and C are used.

trust_keystore
The public key of Supermicro SuperDoctor 5 clients. This attribute is required if the third connection mode is used.

(The asterisk mark "*" indicates a required attribute.)

3.3.3 Keystore Object Definition

A keystore object is used to describe the name and the path (i.e., location) of a keystore as well as the password to access it. This object is applicable if the SSL connection is supported by Supermicro SuperDoctor 5. See *3.2 Connection Modes* in this manual for more information.

```
define keystore{
        keystore_name           default_agent_keystore
        description             A keystore for storing agent's public/private key
        keystore_file           ./certificates/agent.auth
        keystore_password       <your-keystore-password>
}
```

keystore_name*
The name of the keystore object.

description*
The description of the keystore object.

keystore_file*
The full file name (including path) of the keystore.

keystore_password*
The password used to open the keystore.

(The asterisk mark "*" indicates a required attribute.)

3.3.4 Plug-in Object Definition

The primary goal of a plug-in object is to indicate a Java class that implements monitoring, control, or management functions. Usually, a plug-in is only activated by Supermicro SuperDoctor 5 when a request is sent to the plug-in. By setting the active attribute of a plug-in object to 1, Supermicro SuperDoctor 5 will proactively invoke the preload function of the plug-in every time Supermicro SuperDoctor 5 starts. A plug-in can be disabled by setting the enable attribute to 0.

```
define plugin {
        plugin_name     healthinfo_plugin
        class_name      com.supermicro.ssm.agent.plugin.healthinfo.HealthInfoPlugin
        description     HealthInfo Plugin
        version         1.0.0
        active          1
        enabled         1
}
```

plug-in_name*
A unique name of the plug-in object.

class_name*
The Java implementation class of the plug-in object.

description*
The description of the plug-in object.

version*
The version of the plug-in object.

active
1: The plug-in will be loaded when Supermicro SuperDoctor 5 is started.
0: The plug-in will not be loaded when Supermicro SuperDoctor 5 is started. (Default value.)

enabled
1: Enable the plug-in. (Default value.)
0: Disable the plug-in.

(The asterisk mark "*" indicates a required attribute.)

3.3.5 Action Object Definition

An action object defines the exported function and arguments provided by a plug-in.

```
define action {
        action_name             healthinfoitemnumber
        plugin_name             healthinfo_plugin
        description             Return the number of health monitored items
        args                    -mn $ARG1$
        max_instance            0
}
```

action_name*
The name of the action object. The action name is the name to be invoked by Supermicro SuperDoctor 5 clients. For example, when using jcheck_nrpe to connect to Supermicro SuperDoctor 5, this attribute is provided with the –c argument of jcheck_nrpe.

plugin_name*
The name of the plug-in object implemented by this action. Every action belongs to one and only one plug-in.

description*
The description of the action object.

args
The arguments required by the action. For example, when using jcheck_nrpe to connect to Supermicro SuperDoctor 5, this attribute is provided with the –a argument of jcheck_nrpe.

max_instance
The maximum number of concurrent clients allowed to invoke the action. This attribute is used to prevent Supermicro SuperDoctor 5 from being overloaded due to burst requests for an action. This attribute could be omitted if concurrent access constraint to an action is not necessary.

(The asterisk mark "*" indicates a required attribute.)

3.4 Built-in Plug-ins and Actions

The built-in plug-ins of Supermicro SuperDoctor 5 are packaged in the

[install folder]\plugins\builtin\SSMAgentPlugin-build.xx.jar file. Note that you need to manually restart Supermicro SuperDoctor 5 after editing configurations. For details on restarting the service of Supermicro SuperDoctor 5, refer to *2.3 Manually Controlling SD5 Service*. In most situations, you do not need to understand or change the built-in plug-ins. However, if you want to write your own automation scripts to invoke the functions exported by the plug-ins, you can find the necessary information in this section. Users who want to develop new Supermicro SuperDoctor 5 plug-ins can also learn how to define a plugin.cfg file for their own plug-ins.

3.4.1 admin plug-in (admin_plugin)

This plug-in is used to manage all Supermicro SuperDoctor 5 plug-ins and the life cycle of Supermicro SuperDoctor 5. Actions provided by the admin plug-in include plugin_ver, all_plugin_ver, restart, update, generate_config, and check_now. The definition of the plug-in is shown below.

```
define plugin {
        plugin_name     admin_plugin
        class_name      com.supermicro.ssm.agent.plugin.admin.AdminPlugin
        description     Admin Plugin
        version         1.0.0
}
```

3.4.1.1 plugin_ver Action

This action is used to query the version of a specific plug-in.

```
define action {
        action_name             plugin_ver
        plugin_name             admin_plugin
        description             Get the version of the plug-in
        args                    -v -n $ARG1$
}
```

Options:

ARG1: The name of the plug-in.

Usage:

jcheck_nrpe -H <host address> -dk -c plugin_ver -a <ARG1>

Example:

Use jcheck_nrpe to query the version of admin_plugin on host 10.134.12.18.

```
[root@localhost jcheck_nrpe]# ./jcheck_nrpe.sh -H 10.134.12.18 -dk -c plugin_ver -a
admin_plugin
admin_plugin version = 1.0.0
```

Figure 3-2

3.4.1.2 all_plugin_ver Action

This action is used to query the versions of all plug-ins.

```
define action {
        action_name             all_plugin_ver
        plugin_name             admin_plugin
        description             Get versions of all plug-ins
        args                    -v
}
```

Options:
None.

Usage:
jcheck_nrpe -H <host address> -dk -c all_plugin_ver

Example:
Use jcheck_nrpe to inquire the versions of all plug-ins on host 10.134.12.18.

```
[root@localhost jcheck_nrpe]# ./jcheck_nrpe.sh -H 10.134.12.18 -dk -c all_plugin_ver
Agent version = 2.1-build.9066-20140117191958
Plugin version ...
processor_plugin = 1.0.0
healthinfo_plugin = 1.0.0
compound_health_plugin = 1.0.0
receive_passive_check_plugin = 1.0.0
lsiraid_plugin = 1.0.0
agent_web = 1.0.0
echo_plugin = 1.0.0
memory_health_plugin = 1.0.0
fake_healthinfo_plugin = 1.0.0
ipmi_plugin = 1.0.0
notification_plugin = 1.0.0
send_passive_check_plugin = 1.0.0
bios_log_plugin = 1.0.0
smart_plugin = 1.0.0
admin_plugin = 1.0.0
systeminfo_plugin = 1.0.0
executable_plugin = 1.0.0
power_plugin = 1.0.0
storage_health_plugin = 1.0.0
flashBIOS_plugin = 1.0.0
```

Figure 3-3

3.4.1.3 restart Action

This action is used to restart Supermicro SuperDoctor 5.

```
define action {
        action_name             restart
        plugin_name             admin_plugin
        description             Restart Agent
        args                    -s
}
```

Options:
None.

Usage:
jcheck_nrpe -H <host address> -dk -c restart

Example:
Use jcheck_nrpe to restart Supermicro SuperDoctor 5 on host 10.134.12.18.

```
[root@localhost jcheck_nrpe]# ./jcheck_nrpe.sh -H 10.134.12.18 -dk -c restart
Agent restart message has been sent.
```

Figure 3-4

3.4.1.4 update Action

This action is used to update Supermicro SuperDoctor 5. The definition of this action is shown below.

```
define action {
        action_name             update
        plugin_name             admin_plugin
        description             Update Agent
        args                    -u $ARG1$
}
```

Options:
ARG1: The update site containing the latest version of Supermicro SuperDoctor 5.

Note:
If the version of the installed Supermicro SuperDoctor 5 is earlier than the latest version available on the update site, the action will be performed.

Usage:
jcheck_nrpe -H <host address> -dk -c update –a <ARG1>

Example:
Use jcheck_nrpe to update Supermicro SuperDoctor 5 on host 10.134.12.18.

```
[root@localhost jcheck_nrpe]# ./jcheck_nrpe.sh -H 10.134.12.18 -dk -c update -a http
://ssm3.supermicro.com.tw:8080/cruisecontrol/artifacts/Downloads/ -t 240
Agent restart message has been sent.
```

Figure 3-5

If the program does not need to be updated, a message “Nothing to update” appears (see the figure below).

```
[root@localhost jcheck_nrpe]# ./jcheck_nrpe.sh -H 10.134.12.18 -dk -c update -a http
://ssm3.supermicro.com.tw:8080/cruisecontrol/artifacts/Downloads/ -t 240
Nothing to update.
```

Figure 3-6

3.4.1.5 generate_config Action

This action is used to generate service object definitions for a particular plug-in. The definition of this action is shown below.

```
define action {
        action_name             generate_config
        plugin_name             admin_plugin
        description             Generate configurations
        args                    -H $ARG1$ --args $ARG2$ -check_ipmi $ARG3$
}
```

Options:
ARG1: The IP address of the agent-managed host.
ARG2: The name of the configuration object(s). Valid values include ALL, ping_host, and each of the plug-in names. Multiple values are separated by a comma.
ARG3: true: Generate IPMI related object definitions as well.
false: Do not generate IPMI related object definitions.

Usage:
jcheck_nrpe -H <host address> -dk -c generate_config –a <ARG1>!<ARG2>!<ARG3> -plus

Example:
Use jcheck_nrpe to generate object definitions on host 10.134.12.18.

```
[root@localhost jcheck_nrpe]# ./jcheck_nrpe.sh -H 10.134.12.18 -dk -c generate_confi
g -a 10.134.12.18\!ALL\!true -plus
[[{"agent_version":"1.0.0_build.457-20140124163824","agent_os_version":"Red Hat Ente
rprise Linux Server release 6.0","use":"agent_managed_host, linux_host","wol_mac_add
ress":"00-30-48-fd-e4-08"}],[[{"use":"processor_health","check_command":"jcheck_proc
essor_health!1!p1d0","service_description":"Processor health"}],[{"notification_peri
od":"24x7","check_interval":60,"use":"health_compare","host_name":null,"check_period
":"24x7","retry_interval":1,"contacts":"admin","notifications_enabled":1,"notificati
on_options":"w,u,c,r,f","service_description":"FAN 1","check_command":"jcheck_health
!!a!0!0!784","notification_interval":120,"contact_groups":"admins"},{"notification_p
eriod":"24x7","check_interval":60,"use":"health_compare","host_name":null,"check_per
iod":"24x7","retry_interval":1,"contacts":"admin","notifications_enabled":1,"notific
ation_options":"w,u,c,r,f","service_description":"FAN 2","check_command":"jcheck_hea
lth!!a!1!0!784","notification_interval":120,"contact_groups":"admins"},{"notificatio
n_period":"24x7","check_interval":60,"use":"health_compare","host_name":null,"check_
period":"24x7","retry_interval":1,"contacts":"admin","notifications_enabled":1,"noti
fication_options":"w,u,c,r,f","service_description":"FAN 3","check_command":"jcheck_
health!!a!2!0!784","notification_interval":120,"contact_groups":"admins"},{"notifica
tion_period":"24x7","check_interval":60,"use":"health_compare","host_name":null,"che
ck_period":"24x7","retry_interval":1,"contacts":"admin","notifications_enabled":1,"n
otification_options":"w,u,c,r,f","service_description":"FAN 4","check_command":"jche
ck_health!!a!3!0!784","notification_interval":120,"contact_groups":"admins"},{"notif
ication_period":"24x7","check_interval":60,"use":"health_compare","host_name":null,"
check_period":"24x7","retry_interval":1,"contacts":"admin","notifications_enabled":1
,"notification_options":"w,u,c,r,f","service_description":"FAN 5","check_command":"j
check_health!!a!4!0!784","notification_interval":120,"contact_groups":"admins"},{"no
tification_period":"24x7","check_interval":60,"use":"health_compare","host_name":nul
l,"check_period":"24x7","retry_interval":1,"contacts":"admin","notifications_enabled
":1,"notification_options":"w,u,c,r,f","service_description":"CPU1 Vcore","check_com
mand":"jcheck_health!!a!8!1352!824","notification_interval":120,"contact_groups":"ad
mins"},{"notification_period":"24x7","check_interval":60,"use":"health_compare","hos
t_name":null,"check_period":"24x7","retry_interval":1,"contacts":"admin","notificati
ons_enabled":1,"notification_options":"w,u,c,r,f","service_description":"CPU1 DIMM",
"check_command":"jcheck_health!!a!10!1656!1336","notification_interval":120,"contact
_groups":"admins"},{"notification_period":"24x7","check_interval":60,"use":"health_c
ompare","host_name":null,"check_period":"24x7","retry_interval":1,"contacts":"admin"
,"notifications_enabled":1,"notification_options":"w,u,c,r,f","service_description":
```

Figure 3-7

3.4.2 echo plug-in (echo_plugin)

This plug-in is used for testing purposes. The definition of this plug-in is shown below.

```
define plugin {
        plugin_name     echo_plugin
        class_name      com.supermicro.ssm.agent.plugin.echo.EchoPlugin
        description     Echo Plugin
        version         1.0.0
}
```

3.4.2.1 echo Action

This action is used to return the same message received by Supermicro SuperDoctor 5 back to the client.

```
define action {
        action_name             echo
        plugin_name             echo_plugin
        description             Echo
        args                    --text $ARG1$
}
```

Options:
ARG1: The input message.

Usage:
jcheck_nrpe -H <host address> -dk –c echo –a <ARG1>

Example:

Use jcheck_nrpe to echo a message.

```
[root@localhost jcheck_nrpe]# ./jcheck_nrpe.sh -H 10.134.12.18 -dk -c echo -a "Test
echo"
Test echo
```

Figure 3-8

3.4.3 executable plug-in (executable_plugin)

This plug-in is designed to execute external programs or scripts. By using this plug-in, users can extend the functions of Supermicro SuperDoctor 5 without writing new Supermicro SuperDoctor 5 Java plug-ins. The definition of this plug-in is shown below.

```
define plugin {
        plugin_name     executable_plugin
        class_name      com.supermicro.ssm.agent.plugin.executable.ExecutablePlugin
        description     Executable Plugin
        version         1.0.0
}
```

3.4.3.1 executable Action

This action is used to execute an external program.

```
define action {
        action_name             executable
        plugin_name             executable_plugin
        description             Execute an external command
        args                    --executable $ARG1$ --args $ARG2$ --timeout $ARG3$
}
```

Options:

ARG1: The file name of the external program.

ARG2: The arguments for the external program. Multiple values should be separated by a space, such as “arg1 arg2 arg3”.

ARG3: The time in seconds the plug-in should wait for the external program to complete its execution. The default value is 60.

Usage:

jcheck_nrpe -H <host address> -dk –c executable –a <ARG1>!<ARG2>!<ARG3>

Example:

Use jcheck_nrpe to execute an echo program on host 10.134.12.18.

```
[root@localhost jcheck_nrpe]# ./jcheck_nrpe.sh -H 10.134.12.18 -dk -c executable -a
echo\!"Test echo"
Test echo
```

Figure 3-9

3.4.4 healthinfo plug-in (healthinfo_plugin)

This plug-in is used to check the health of all monitored items. Six actions are included: health_item_num, health_reading, health_compare, health_def, health_all, and reset_switch. They are used to get the number of monitored items, query readings of monitored items, check health status with user-defined thresholds, retrieve definitions of monitored items, check health status using default thresholds, and reset chassis intrusion, respectively. The definition of this plug-in is shown below.

```
define plugin {
        plugin_name             healthinfo_plugin
        class_name
        com.supermicro.ssm.agent.plugin.healthinfo2.HealthInfoPlugin2
        description             HealthInfo Plugin
        version                 1.0.0
        active                  1

}
```

3.4.4.1 health_item_num Action

This action is used to get the number of monitored items.

```
define action {
        action_name             health_item_num
        plugin_name             healthinfo_plugin
        description             Get the number of health monitored items
        args                    -mn $ARG1$
}
```

Options:

ARG1: Types of monitored items. The valid values are:

- a: all monitored items
- f: fan
- v: voltage
- s: switch
- c: circuit

Usage:

jcheck_nrpe -H <host> -dk –c health_item_num –a <ARG1>

Example:

Use jcheck_nrpe to get the count of all monitored items on host 192.168.12.18.

```
[root@localhost jcheck_nrpe]# ./jcheck_nrpe.sh -H 10.134.12.18 -dk -c health_item_nu
m -a a
63
```

Figure 3-10

3.4.4.2 health_reading Action

This action is used to get the reading of a specific monitored item.

```
define action {
        action_name             health_reading
        plugin_name             healthinfo_plugin
        description             Get reading of a health monitored item
        args                    $ARG1$ -t $ARG2$ -n $ARG3$
}
```

Options:
ARG1: -csv: Display the result in CSV format
ARG2: Types of monitored items. The valid values are:
- a: all monitored items
- f: fan
- v: voltage
- s: switch
- c: circuit

ARG3: The index of a monitored item (begins with 0)

Usage:

jcheck_nrpe -H <host> -dk –c health_reading –a <ARG1>!<ARG2>!<ARG3>

Example:

Use jcheck_nrpe to get the reading of the first fan on host 10.134.12.18.

```
[root@localhost jcheck_nrpe]# ./jcheck_nrpe.sh -H 10.134.12.18 -dk -c health_reading
 -a \!f\!0
[0]FAN 1 is 9216RPM
```

Figure 3-11

3.4.4.3 health_compare Action

Check the health status of a specific monitored item with user-defined thresholds.

```
define action {
        action_name     health_compare
        plugin_name     healthinfo_plugin
        description     Get and compare reading of a health monitored item with high/low limits
        args            $ARG1$ -t $ARG2$ -n $ARG3$ -high $ARG4$ -low $ARG5$
}
```

Options:

ARG1: -csv: Display the results in CSV format

ARG2: Types of monitored items. The valid values are:

a: all monitored items

f: fan

v: voltage

s: switch

c: circuit

ARG3: The index of a monitored item (begins with 0).

ARG4: The high limit.

ARG5: The low limit.

Usage:
jcheck_nrpe -H <host address> -dk –c health_compare –a <ARG1>!<ARG2>!<ARG3>!<ARG4>!<ARG5>

Example:
Use jcheck_nrpe to check the health status of the first voltage on host 10.134.12.18 with a user-defined high limit of 1350 mV and low limit of 900 mV.

```
[root@localhost jcheck_nrpe]# ./jcheck_nrpe.sh -H 10.134.12.18 -dk -c health_compare
 -a \!v\!0\!1350\!900
[0]CPU1 Vcore is normal(1350mV>=1024mV>=900mV)
```

Figure 3-12

3.4.4.4 health_def Action

This action is used to retrieve the definitions of all monitored items. The generated definitions are used by SSM Web to generate the default monitoring services of an agent-managed host.

```
define action {
        action_name     health_def
        plugin_name     healthinfo_plugin
        description     Get the definitions of all health monitored items
        args            -d $ARG1$ -f $ARG2$
}
```

Options:
ARG1: The IP address of an agent-managed host.
ARG2: 1: Filter inactive items;
0: Do not filter inactive items.

Usage:
jcheck_nrpe -H <host address> -dk –c health_def –a <ARG1>!<ARG2>

Example:
Use jcheck_nrpe to get the definitions of all monitored items on host 10.134.12.18.



Figure 3-13

3.4.4.5 health_all Action

Check the health status of all monitored items with default thresholds.

```
define action {
        action_name     health_all
        plugin_name     healthinfo_plugin
        description     Get readings of all monitored items and compare with default high/low limits
        args            -a -x $ARG1$ -f $ARG2$
}
```

Options:
ARG1: The index of monitored items to be excluded. Multiple values are separated by a comma.
ARG2: 1: Filter inactive items;
0: Do not filter inactive items.

Usage:
jcheck_nrpe -H <host address> -dk –c health_all –a <ARG1>!<ARG2>

Example:
Use jcheck_nrpe to check the health status of all monitored items on host 192.168.12.18 with default thresholds.

```
[root@localhost jcheck_nrpe]# ./jcheck_nrpe.sh -H 10.134.12.18 -dk -c health_all
Checked: 22, OK: 22. |
FAN_1=9216RPM;0;0;784;13000 FAN_2=10404RPM;0;0;784;13000 FAN_3=9216RPM;0;0;784;13000
 FAN_4=9216RPM;0;0;784;13000 FAN_5=9216RPM;0;0;784;13000 CPU1_Vcore=0.928V;0;0;0.824
;1.352 CPU1_DIMM=1.512V;0;0;1.336;1.656 +1.5_V=1.52V;0;0;1.336;1.656 +5_V=5.088V;0;0
;4.48;5.536 +5VSB=5.088V;0;0;4.48;5.536 +12_V=12.19V;0;0;10.706;13.25 +1.1_V=1.12V;0
;0;0.976;1.216 +3.3VCC=3.312V;0;0;2.928;3.648 +3.3VSB=3.264V;0;0;2.928;3.648 VBAT=3.
192V;0;0;2.928;3.648 System_Temp=30C;0;0;0;75 P1-DIMM1A=37C;0;0;0;75 P1-DIMM2A=34C;0
;0;0;75 Chassis_Intru=0SWITCH;0;0;-1;2 PS_Status=0SWITCH;0;0;-1;2 PS2_Fan1=8512RPM;0
;0;720;13000 PS2_Temperature1=41C;0;0;0;10000 PS2_Temperature2=36C;0;0;0;10000 PS2_A
CInputCurrent=0.156A;0;0;-10000;10000 PS2_DC12VOutputCurrent=4.5A;0;0;-10000;10000 P
S2_ACInputPower=33W;0;0;-10000;10000 PS2_DC12VOutputPower=56W;0;0;-10000;10000 PS2_A
CInputVoltage=225.5V;0;0;-10000;10000 PS2_DC12VOutputVoltage=12.187V;0;0;-10000;1000
0 PS2_Status=0SWITCH;0;0;-1;2 PS1_Fan1=8352RPM;0;0;720;13000 PS1_Temperature1
```

Figure 3-14

3.4.4.6 reset_switch Action

Clear a chassis intrusion flag. The definition of this action is shown below.

```
define action {
        action_name             reset_switch
        plugin_name             healthinfo_plugin
        description             Clear the trigger created by switch
        args                    -reset
}
```

Options:
None.

Usage:
jcheck_nrpe -H <host address> -dk –c reset_switch

Example:
Use jcheck_nrpe to reset the chassis intrusion flag on host 10.134.12.18.

```
[root@localhost jcheck_nrpe]# ./jcheck_nrpe.sh -H 10.134.12.18 -dk -c reset_switch
Switch [Chassis Intrustion] reset successful.
```

Figure 3-15

3.4.5 power plug-in (power_plugin)

This plug-in is used to support power control functions such as power off, reboot, and shutdown. The definition of this plug-in is shown below.

```
define plugin {
  plugin_name   power_plugin
  class_name     com.supermicro.ssm.agent.plugin.powercontrol.PowerControlPlugin
  description    Power Plugin
  version        1.0.0
}
```

3.4.5.1 powercontrol Action

This action implements power off, reboot, and shutdown functions.

```
define action {
        action_name             powercontrol
        plugin_name             power_plugin
        description             Power control the local machine
        args                    -t $ARG1$ -d $ARG2$
        version                 1.0.0
}
```

Options:
ARG1: Types of power control functions. The valid values are:
0: Abort. This argument is not recommended for use.
1: Power off. This argument is not recommended for use.
2: Reboot.
3: Shutdown.
ARG2: The number of seconds to wait before the power control command takes effect.

Usage:
jcheck_nrpe -H <host address> -dk –c powercontrol –a <ARG1>!<ARG2>

Example:
Use jcheck_nrpe to reboot host 10.134.12.34 after 10 seconds.

```
[root@localhost jcheck_nrpe]# ./jcheck_nrpe.sh -H 10.134.12.34 -dk -c powercontrol -
a 2\!10
The reboot command is fired.
```

Figure 3-16

3.4.6 systeminfo plug-in (systeminfo_plugin)

This plug-in is used to query local system information. Two actions are included: systeminfo for getting all system information items and systeminfo_item for getting one specific system information item. The definition of this plug-in is shown below.

```
define plugin {
  plugin_name          systeminfo_plugin
  class_name           com.supermicro.ssm.agent.plugin.systeminfo.SystemInfoPlugin
  description          SystemInfo Plugin
  version               1.0.0
}
```

3.4.6.1 systeminfo Action

This action is used to query software and hardware information such as the OS version, CPU model, physical memory, printer, services, and so on.

```
define action {
        action_name          systeminfo
        plugin_name          systeminfo_plugin
        description          Get system information of local machine
        max_instance         1
}
```

Options:
None.

Usage:
jcheck_nrpe -H <host address> -dk –c systeminfo

Example:
Use jcheck_nrpe to get system information on host 10.134.12.18.


[root@localhost jcheck_nrpe]# ./jcheck_nrpe.sh -H 10.134.12.18 -dk -c systeminfo -t
120 -plus
{"19":[],"35":[{"OEM Record":"[]","FRU File ID":"","Base Compatibility Record":"[]",
"DC Load":"[]","Firmware Version":"1.0","Product Serial Number":"P7031CA39IT7147","E
xtended Compatibility Record":"[]","Product Version":"1.0","Product Name":"PWS-703P-
1R","Power Supply Information":"[\"Overall capacity (watts):700
Peak VA:795
In
rush:25
Inrush interval (ms):17
Low end Input voltage range 1 (mV):100000
H
igh end Input voltage range 1 (mV):140000
Low end Input voltage range 2 (mV):1800
00
High end Input voltage range 2 (mV):240000
Low end Input frequency range:50

High end Input frequency range:60
A\\\/C dropout tolerance (ms):15
Hot Swa
p Support
Autoswitch
Power factor correction
No Predictive fail support
Hold up time (second):0
Peak capacity (watts):700
Combined Wattage Voltage 1:1
2V
Combined Wattage Voltage 2:12V
Total Combined Wattage Voltage:0
Predicti
ve fail pin indicates pass\\\/fail.The signal asserted (1) indicates failure.\"]","M
anufacturer Name":"SUPERMICRO","Asset Tag":"","DC Output":"[\"Standby
Output numb
er:1
Nominal voltage:5000(mV)
Maximum negative voltage deviation:4800(mV)
M
aximum positive voltage deviation:5250(mV)
Ripple and Noise pk-pk 10Hz to 30MHz:5
0(mV)
Minimum current draw:0(mA)
Maximum current draw:4000(mA)\",\"Output numb
er:2
Nominal voltage:12000(mV)
Maximum negative voltage deviation:11520(mV)
Maximum positive voltage deviation:12600(mV)
Ripple and Noise pk-pk 10Hz to 30MH
z:120(mV)
Minimum current draw:0(mA)
Maximum current draw:58000(mA)\"]","Manag
ement Access Record":"[]","Product Part\/Model Number":"PWS-703P-1R"},{"OEM Record":
"[]","FRU File ID":"","Base Compatibility Record":"[]","DC Load":"[]","Firmware Vers
ion":"1.0","Product Serial Number":"P7031CA39IT7145","Extended Compatibility Record"
:"[]","Product Version":"1.0","Product Name":"PWS-703P-1R","Power Supply Information
":"[\"Overall capacity (watts):700
Peak VA:795
Inrush:25
Inrush interval (m
s):17
Low end Input voltage range 1 (mV):100000
High end Input voltage range 1
(mV):140000
Low end Input voltage range 2 (mV):180000
High end Input voltage
range 2 (mV):240000
Low end Input frequency range:50
High end Input frequency
range:60
A\\\/C dropout tolerance (ms):15
Hot Swap Support
Autoswitch
Po
wer factor correction
No Predictive fail support
Hold up time (second):0
Pe
ak capacity (watts):700
Combined Wattage Voltage 1:12V
Combined Wattage Voltag
e 2:12V
Total Combined Wattage Voltage:0
Predictive fail pin indicates pass\\\
/fail.The signal asserted (1) indicates failure.\"]","Manufacturer Name":"SUPERMICRO
","Asset Tag":"","DC Output":"[\"Standby
Output number:1
Nominal voltage:5000(
mV)
Maximum negative voltage deviation:4800(mV)
Maximum positive voltage devia
tion:5250(mV)
Ripple and Noise pk-pk 10Hz to 30MHz:50(mV)
Minimum current draw

Figure 3-17

3.4.6.2 systeminfo_item Action

This action is used to query one specific system information item.

```
define action {
        action_name             systeminfo_item
        plugin_name             systeminfo_plugin
        description             Get specific system information of a local machine
        args                    -i $ARG1$
        max_instance            1
}
```

Options:

ARG1: Types of system information items include:

Options:
ARG1:
0: account
1: baseboard
2: bios
3: cd rom
4: chassis
5: computer system
6: disk
7: floppy
8: keyboard
9: logical disk
10: logical memory
11: memory
12: desktop monitor
13: network
14: os
15: processor
16: process
17: port connector
18: pointing device
19: parallel port
20: printer
21: service
23: share
24: serial port
25: system slot

26: computer summary
27: time zone
28: video controller
30: ipmi
34: startup command
35: fru
36: oem strings
37: system cfg options
38: power supply

Usage:
jcheck_nrpe -H <host address> -dk –c systeminfo_item –a <ARG1>

Example:
Use jcheck_nrpe to get user accounts on host 10.134.12.18.

```
[root@localhost jcheck_nrpe]# ./jcheck_nrpe.sh -H 10.134.12.18 -dk -c systeminfo_ite
m -a 0 -plus
[{"Name":"root","Caption":"","Description":"root","Domain":"","Disabled":"false","Fu
ll Name":""},{"Name":"bin","Caption":"","Description":"bin","Domain":"","Disabled":"
true","Full Name":""},{"Name":"daemon","Caption":"","Description":"daemon","Domain":
"","Disabled":"true","Full Name":""},{"Name":"adm","Caption":"","Description":"adm",
"Domain":"","Disabled":"true","Full Name":""},{"Name":"lp","Caption":"","Description
":"lp","Domain":"","Disabled":"true","Full Name":""},{"Name":"sync","Caption":"","De
scription":"sync","Domain":"","Disabled":"true","Full Name":""},{"Name":"shutdown","
Caption":"","Description":"shutdown","Domain":"","Disabled":"true","Full Name":""},{
"Name":"halt","Caption":"","Description":"halt","Domain":"","Disabled":"true","Full
Name":""},{"Name":"mail","Caption":"","Description":"mail","Domain":"","Disabled":"t
rue","Full Name":""},{"Name":"uucp","Caption":"","Description":"uucp","Domain":"","D
isabled":"true","Full Name":""},{"Name":"operator","Caption":"","Description":"opera
tor","Domain":"","Disabled":"true","Full Name":""},{"Name":"games","Caption":"","Des
cription":"games","Domain":"","Disabled":"true","Full Name":""},{"Name":"gopher","Ca
ption":"","Description":"gopher","Domain":"","Disabled":"true","Full Name":""},{"Nam
e":"ftp","Caption":"","Description":"FTP User","Domain":"","Disabled":"true","Full N
ame":""},{"Name":"nobody","Caption":"","Description":"Nobody","Domain":"","Disabled"
:"true","Full Name":""},{"Name":"dbus","Caption":"","Description":"System message bu
s","Domain":"","Disabled":"true","Full Name":""},{"Name":"usbmuxd","Caption":"","Des
cription":"usbmuxd user","Domain":"","Disabled":"true","Full Name":""},{"Name":"avah
i-autoipd","Caption":"","Description":"Avahi IPv4LL Stack","Domain":"","Disabled":"t
rue","Full Name":""},{"Name":"vcsa","Caption":"","Description":"virtual console memo
ry owner","Domain":"","Disabled":"true","Full Name":""},{"Name":"rpc","Caption":"","
Description":"Rpcbind Daemon","Domain":"","Disabled":"true","Full Name":""},{"Name":
"rtkit","Caption":"","Description":"RealtimeKit","Domain":"","Disabled":"true","Full
 Name":""},{"Name":"abrt","Caption":"","Description":"","Domain":"","Disabled":"true
","Full Name":""},{"Name":"nscd","Caption":"","Description":"NSCD Daemon","Domain":"
","Disabled":"true","Full Name":""},{"Name":"haldaemon","Caption":"","Description":"
HAL daemon","Domain":"","Disabled":"true","Full Name":""},{"Name":"apache","Caption"
:"","Description":"Apache","Domain":"","Disabled":"true","Full Name":""},{"Name":"ns
lcd","Caption":"","Description":"LDAP Client User","Domain":"","Disabled":"true","Fu
ll Name":""},{"Name":"saslauth","Caption":"","Description":"\"Saslauthd user\"","Dom
ain":"","Disabled":"true","Full Name":""},{"Name":"postfix","Caption":"","Descriptio
n":"","Domain":"","Disabled":"true","Full Name":""},{"Name":"avahi","Caption":"","De
scription":"Avahi mDNS\/DNS-SD Stack","Domain":"","Disabled":"true","Full Name":""},
```

Figure 3-18

3.4.7 smart plug-in (smart_plugin)

This plug-in is used to monitor the total number and health information of hard drives. Two actions are included: smart_check_cache, and storage_health_cache.

```
define plugin {
        plugin_name             smart_plugin
        class_name              com.supermicro.ssm.agent.plugin.smarthd.SMARTHDPlugin
        description             SMART HD Plugin
        active                  1
        version                 1.0.0
}
```

To use this plug-in, the hard drives to be monitored must support SMART.

3.4.7.1 smart_check_cache Action

This action is used to actively collect hard drive health information and save the information to a cache file every 3600 seconds (1 hour).

```
define action {
        action_name             smart_check_cache
        plugin_name             smart_plugin
        description             S.M.A.R.T. HDD Check(s) Cache
        version                 1.0.0
        check_interval          3600
}
```

Options:
None.

Usage:
The action is designed to automatically run periodically for maintaining a hard drive cache to increase the performance of the hard drive monitoring function.

3.4.7.2 storage_health_cache Action

This action queries hard drive health information from the hard drive cache maintained by the smart_check_cache action. Regardless of the total number of installed hard drives on the monitored host, running this action usually takes a few seconds.

```
define action {
        action_name             storage_health_cache
        plugin_name             smart_plugin
        description             Storage Action
        args                    -q $ARG1$ -s $ARG2$ -cache 1
}
```

Options:
ARG1: Expected numbers of hard drives (-1: Disable the check).
ARG2: Check the hard drive status with SMART (0: Disable the check).

Usage:
jcheck_nrpe -H <host address> -dk –c storage_health_cache –a <ARG1>!<ARG2>

Example:
Use jcheck_nrpe to get the health information of hard drives from the hard drive cache on host 192.168.12.104.

```
[root@localhost jcheck_nrpe]# ./jcheck_nrpe.sh -H 10.134.14.104 -dk -c storage_healt
h_cache -a \!1\!1 -dk
Intel Corporation Patsburg 6 Port SATA AHCI Controller
-- 1 physical disk(s)
-- /dev/sda (VNP210B2GHRK3B) is SMART check OK
```

Figure 3-19

3.4.8 bios log plug-in (bios_log_plugin)

This plug-in is used to get BIOS event logs. The bios_log_num action retrieves BIOS event logs every 5 minutes. The definition of this plug-in is shown below.

```
define plugin {
        plugin_name             bios_log_plugin
        class_name              com.supermicro.ssm.agent.plugin.bioslog.BiosLogPlugin
        description             BIOS Log Check Plugin
        active                  1
        version                 1.0.0
}
```



Note: This plug-in applies to hosts running Linux operating systems only.

3.4.8.1 bios_log_num Action

This action is used to read BIOS event logs every 300 seconds (5 minutes).

```
define action {
        action_name             bios_log_num
        plugin_name             bios_log_plugin
        description             BIOS Log Check(s)
        args                    -t $ARG1$ -d $ARG2$
        version                 1.0.0
        check_interval          300
}
```

Options:
None.

Usage:
The action is designed to run automatically and periodically for retrieving BIOS event logs.

3.4.9 memory plug-in (memory_health_plugin)

This plug-in is used to monitor memory health information by counting CECC and UECC error events. It can also monitor the total number of DIMMs installed on the host under monitoring. One action is included: memory_health for getting memory health information. The definition of this plug-in is shown below.

```
define plugin {
        plugin_name             memory_health_plugin
        class_name
        com.supermicro.ssm.agent.plugin.memory.PhysicalMemPlugin
        description             Memory Check Plugin
        version                 1.0.0
}
```



Note: This plug-in applies to hosts running Linux operating systems only.

3.4.9.1 memory_health Action

This action is used to monitor memory health information.

```
define action {
        action_name             memory_health
        plugin_name             memory_health_plugin
        description             CECC/UECC Checks for Physical Memory
        args                    -nm $ARG1$ -c $ARG2$
        version                 1.0.0
}
```

Options:
ARG1: Expected number of DIMMs (-1: Disable the check).
ARG2: The threshold for CECC and UECC.

The argument format is as follows:

[type][duration][fail count],….

- [type]:
    - m: Correctable single bit ECC errors.
    - M: Uncorrectable ECC errors.
- [duration]:
    - d: day
    - h: hour
    - m: minute
    - s: second

[fail count]: The acceptable number of failures. To trigger a critical status, the failure counts must be greater than this value.

To specify a threshold for memory that indicates four single bit ECC errors per 1GB RAM within one day (24 hours) are allowed (i.e., m1d4) and 0 uncorrectable ECC errors are allowed within 1 hour (i.e., M1h0):

m1d4,M1h0

Usage:
jcheck_nrpe -H <host address> -dk –c memory_health –a <ARG1>!<ARG2>

Example:
Use jcheck_nrpe to get the health information of DIMMs on host 10.134.12.18.

```
[root@localhost jcheck_nrpe]# ./jcheck_nrpe.sh -H 10.134.12.18 -dk -c memory_health
-a 2\!m1d1,M1d0 -dk
Memory is OK; 2 DIMM(s), 8.0 GB RAM; CECC OK, threshold: 1 time(s) in 1 day; UECC OK
, threshold: 0 time(s) in 1 day.
```

Figure 3-20

3.4.10 storage plug-in (storage_health_plugin)

The plug-in is used to monitor the total number of hard drives, the SMART status of hard drives and the health status of RAID controllers. One action is included: storage_health_allinone.

```
define plugin {
        plugin_name             storage_health_plugin
        class_name              com.supermicro.ssm.agent.plugin.storage.StoragePlugin
        description             Storage Health Allinone Plugin
        active                  1
        version                 1.0.0
        enabled                 1
}
```

To use this plug-in, the hard drives to be monitored must support SMART. Currently, the RAID health check is available on LSI MegaRAID 2108, 2208, 3108 controllers and later generations such as 3908 and 3916.

3.4.10.1 storage_health_allinone Action

This action is used to query storage health information including SMART status of hard drives and health status of RAID controllers. The SMART health information is from the hard drive cache maintained by the smart_check_cache action. The RAID health information is from the RAID controller cache maintained by the raid_health action. Regardless of the total number of installed hard drives and RAID controllers on the monitored host, running this action usually takes a few seconds.

```
define action {
        action_name             storage_health_allinone
        plugin_name             storage_health_plugin
        description             Storage Allinone Action
        args                    -q $ARG1$ -s $ARG2$ -r $ARG3$
}
```

Options:
ARG1: Expected numbers of hard drives (-1: Disable the check).
ARG2: Check the hard drive status with SMART (0: Disable the check).
ARG3: Check RAID health (0: Disable the check).

Usage:
jcheck_nrpe -H <host address> -dk –c storage_health_allinone –a <ARG1>!<ARG2>!<ARG3>

Example:
Use jcheck_nrpe to get the storage health information on host 10.134.14.104.

```
[root@localhost jcheck_nrpe]# ./jcheck_nrpe.sh -H 10.134.14.104 -dk -c storage_healt
h_allinone -a 4\!1\!1 -dk
Physical disk number is incorrect on the system, expect: 4, actual: 3

Intel Corporation Patsburg 6 Port SATA AHCI Controller
-- 1 physical disk(s)
-- /dev/sda (VNP210B2GHRK3B) is SMART check OK


Supermicro SMC2108 Controller
-- 2 physical disk(s)
-- The status of RAID is normal.
```

Figure 3-21

3.4.11 LSI RAID plug-in (lsiraid_plugin)

This plug-in is used to monitor the health of RAID controllers. Two actions are included: raid_health and lsiraid_check_cache.

```
define plugin {
        plugin_name             lsiraid_plugin
        class_name              com.supermicro.ssm.agent.plugin.raid.LSIRaidPlugin
        description             LSI RAID Plugin
        active                  1
        version                 1.0.0
        enabled                 1
}
```

3.4.11.1 raid_health Action

This action is used to query RAID health information using cache data maintained by lsiraid_check_cache action. Regardless of the total number of installed RAID controllers and hard drives combined to RAID on the monitored host, running this action usually takes a few seconds.

```
define action {
        action_name             raid_health
        plugin_name             lsiraid_plugin
        description             Raid Action
        args                    -cache 1
        varsion                 1.0.0
}
```

Options:
None.

Usage:
jcheck_nrpe -H <host address> -dk –c raid_health –a cache 1

Example:
Use jcheck_nrpe to get the health information of RAID controllers on host 10.134.14.104.

```
[root@localhost jcheck_nrpe]# ./jcheck_nrpe.sh -H 10.134.14.104 -dk -c raid_health -
a cache 1 -dk
Supermicro SMC2108 Controller
-- 2 physical disk(s)
-- The status of RAID is normal.
```

Figure 3-22

3.4.11.2 lsiraid_check_cache Action

This action is used to actively collect the health information of RAID controllers and save the information to a cache file every 180 seconds (or 3 minutes).

```
define action {
        action_name             lsiraid_check_cache
        plugin_name             lsiraid_plugin
        description             LSI RAID Check(s) Cache
        version                 1.0.0
        check_interval          180
        enabled                 1
}
```

Options:
None.

Usage:
The action is designed to automatically run periodically for maintaining a RAID cache to increase the performance of the RAID monitoring function.

3.4.12 notification plug-in (notification_plugin)

This notification plug-in is used to monitor its configuration file, **polling.properties**, located in the **[install folder]\config** folder. The notification behavior of Supermicro SuperDoctor 5 depends on the **polling.properties** file of polling setting, and notification methods. Once the file is changed, the notification behavior will be changed. See *4.5.1 Alert Configuration* for more information. The definition of this plug-in is shown below.

```
define plugin {
        plugin_name             notification_plugin
        class_name
        com.supermicro.ssm.agent.plugin.notification.NotificationPlugin
        description             Notification plugin
        active                  1
        version                 1.0.0
        enabled                 1
}
```

3.4.12.1 change_alerts action

This action is used to notify the changes of polling.properties. Supermicro SuperDoctor 5 then will send notifications by the definition the polling.properties.

```
define action {
        action_name             change_alerts
        plugin_name             notification_plugin
        args                    -send
        description             Alert Configuration Changes
}
```

Options:
None.

Usage:
jcheck_nrpe -H <host address> -dk –c change_alerts

3.4.12.2 start_filewatcher action

This action is used to start a file watcher to monitor polling.properties every second.

```
define action {
        action_name             start_filewatcher
        plugin_name             notification_plugin
        args                    -start
        description             Start File Watcher
        check_interval          1
}
```

Options:
None.

Usage:
jcheck_nrpe -H <host address> -dk –c start_filewatcher

3.4.12.3 stop_filewatcher action

This action is used to stop the file watcher to monitor **polling.properties**.

```
define action {
        action_name             stop_filewatcher
        plugin_name             notification_plugin
        args                    -stop
        description             Stop File Watcher
}
```

Options:
None.

Usage:
jcheck_nrpe -H <host address> -dk –c stop_filewatcher

4 SD5 Web

Supermicro SuperDoctor 5 includes a built-in plug-in called SD5 Web, which provides a Web-based console for Supermicro SuperDoctor 5. The SD5 Web allows users to view health information and system information as well as to set configuration data via Web browsers.

4.1 SD5 Web Login

Type the following URL in your browser to connect to the SD5 Web:

https://[Supermicro SuperDoctor 5 address]:8444/SuperDoctor5

The login page is shown below.



Figure 4-1

4.2 Health Information

SD5 Web graphically displays the status of the monitored devices, including fan speed, voltage, temperature, chassis intrusion, power failure, hard drives, and memory. An item in green indicates a healthy state while a red one denotes a critical state. Notifications can be sent when a monitored item reaches critical status. You can configure the notification behavior on the Configuration page. See *4.5 SD5 Web Configuration* for more information.

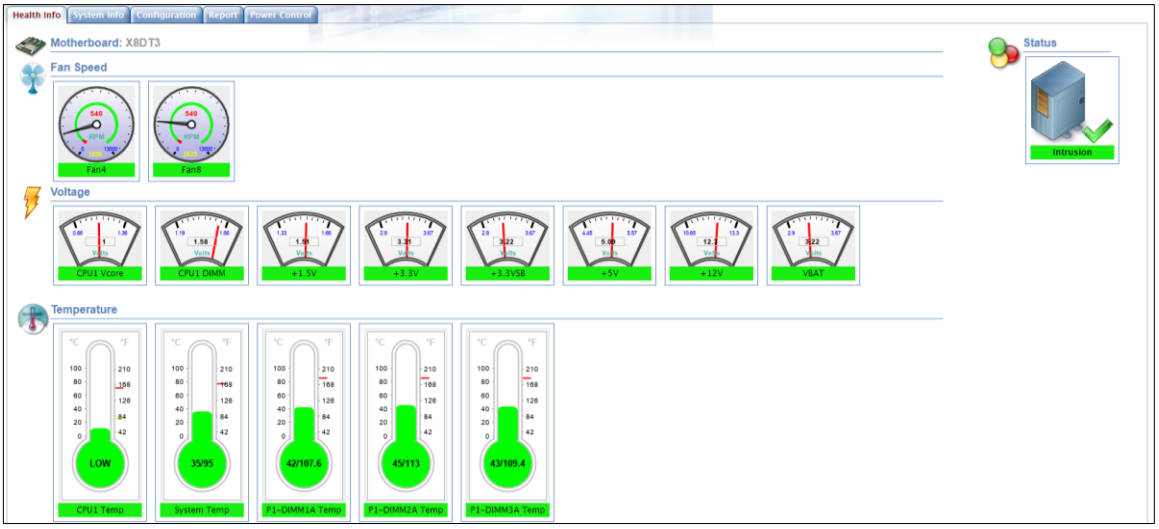


Figure 4-2

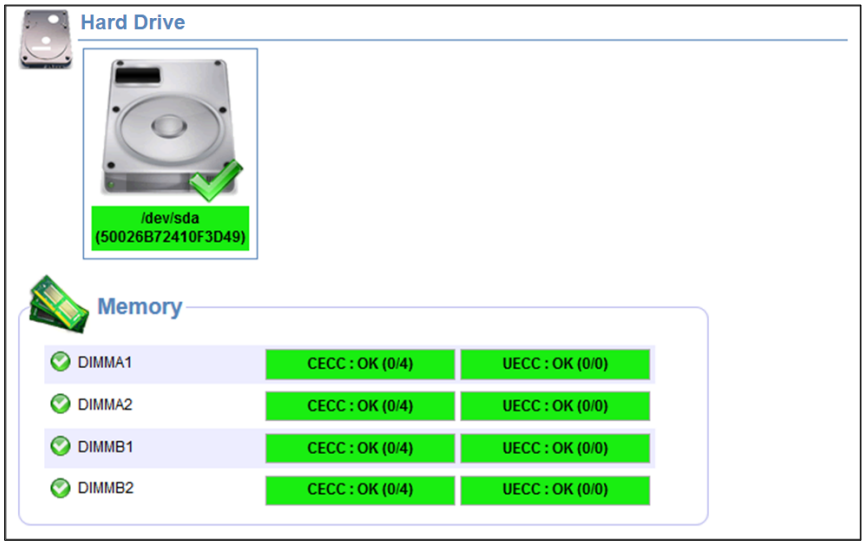


Figure 4-3

Note: The default argument for CECC and UECC is 1 time in one day per 1GB and 0 times in one day, respectively.

The SMART health monitoring function supports non-RAID internal hard drives and hard drives that connected to the Intel RAID controller, but does not support USB hard drives or flash drives. In Linux, whether the RAID drives are configured or not, all drives connected to the Intel RAID controller will be displayed on the page. In Windows, if the RAID drives are configured, the hard drives (except for NVMe drives) can also be displayed in the Hard Drive area. Note that all the created RAID volumes won't be displayed on the page.

To use this function, first install the smartctl utility program. For Windows users, when you install smartmontools including smartctl online, click **Install Smartmontools** (see the figure below).

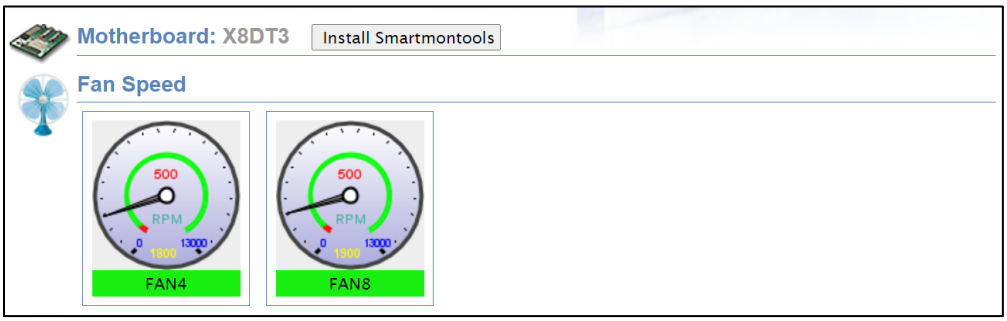


Figure 4-4

A GPL (GNU General Public License) 2.0 license agreement dialog box shows up. Read the agreement carefully before installing smartmontools. If you accept the terms of the agreement, click **I Agree** to continue installation.

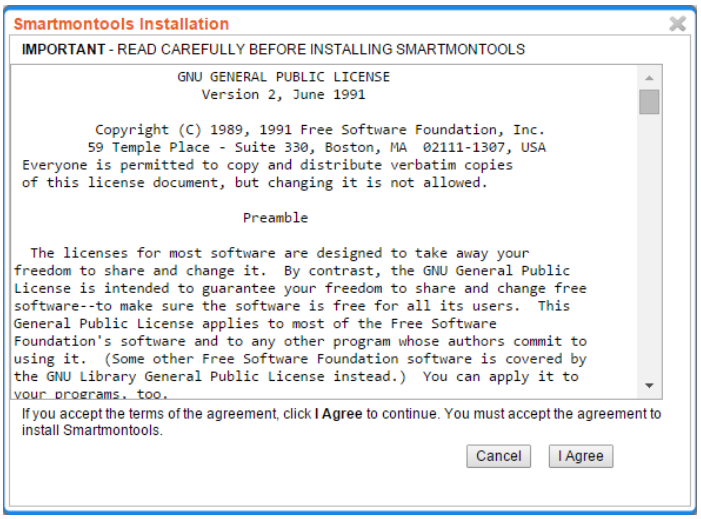


Figure 4-5

To manually install the smartmontools package, follow these steps:

1. Download the smartmontools package from http://www.supermicro.com/wftp/GPL/smartmontools/windows/smartctl.zip.
2. Extract the zip file and copy all(*.*) files into the [install folder]/libs/native.
3. In text console, execute the "sdc -rd" command to detect the hardware configuration again.



Note: There are smartctl utility limitations for NVMe drives connected behind the Intel RAID controller on Windows platforms while Intel® VMD (Intel® Volume Management Device) is enabled in the BIOS Setup.

- If no RAID volume is set, then all hard drives will be shown in the Hard Drive area, but only one drive will be selected and checked with SMART health.
- If there is a RAID volume is set, then none of drives will be shown in the Hard Drive area.

The health information of the LSI MegaRAID RAID controller is also supported on the page. The health of a RAID controller is a combined status that depends on the states of its components such as battery backup unit (BBU), virtual drives, and hard drives. If all components belonging to the adapter are OK, the status of the adapter shows OK. Otherwise, it could be Warning or Critical depending on the states of the components. Valid states for BBU, virtual drives and hard drives are:

BBU	This shows the current status of a BBU. Valid values are OK (Optimal), Critical (BBU status is missing or degraded or failed) and Unknown (incomplete command output).
Virtual drive	This shows the current status of a virtual drive. Valid values are OK (Optimal), Warning (Partially Degraded or Degraded) and Critical (Offline).
Hard drive	This shows some attributes of a hard drive such as port status and firmware state. Valid values are OK (port status is active, and the firmware state is equal to online or hotspare or unconfigured good or jbod), Warning (port status is active, and the firmware state is equal to rebuild or copyback) and Critical (port status is inactive or unknown or the firmware state is offline or missing or failed or unconfigured bad).

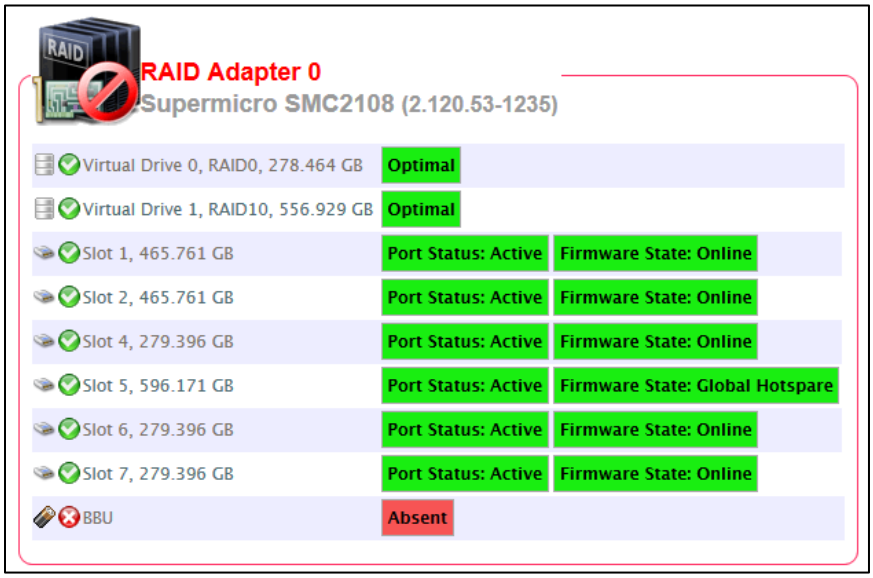


Figure 4-6

Note: Only LSI MegaRAID 2108, 2208, 3108 and later generations such as 3908 and 3916 RAID controllers are currently supported on both Windows and Linux platforms. Other LSI MegaRAID RAID controllers (i.e. LSI MegaRAID 2008 and 2308 RAID controllers) are not fully tested and non-LSI MegaRAID RAID controllers (i.e. LSI Fusion-MPT based and Intel Rapid Storage Technology) are not supported in this version.

4.3 System Information

The system information provided by the SD5 Web is similar to that provided by the SSM Web.

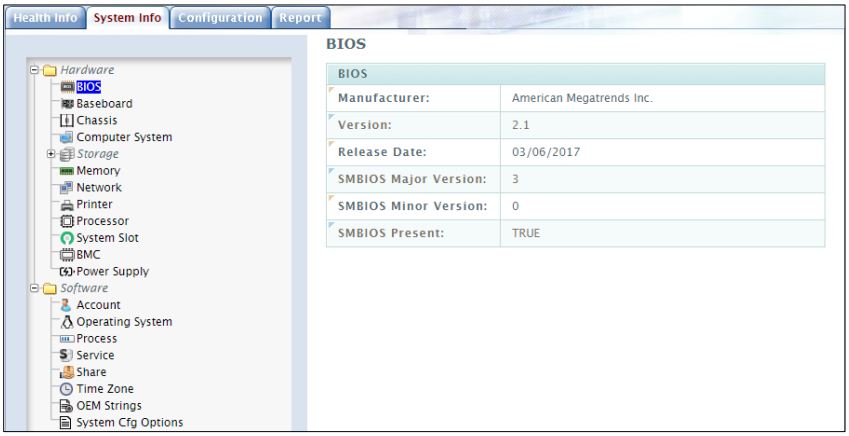


Figure 4-7

Notes:

- The system information contents are platform dependent. Particular information available on a Windows host may not be presented on a Linux host, and vice versa. Also, Linux does not support all types of system information objects in the same way that Windows supports them. Types including Desktop Monitor, Floppy, Keyboard, Port Connector, Parallel Port, Pointing Device, Serial Port, Computer Summary, Startup Command, and Video Controller are supported on Windows platforms only.
- The Current Clock Speed (MHz) in the Processor category is read from the DMI table. It may not reflect the real time data when you check the current clock speed under operating systems.
- System Information page requires the **smartctl utility program** as well. Before using this function, please ensure that smartctl is installed.

4.4 Reports

Supermicro SuperDoctor 5 provides three CSV (Comma Separated Values) format reports. These reports can be downloaded and viewed with CSV supported tools like Microsoft Excel.

- System Information Report: This report contains information shown in the System Info function. See *4.3 System Information* for more information.
- Health Information Log Report: This report includes the historical data of monitored item readings. Readings of selected (i.e. enabled) monitored items will be written to a file only if the **Polling Interval** value is set and the Log option is enabled in the **Alert Configuration** function. See *4.5.1 Alert Configuration* and *4.5.2 Monitored Item* for more information.
- Event Log Report: This report contains events that represent problems and recoveries with monitored items. When the status of a monitored item is changed, an event log is written to the Event Log Report. Note that to write events to the log file, the **Polling Interval** on the Configuration page must be set.

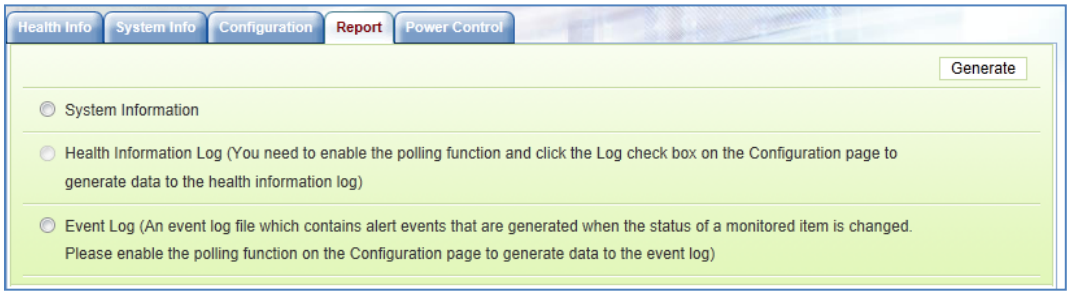


Figure 4-8

4.5 SD5 Web Configuration

This page includes four submenus: **Alert Configuration**, **Monitored Item**, **Password Setting** and **Flash BIOS**.

4.5.1 Alert Configuration

On this page you can configure the SD5 Web notification methods. Five methods are supported: **Log**, **Email**, **SNMP Trap**, **System Tray** and **OS Event Log**. The meanings of each argument are illustrated below:

- **Enabled Pooling**: Supermicro SuperDoctor 5 periodically checks the health status of monitored items if pooling is enabled. No alert is sent if pooling is disabled.
- **Polling Interval**: Determines how frequently in seconds the SD5 Web should check the health status of monitored items. The minimum value is 3 seconds.
- **Log**: Keeps alerts in a log file named "log.txt[yyyy-mm-dd-sequence]" located in the **[install folder]\archive** folder. The file is split into two files once its size becomes greater than 10 MB. The total number of log files to be kept can be configured by setting the "backup files to keep around" argument.
- **Email Alert**: Sends alerts via email. To use this function, you need to set recipients, an email server address and a port number as well as a sender's email address. Check SSL or TLS if the email server uses secure connections. If the email server requires authentication, you will need to set up an account and password to log in to the email server. Multiple recipients must be separated by a comma.
- **SNMP Trap**: Sends alerts with SNMP traps. To use this function, you need to select SNMP version for the trap message and set SNMP trap recipients first. Multiple recipients must be separated by commas. If you use an SNMPv3 trap, the engine id will be auto-generated and cannot be modified. Please provide your user name, an authentication protocol, an authentication key, an encryption protocol and an encryption key. For authentication protocol, SHA224, SHA256, SHA384 and SHA512 are supported; for encryption protocol, AES, AES192 and AES256 are supported.
- **System Tray Popup Alert**: Sends alerts to local desktop. Note that the function is only available on Windows platform. For more information on using the **SD5 Tray** program to receive alerts, please refer to *7 SD5 Tray*.
- **OS Event Log**: Writes alerts to Windows Logs for Windows platforms and system logs for Linux platforms.

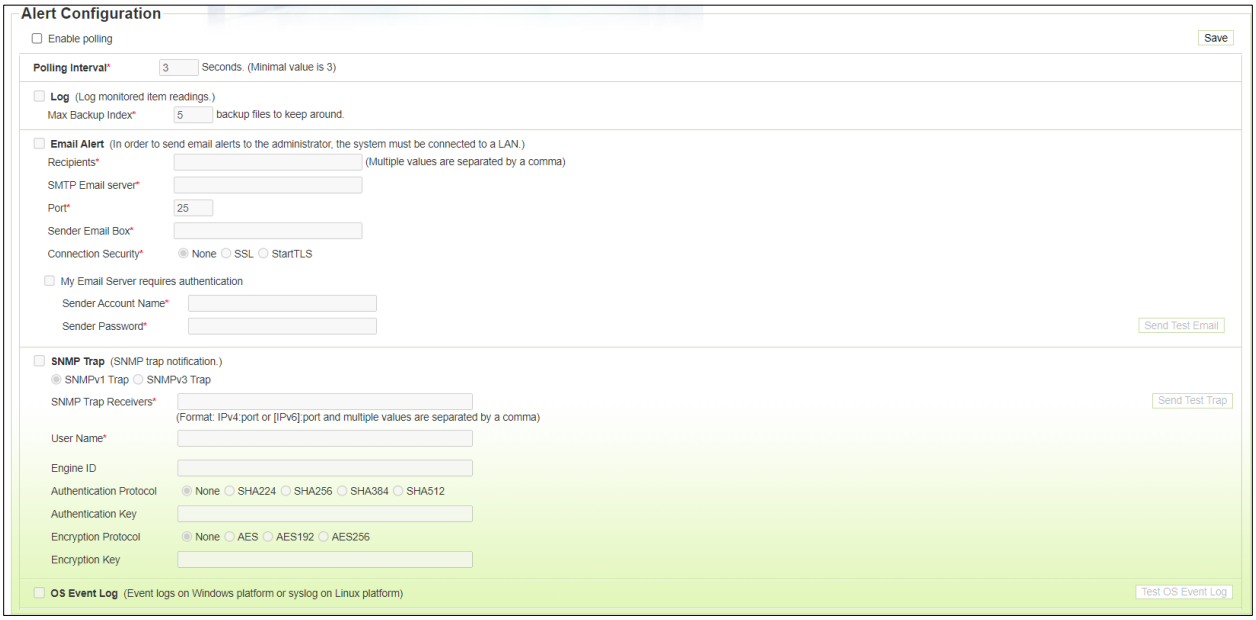


Figure 4-9

Note: On Linux platforms, you may need to add the host name and the IP address to the /etc/hosts file if SNMP traps cannot be sent.

The Email message format is defined by the following attributes:

- Mail title:
  - Item 1: the type of an alert ("Problem", "Recovery")
  - Item 2: the name of the monitored item
  - Item 3: the status of the monitored item ("OK", "Warning", "Critical", or "Unknown")
  - Item 4: the time of an alert in date time format
  - Item 5: the host name and host address which sent out an alert
- Mail body:
  - Item 6: the output message about the status of the monitored item

For example, the subject line of an email alert shows "Problem: RAID Adapter 0(Supermicro SMC2108) - Virtual Drive 0 is WARNING at 2012/3/12 13:50:13 from softlab1(192.168.12.30)" and the mail body of an email alert shows "RAID Adapter 0(Supermicro SMC2108) - Virtual Drive 0(RAID5, 500GB) is Degraded".

Notes:

- A problem alert will be sent while the status of the monitored item is non-OK (i.e., WARNING, UNKNOWN or CRITICAL) from the initial or is from an OK state to a non-OK state or is from a non-OK state to another non-OK state.
- A recovery alert will be sent while the status of the monitored item is from a non-OK state to an OK state.

The SNMP Trap description is defined by the following attributes:

- Item 1: the type of an alert ("Problem", "Recovery")
- Item 2: the name of the monitored item
- Item 3: the status of the monitored item ("OK", "Warning", "Critical", or "Unknown")
- Item 4: the time of an alert in date time format
- Item 5: the output message about the status of the monitored item

For example, the description of an SNMP trap shows "Problem: RAID Adapter 0(Supermicro SMC2108) - Virtual Drive 0 is WARNING at 2012/3/12 13:50:13. Virtual Drive 0(RAID5, 500GB) is Degraded".

4.5.2 Monitored Items

On this page, you can decide if an item should be monitored or not. You can also change both the high and low limits of an item. All possible monitored items are listed. When Supermicro SuperDoctor 5 is first started, it detects unplugged monitored items and disables them automatically. Thus, the first time you see this page, some items may be already disabled.

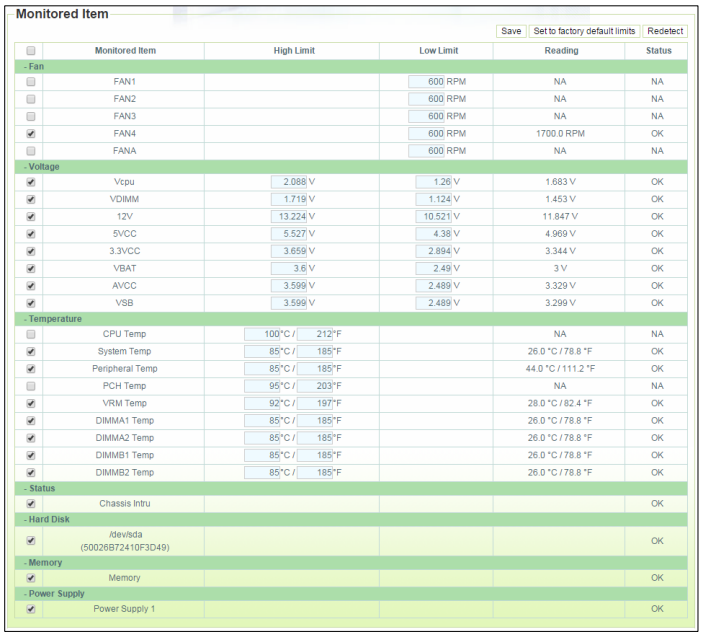


Figure 4-10

You can change the high and low limits of an item, or you can deselect an item if you no longer wish to monitor it. Click the **Save** button to apply changes immediately. A row with high/low limits in invalid format will be highlighted (see the figure below). To view the detailed error message, move the mouse over the warning icon.



Figure 4-11

To restore the default threshold values, click the **Set to factory default limits** button.

Sometimes your hardware configuration may change, such as when a new power supply is used or new fans are plugged in. In such cases, you can click the **Redetect** button to detect the monitored items again (see the figure below).

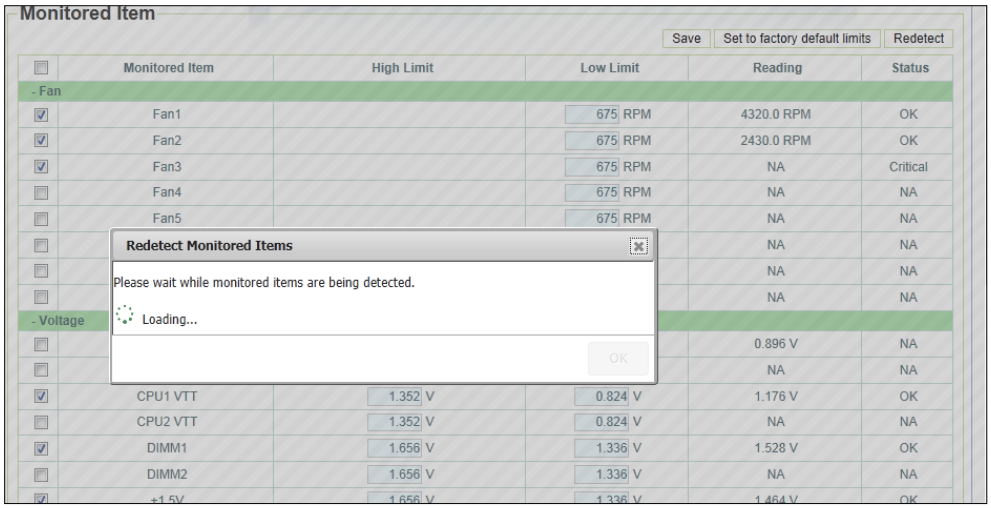


Figure 4-12

Supermicro SuperDoctor 5 will be restarted after the detection process is complete and you have to log in Supermicro SuperDoctor 5 again. Click the **OK** button to go to the SD5 login web page.

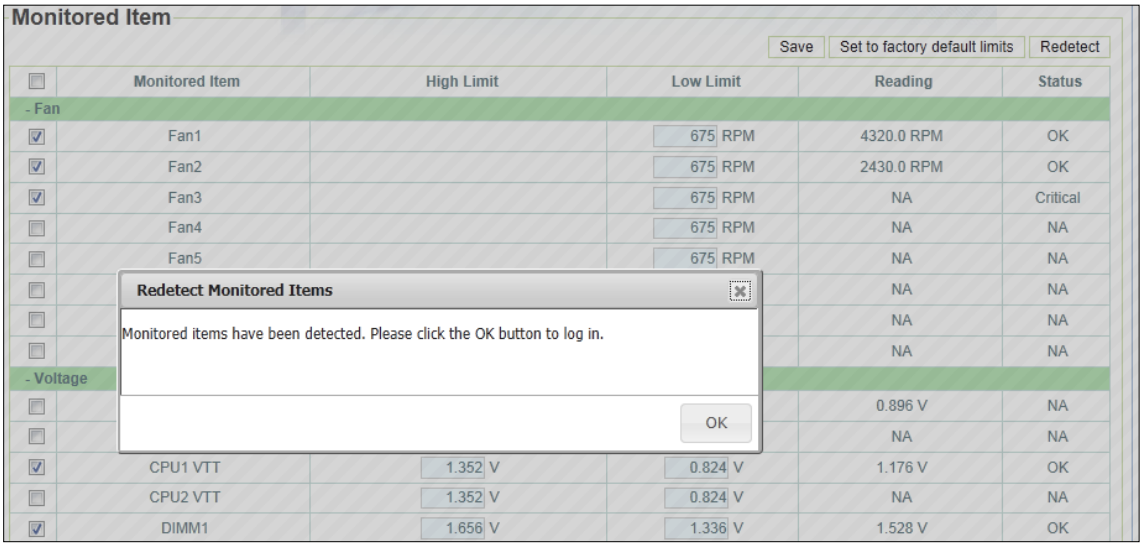


Figure 4-13

4.5.3 Account Setting

You can change the account and the password for the built-in account on this page. Note that the function of creating new accounts is not supported and ADMIN/ADMIN (case insensitive) cannot be set as the user name and password for the account.

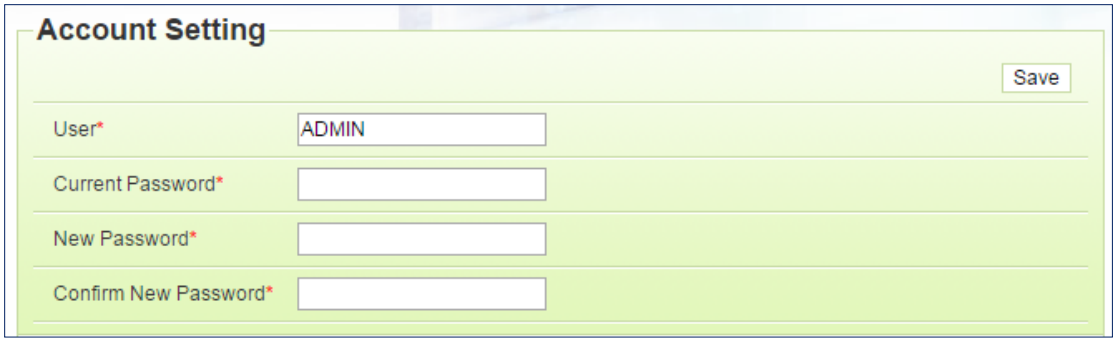


Figure 4-14

4.5.4 Flashing BIOS

On this page you can upload BIOS binary files and flash the BIOS to a system that has Supermicro SuperDoctor 5 installed. Note that this function supports X9 series Supermicro motherboards and later on both Windows and Linux platforms.

Notes:

- A jumperless solution is provided for X10 Intel® Xeon® Processor E5 v3/v4 Product Family platforms. See later in this section for details. Also, it's recommended that you check the original settings of the boot order in the BIOS Setup. Flashing the BIOS can cause the system reboot from a boot device which was not previously set.
- Root of Trust (RoT) has been supported on Supermicro motherboards and server products since X12/H12 platforms. X12/H12 platforms require a BMC username and a password in order to flash BIOS, but for X13/H13 and later, it's not necessary

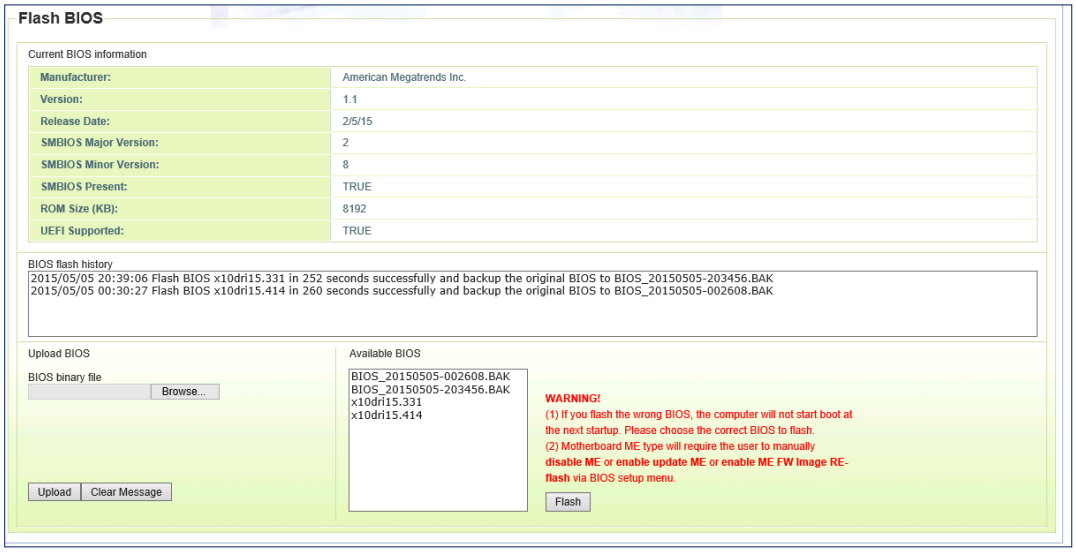


Figure 4-15

The Flash BIOS page includes four fields:

- Current BIOS information: A table displays the current BIOS information, such as version, release date and ROM size.
- BIOS flash history: The BIOS flashing activities via Supermicro SuperDoctor 5 is logged in the list. The flashing is logged whether it is successful or not. If you have never used SD5 to flash the BIOS before, the history field is empty.
- Upload BIOS: A user can choose and upload the desired ROM BIOS binary file. If you have never uploaded BIOS binary files in SD5 before, the **Available BIOS** field is empty.

- Available BIOS block: A list contains BIOS binary files backed up or uploaded in SD5. Note that to prevent the BIOS from being corrupted, you are required to disable ME (Intel Management Engine) before updating the BIOS. Find **disable ME** or **enable update ME** or **enable ME FW Image RE-flash** in the BIOS setup menu.

Select a BIOS to start flashing. A warning message shows up to remind you of not removing the AC power or turning off the computer until the BIOS is completely flashed (see the figure below).

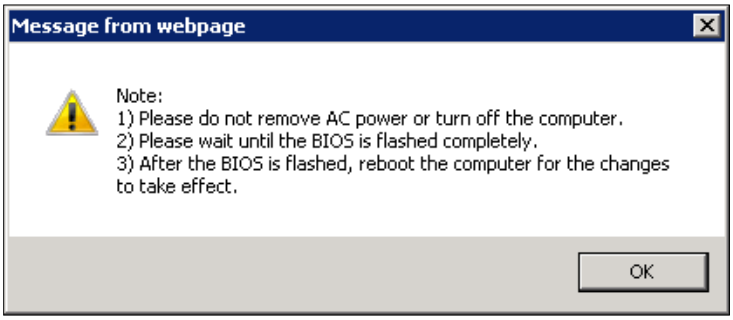


Figure 4-16

Later another warning message shows up to remind you of rebooting the system for the changes to take effect (see the figure below).

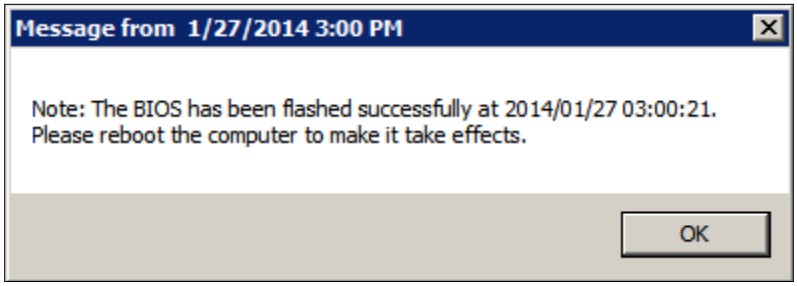


Figure 4-17

The original BIOS will be backed up in the **[install folder]\BIOS\rom** folder if the BIOS is flashed successfully.

Jumperless Solution for X10 Platforms of Intel® Xeon® Processor E5 v3/v4 Product Family

Before X10 Intel® Xeon® Processor E5 v3/v4 Product Family platforms, users manually set onboard jumper (JPME2) to enable the ME manufacturing mode. This was required upon all software-strap settings being updated in the Flash Descriptor Table (FDT) inside the ME region. When flashing BIOS on multiple systems with different FDTs, such a way of flashing BIOS was not doable. Supermicro then

introduced a jumperless solution on X10 Intel® Xeon® Processor E5 v3/v4 Product Family platforms to flash BIOS.

When the FDT is different, a system installed with Supermicro SuperDoctor 5 needs to reboot to enter the ME manufacturing mode to update BIOS. The number of systems rebooting depends on if the Flash Descriptor Table (FDT) is identical between the current system BIOS and the updating image file.

Note: In order to continue updating BIOS after reboot, make sure the OS in use is the same as the one on which the multi-boot function is set.

- When the FDT is the same, Supermicro SuperDoctor 5 will start flashing BIOS and remind you to reboot the system for the changes to take effect (see the figure below).

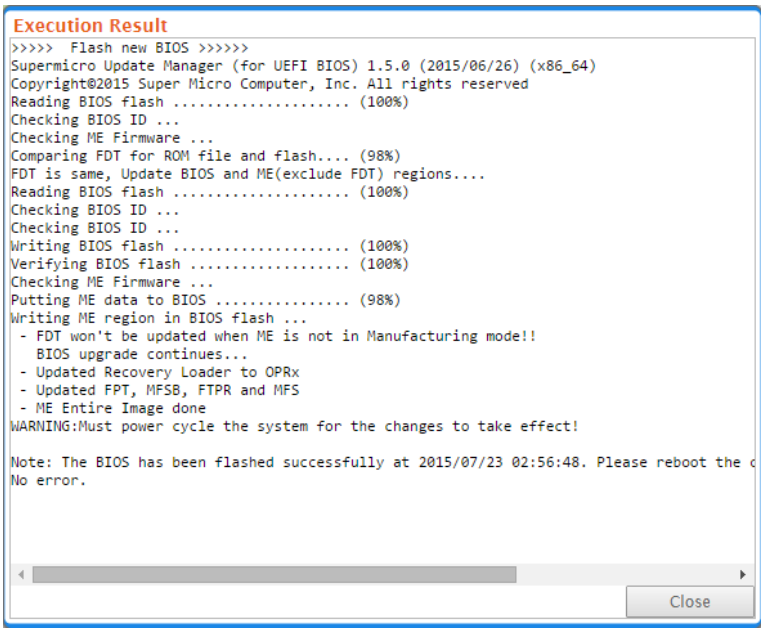


Figure 4-18

- When the FDT is different, Supermicro SuperDoctor 5 will continue updating BIOS after the first reboot (see the figure below).

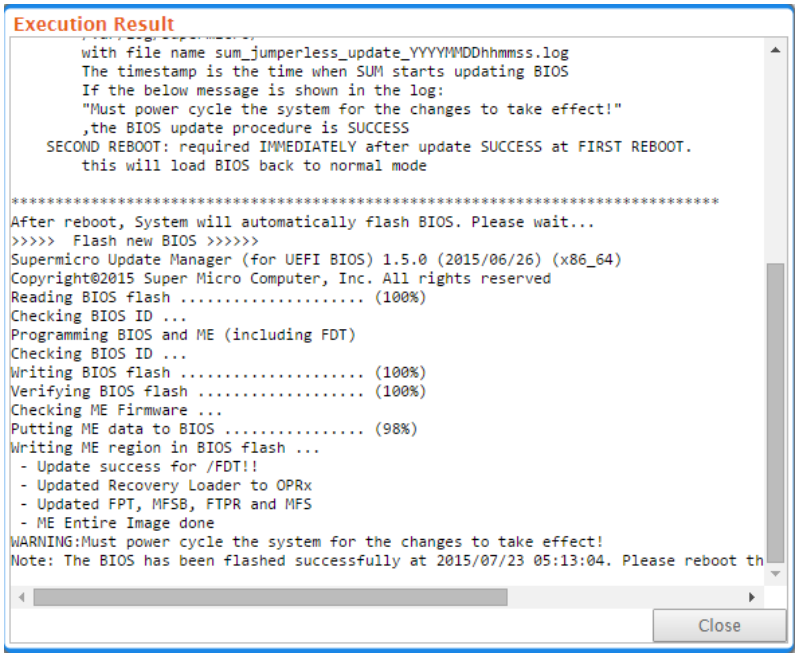

Execution Result
with file name sum_jumperless_update_YYYYMMDDhhmmss.log
The timestamp is the time when SUM starts updating BIOS
If the below message is shown in the log:
"Must power cycle the system for the changes to take effect!"
,the BIOS update procedure is SUCCESS
SECOND REBOOT: required IMMEDIATELY after update SUCCESS at FIRST REBOOT.
this will load BIOS back to normal mode
After reboot, System will automatically flash BIOS. Please wait...
>>>>> Flash new BIOS >>>>>>
Supermicro Update Manager (for UEFI BIOS) 1.5.0 (2015/06/26) (x86_64)
Copyright©2015 Super Micro Computer, Inc. All rights reserved
Reading BIOS flash ..... (100%)
Checking BIOS ID ...
Programming BIOS and ME (including FDT)
Checking BIOS ID ...
Writing BIOS flash ..... (100%)
Verifying BIOS flash ..... (100%)
Checking ME Firmware ...
Putting ME data to BIOS ..... (98%)
Writing ME region in BIOS flash ...
- Update success for /FDT!!
- Updated Recovery Loader to OPRx
- Updated FPT, MFSB, FTPR and MFS
- ME Entire Image done
WARNING:Must power cycle the system for the changes to take effect!
Note: The BIOS has been flashed successfully at 2015/07/23 05:13:04. Please reboot th
Close

Figure 4-19

4.6 RAID

The RAID information will be shown under the Storage category in System Info tab while Supermicro SuperDoctor 5 detects whether the LSI MegaRAID RAID controller is available in the system. The layout of RAID is divided into two parts:

- Tree Area: A tree structure serves as a menu for users to get more information, such as RAID controllers, virtual drives, and hard drives.
- Content Area: shows the detailed information of the selected node in the Tree Area.

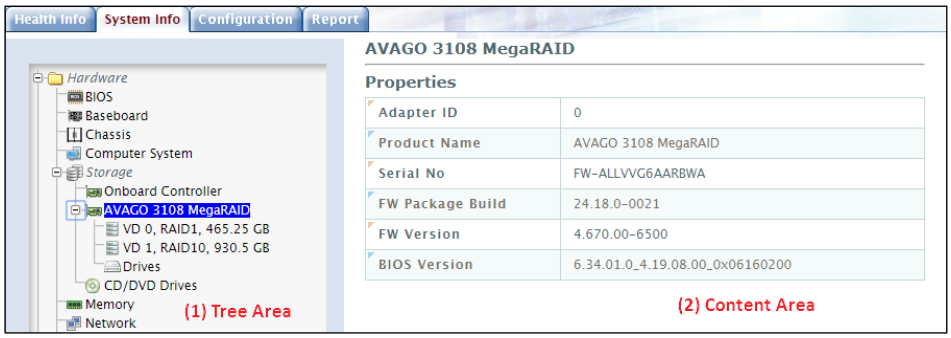


Figure 4-20

There are two main (virtual) nodes in one adapter: the **VD (Virtual Drive)** node, and the **Drives** node. These two virtual tree nodes are used for classification:

VD	Virtual drives are the volumes that are configured as RAID 0, 1, 5 and 10.
Drives	This node comprises all hard drives of the adapter.

The RAID controller named **AVAGO 3108 MegaRAID** contains two virtual drives (RAID 1 and RAID 10), and six hard drives (Slot 3, 5, 6, 12, 14 and 16).

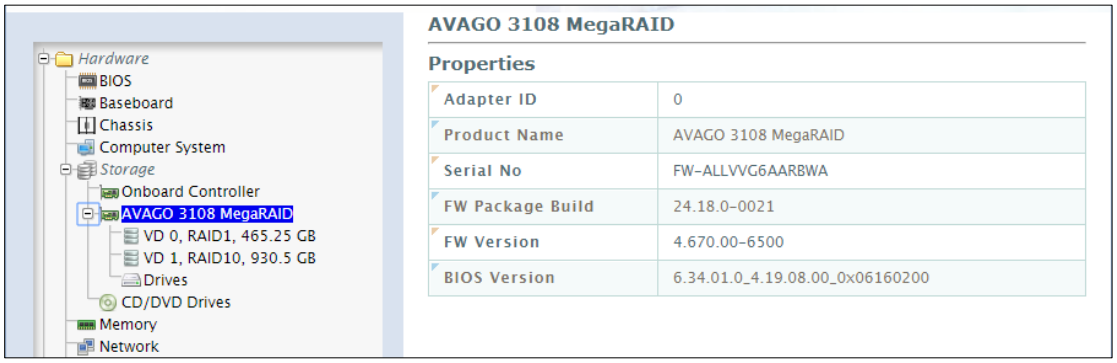


Figure 4-21

Note: The RAID tree will not automatically refresh periodically. Thus, it may not reflect real-time hardware configurations.

For example, click on **AVAGO 3108 MegaRAID** tree node. The detailed properties are shown on the right panel.

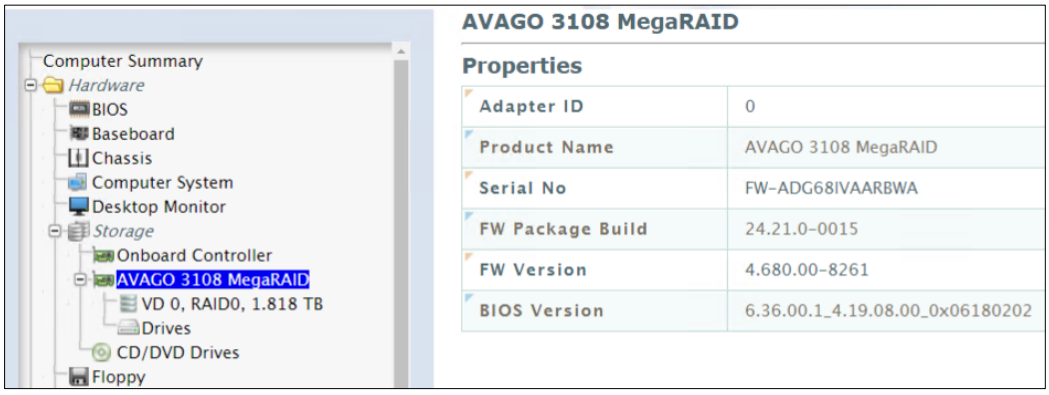


Figure 4-22

Click the **VD 0**, **RAID0, 1.818 TB** tree node on the left panel. The detailed properties of a virtual drive are shown on the right panel.

VD 0, RAID0, 1.818 TB

Properties

Virtual Drive ID	0
Target ID	
Name	VD_0
RAID Level	RAID0
Size	1.818 TB
State	Optimal
Mirror Data	
Strip Size	256 KB
Number Of Drives	2
Span Depth	1
Default Cache Policy	WriteBack
Current Cache Policy	Read Ahead, WriteThrough, Direct IO
Default Access Policy	
Current Access Policy	Read Write
Disk Cache Policy	Disabled
Encryption Type	None
Default Power Savings Policy	
Current Power Savings Policy	
Can spin up in 1 minute	
LD has drives that support T10 power conditions	
LD's IO profile supports MAX power savings with cached write	
Bad Blocks Exist	
Is VD Cached	

Figure 4-23

Click on the **Drives** tree node on the left panel, and you can see a list of hard drives. For example, click on the expand icon of Enclosure.252.Slot.4, and you can view the detailed properties of the hard drive.

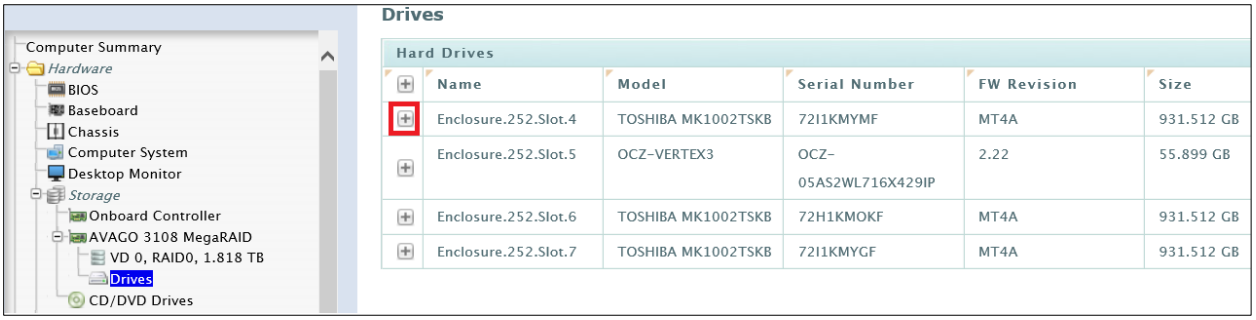


Figure 4-24



Figure 4-25

Note: Only LSI MegaRAID 2108, 2208, 3108, and later generations such as 3908 and 3916 RAID controllers are currently supported on both Windows and Linux platforms. Other LSI MegaRAID RAID controllers (i.e. LSI MegaRAID 2008 and 2308 RAID controllers) are not fully tested and Non-LSI MegaRAID RAID controllers (i.e. LSI Fusion-MPT based and Intel Rapid Storage Technology) are not supported in this version.

4.7 Power Control

The Power Control allows users remotely turn off the system via **Graceful Power Control** or **Power Control**.

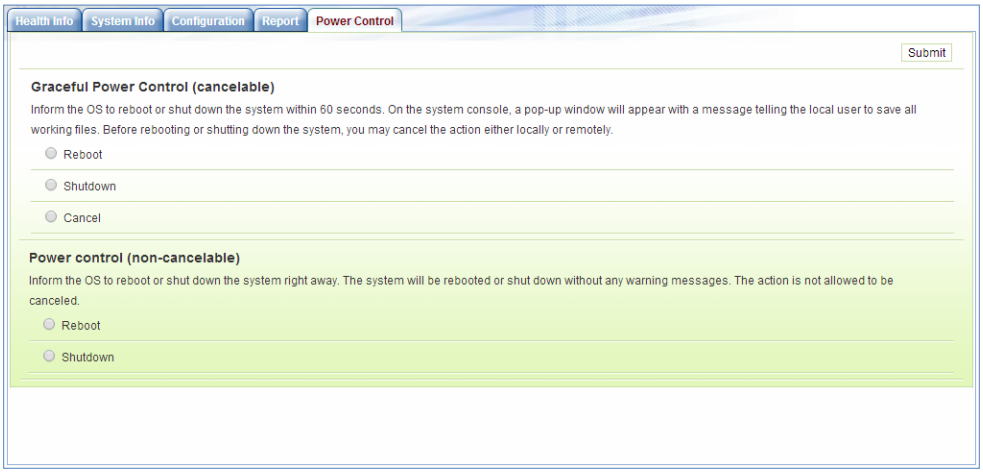


Figure 4-26

- **Graceful Power Control:** SD5 Web allows a user to reboot or shut down the system within 60 seconds. On the system console, a message shows up to remind the user of saving the working files. Before the system is rebooted or shut down, it's allowed to cancel the action either locally or remotely.
- **Power Control:** SD5 Web allows a user to reboot or shut down the system right away. The system will reboot or shut down without any warning messages. Note that the action cannot be cancelled.

To execute a Graceful Power Control, select Reboot, and then click the Submit button. A dialog box shows up for confirmation.

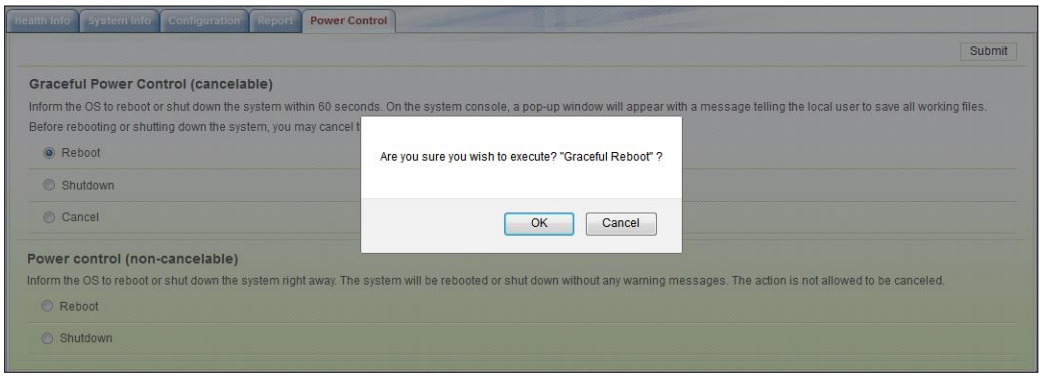


Figure 4-27

Click **OK**. A countdown dialog box shows up, and the rebooting will begin 60 seconds later.

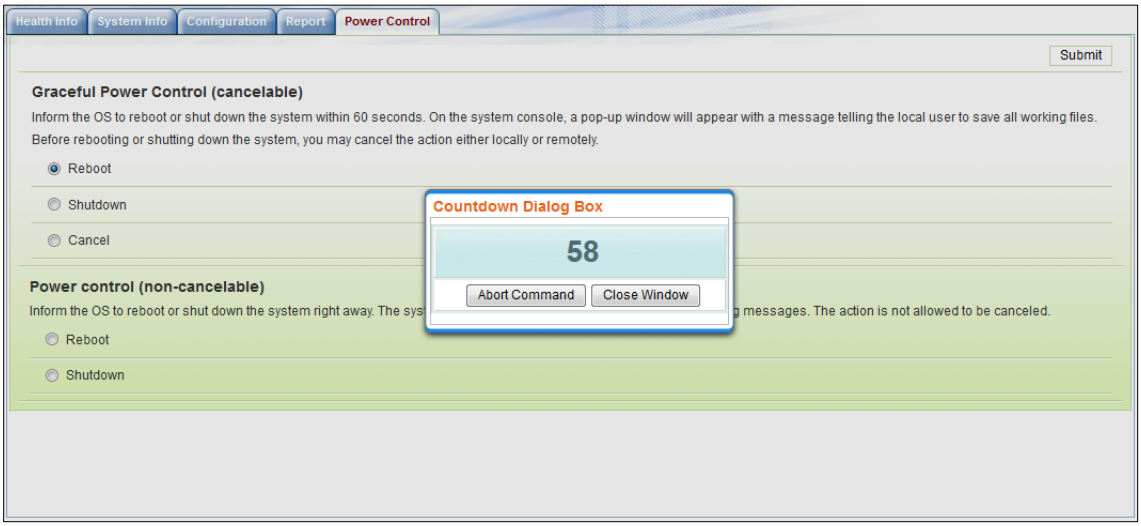


Figure 4-28

To execute a Power Control, select Reboot radio and click the Submit button. A dialog box shows up.

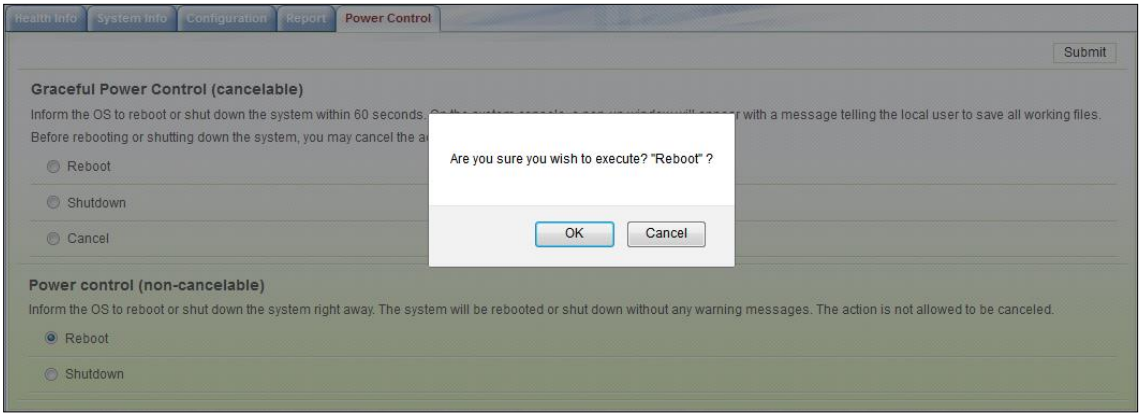


Figure 4-29

Click **OK** to start rebooting.

5 SNMP Extension

Supermicro SuperDoctor 5 provides a program called Supermicro SuperDoctor 5 SNMP Extension, which allows users to get health information via Simple Network Management Protocol (SNMP). To use this function, you have to install the operating system's built-in SNMP service in advance. In Windows, the Microsoft Windows implementation of SNMP has to be installed. In Linux, the Net-SNMP package is most commonly used. Supermicro SuperDoctor 5 SNMP Extension can then be integrated into the operating system's built-in SNMP service to provide Supermicro proprietary management information bases (MIBs).

5.1 Setting Up the SNMP Service on Windows

5.1.1 Preparation

Please follow these steps to install the SNMP service:

1. Open the **Control Panel**.
2. Click **Programs and Features**. For Windows Server 2012 R2 users, click **Programs**.
3. Click **Turn Windows features on or off**.
4. Click **Add Roles and Features**.
5. Click **Next** and skip the Before You Begin section in the Add Roles And Features Wizard.
6. Click **Role-based or feature-based installation** and **Next** in Installation Type**.**
7. Choose the target server to install SNMP and click **Next** in Server Selection.
8. Click **Next** in Server Roles.
9. Select **SNMP Service** and click **Next** in Features.
10. Click **Install** to begin the installation.

5.1.2 Configuring the SNMP Service

1. Open the **Control Panel**.
2. Click **Administrative Tools**.
3. Click **Services**.
4. Select the **SNMP Service**.

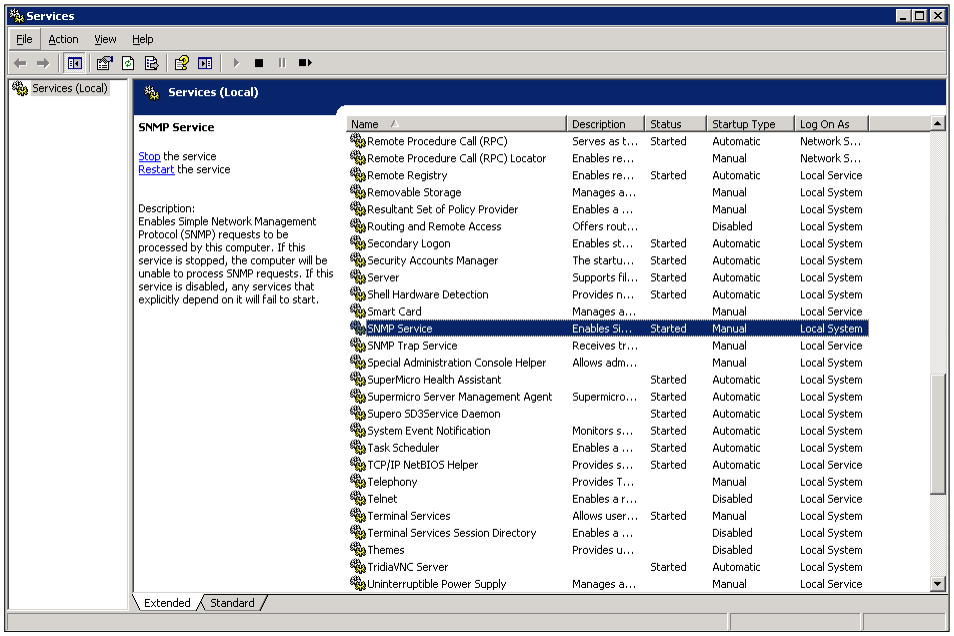


Figure 5-1

5. Double-click the **SNMP Service**, and the **SNMP Service Properties (Local Computer)** dialog box appears.

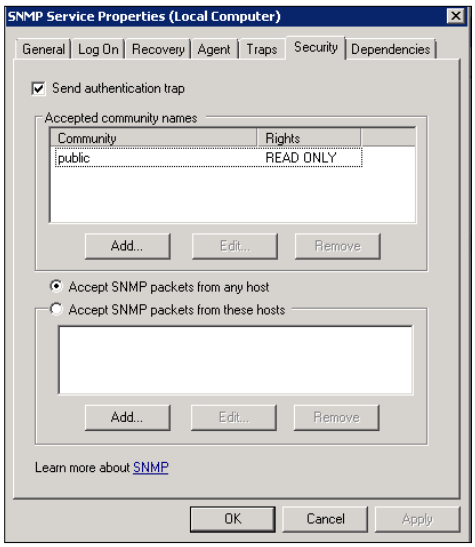


Figure 5-2

6. Click the **Security** tab

7. In the Accepted community names setting, click the **Add…** button to add a **public** community with READ ONLY rights.
8. Select **Accept SNMP packets from any host**.
9. Click the **OK** button to complete the settings.

5.1.3 Verifying the SNMP Service

You can use **sc query snmp** to check the SNMP service in console mode.

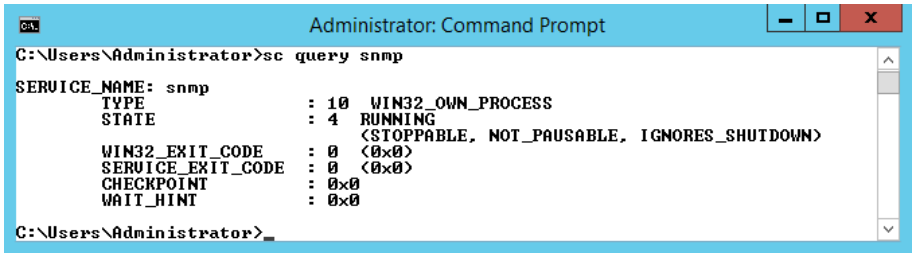


Figure 5-3

5.2 Setting Up the SNMP Service on Linux

5.2.1 Preparation

Please contact your system administrator to install the **NET-SNMP** service on your Linux boxes before using the Supermicro SuperDoctor 5 SNMP extension.

5.2.2 Configuring the SNMP Service

1. Use a text editor to open the **/etc/snmp/snmpd.conf** file.
2. Add the following line into the **Pass through control** section of the file:

```
pass .1.3.6.1.4.1.10876 [install folder]/libs/native/snmpagent
```

3. If you are using Red Hat Enterprise Linux (RHEL) 6.x platforms,

edit the /etc/selinux/config file and replace **"SELINUX=enforcing"** with **"SELINUX=disabled"**. Save the /etc/selinux/config file and reboot the system.

4. Use the following command to restart the SNMP service:

```
service snmpd restart
```

5. Use an SNMP client to walk through the Supermicro MIB tree (i.e., the **.1.3.6.1.4.1.10876** OID tree). If it fails to get any data from .1.3.6.1.4.1.10876, compare the sample snmpd.conf file below to your snmpd.conf file and check if something is configured wrong.

```
com2sec notConfigUser  default       public
group   notConfigGroup v1          notConfigUser
group   notConfigGroup v2c         notConfigUser

view                allview  included          .1
access  notConfigGroup ""      any       noauth    exact  allview none none

syslocation Unknown (edit /etc/snmp/snmpd.conf)
syscontact Root <root@localhost> (configure /etc/snmp/snmp.local.conf)

pass .1.3.6.1.4.1.10876 /opt/Supermicro/SuperDoctor5/libs/native/snmpagent
```

5.2.3 Verifying the SNMP Service

For Linux users, use this command to check SNMP service:

```
service snmpd status
```

5.3 Supermicro MIB

The Supermicro MIB subtree begins from .1.3.6.1.4.1.10876. Please find a file named **SD5_MIB.zip** on your Supermicro SuperDoctor 5 CD to get detailed SNMP MIB/OID information.

The MIB zip file includes 5 files:

- **SUPERMICRO-SMI.my:** The file contains Supermicro MIB information used by Supermicro SuperDoctor®, Supermicro SuperDoctor 5 and SSM.
- **SUPERMICRO-HEALTH-MIB.my:** The file contains HEALTH MIB module used by Supermicro SuperDoctor®, and Supermicro SuperDoctor 5.
- **SUPERMICRO-SD5-MIB.my:** The file contains MIB module used by Supermicro SuperDoctor 5.
- **SUPERMICRO-SSM-MIB.my:** The file contains MIB module used by SSM.
- **xtree.txt:** The file represents HEALTH, SD5 and SSM module structure in tree structure format.
- **xiden.txt:** The file represents HEALTH, SD5 and SSM module structure in identifier format.

A screenshot generated by the **snmpwalk** program of the NET-SNMP libraries on Linux platforms is shown below.

```
snmpwalk -v 1 localhost -c public .1.3.6.1.4.1.10876
```

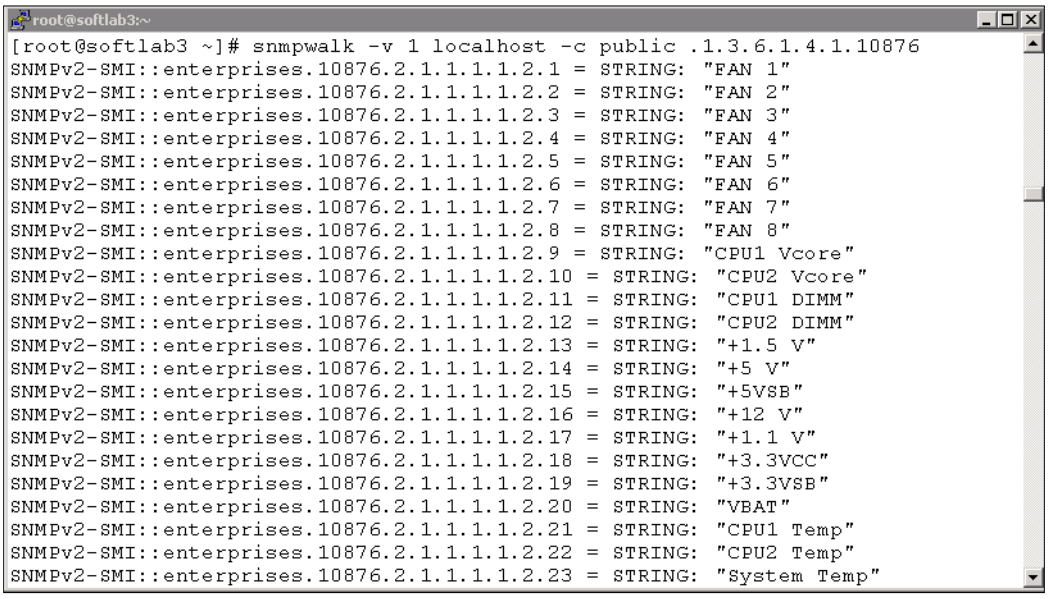


Figure 5-4

The figure below shows how the **snmpwalk** program of the NET-SNMP libraries using Supermicro MIBs is run on Linux platform.

```
snmpwalk -v 1 localhost -c public .1.3.6.1.4.1.10876
```

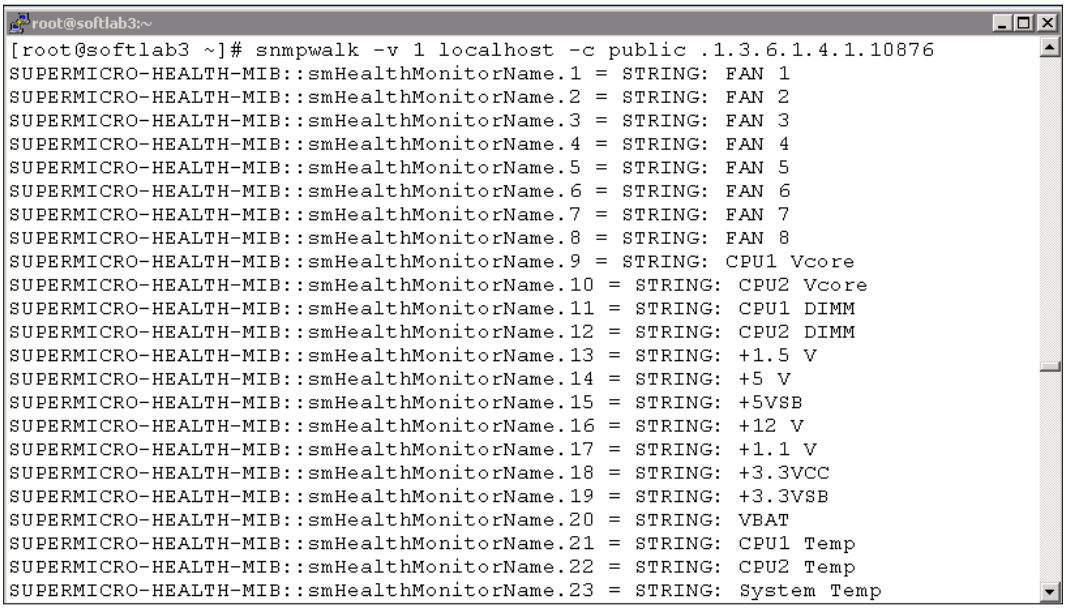


Figure 5-5

6 Supermicro SuperDoctor 5 Command Line Program

Supermicro SuperDoctor 5 provides a command line interface program **sdc**, which displays health information in text mode.

6.1 SDC Commands

The sdc program is located in the **[install folder]** folder. This file is named **sdc.bat** for Windows platforms and sdc.sh for Linux platforms.

6.1.1 –h: Display sdc command arguments

In text console, execute **sdc -h** and you will see the sdc supported arguments.

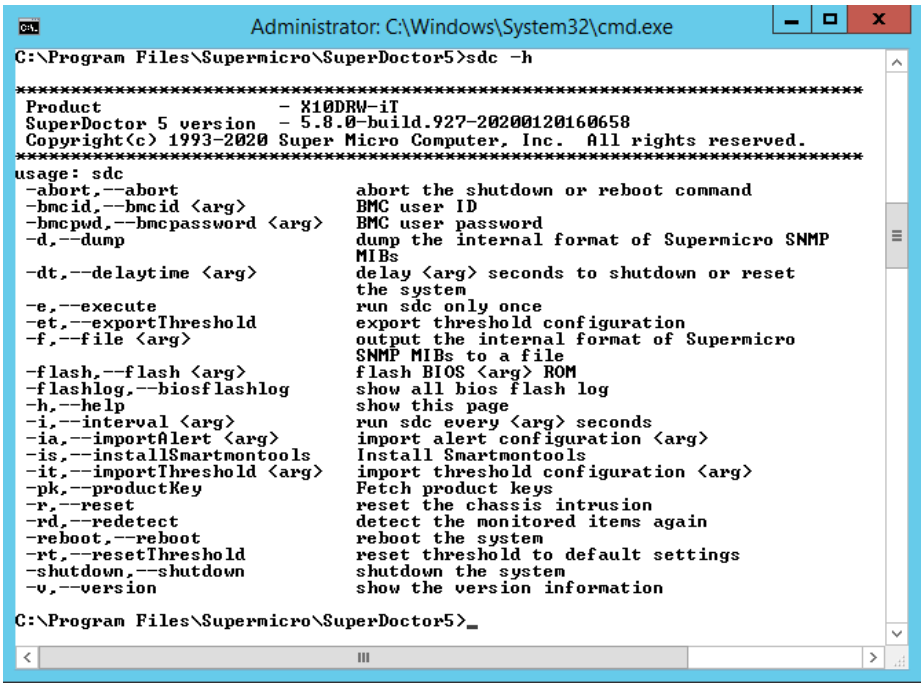


Figure 6-1

6.1.2 –d: Dump SNMP Messages

The -d option displays the internal formats of the Supermicro MIBs. This argument is for debugging purposes and should not be used by end users.

6.1.3 –e: Display All Monitored Items and their Status

In text console, execute **sdc -e** and you will see the status of monitored items

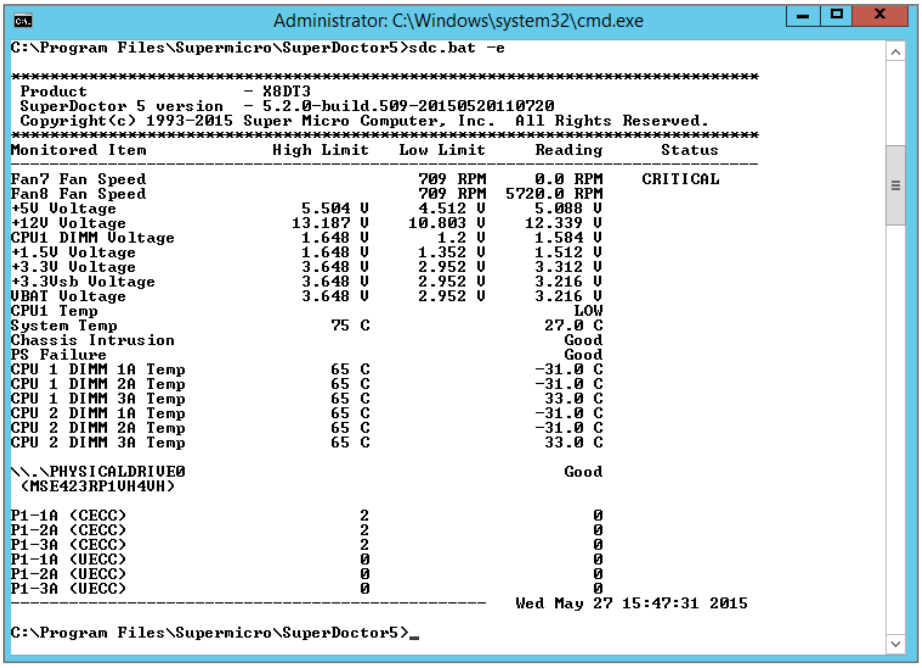


Figure 6-2

Notes:

- The Status column (see the figure above) is empty, indicating that the monitored item is healthy.
- Only the health of internal hard drive is shown. No health status of USB hard drives and flash drives is indicated.
- RAID health is available on LSI MegaRAID 2108, 2208, 3108 and later generations such as 3908 and 3916 controllers.

```
**********************************************************************************
Monitored Item              High Limit    Low Limit      Reading        Status
----------------------------------------------------------------------------------
CPU1 Temp                         80 C                     37.0 C
System Temp                       85 C                     30.0 C
Peripheral Temp                   85 C                     35.0 C
PCH Temp                          95 C                     49.0 C
10G Temp                          95 C                     50.0 C
FAN1                                          450 RPM  1875.0 RPM
FAN2                                          450 RPM  1725.0 RPM
VTT                          1.392 V      0.864 V      1.04 V
CPU1 Vcore                    1.52 V      0.512 V     0.832 V
VDIMM AB                     1.696 V      1.152 V     1.488 V
VDIMM CD                     1.696 V      1.152 V     1.504 V
3.3V                         3.792 V      2.784 V     3.312 V
+3.3VSB                      3.792 V      2.784 V      3.36 V
5V                           5.696 V      4.288 V     4.992 V
+5VSB                        5.696 V      4.288 V     4.992 V
12V                         13.568 V     10.494 V    11.978 V
VBAT                         3.456 V      2.544 V     3.216 V
Chassis Intru                                            Good

P1_DIMMA1 (CECC)                  2                        0
P1_DIMMA2 (CECC)                  2                        0
P1_DIMMA1 (UECC)                  0                        0
P1_DIMMA2 (UECC)                  0                        0
LSI 2208 MegaRAID #0                                     Good
  VD 0 (RAID1)                                           Good
  VD 1 (RAID10)                                          Good
  Slot 0                                                 Good
  Slot 1                                                 Good
  Slot 2                                                 Good
  Slot 4                                                 Good
  Slot 5                                                 Good
  Slot 8                                                 Good
```

Figure 6-3

6.1.4 –f: Write SNMP Messages to a Specified File

The -f option is similar to the -d option except that the former writes the internal formats of the Supermicro MIBs to a file. This argument is for internal use and should not be used by end users.

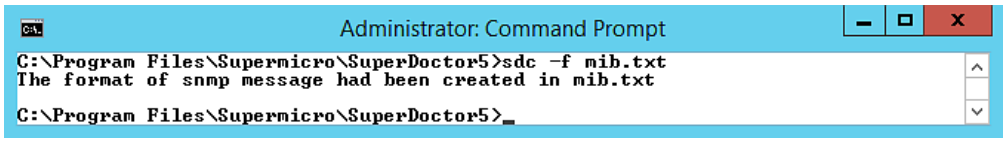


Figure 6-4

6.1.5 –i: Display All Monitored Items and their Status Repeatedly

The difference between the -i and -e commands is the frequency of displaying the monitored results. The **sdc -e** command only shows the status of monitored items once, and the -i command repeatedly shows their status.

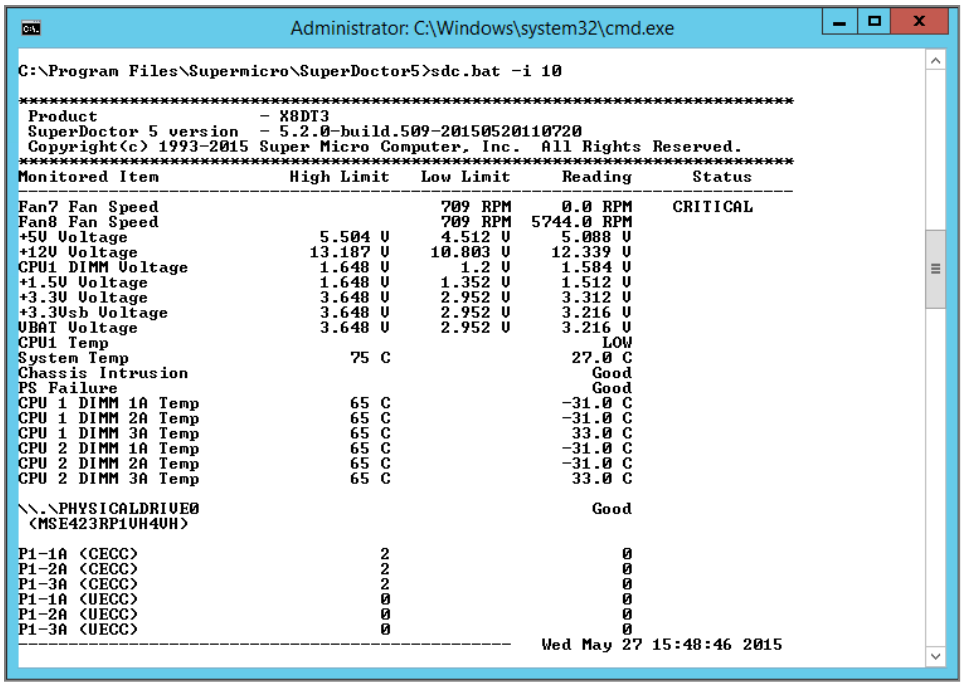


Figure 6-5

Note: Press the **Ctrl+C** keys to exit the sdc program.

6.1.6 –ia: Import Alert Configuration

The **-ia** argument is provided to import alert configuration data for Supermicro SuperDoctor 5 without a web console. To execute the command **sdc -ia**, a property file that contains the necessary alert settings is required.

Modify **alertcfg.properties.template** located in the **[install folder]\config** folder to suit your needs. Possible attributes and values of the property file are shown below. Note that the attributes and options are case insensitive.

Attribute	Description	Option
polling	Enables Pooling	true | false
pollinginterval	The interval in seconds between checks for the health status of monitored items if Polling=true Note: Minimal value is 3.	
log	Enables logging if polling=true	true | false
maxbackupindex	Backup files to keep around if log=true	
mail	Enables email alerts if polling=true	true | false
to	Recipients if mail=true Note: Multiple values are separated by a comma.	
from	Sender's email if mail=true	
smtp	SMTP server if mail=true	
port	Port if mail=true	
encryption	Connection security if mail=true	None|SSL|TLS
authentic	SMTP authentication if mail=true	true | false
username	Username (SMTP authentication) if mail=true	
password	Password (SMTP authentication) if mail=true	
trap	Enable trap alerts if polling=true	true | false
trapreceiver	Trap receivers if trap=true Note: Format: IP:port; Multiple values are separated by a comma.	
tray	Enable system tray if polling=true	true | false
syslog	Enable OS event log if polling=true	true | false
trapversion	Trap version if trap=true	SNMPv1 Trap | SNMPv3 Trap
trapuser	Trap security user name if trap=true and trapversion=SNMPv3 Trap Note: A user name must be 1 to 32 characters in length.	
authprotocol	Trap authentication protocol if trap=true and trapversion=SNMPv3 Trap	None|SHA224|SHA 256|SHA384| SHA512
authpassword	Trap authentication key if trap=true, trapversion=SNMPv3 Trap and authprotocol != None Note: An authentication key must be 8 to 128 characters	

Attribute	Description	Option
	in length.	
privprotocol	Trap encryption protocol if trap=true, trapversion=SNMPv3 Trap and authprotocol != None	None|AES|AES192 |AES256
privpassword	Trap encryption key if trap=true, trapversion=SNMPv3 Trap and privprotocol != None Note: An encryption key must be 8 to 128 characters in length.	

In text console, execute **sdc -ia [property_file_name]** and you will see the import status of the alert configuration file.

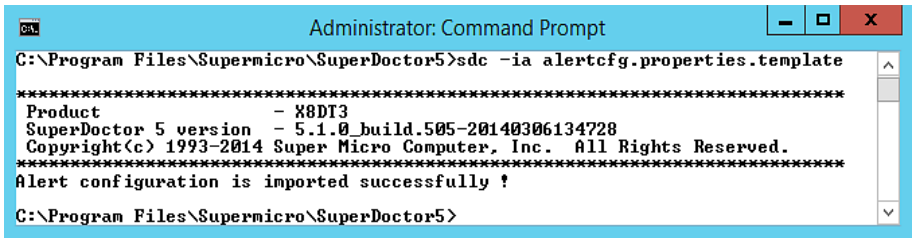


Figure 6-6

6.1.7 –r: Reset the Chassis Intrusion

In text console, execute the command **sdc -r** to reset the chassis intrusion flag. The result is shown below:

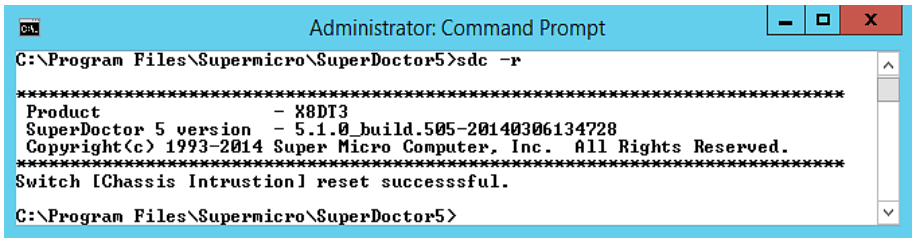


Figure 6-7

6.1.8 –rd: Detect the Monitored Items Again

Sometimes your hardware configurations may change, such as a new power supply being used or new fans being plugged in. In these cases, you can execute the command **sdc -rd** to detect the monitored items again. The sdc program will start re-detecting and wait for Supermicro SuperDoctor 5 to restart.

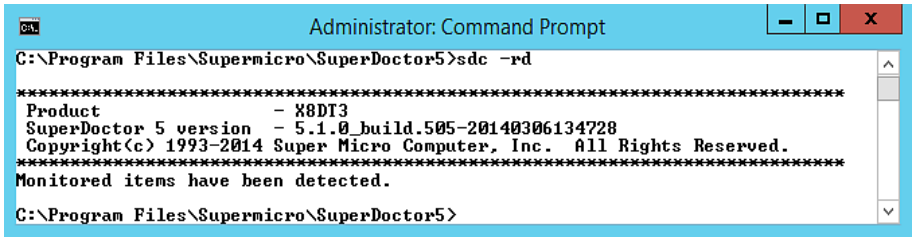


Figure 6-8

6.1.9 –v: Display sdc version information

The **-v** argument shows the sdc version information. In the prompt, enter the command **sdc -v**.

In text console, execute the command **sdc -v** to show the version of the **sdc**. The result is shown below:



Figure 6-9

6.1.10 –reboot: Reboot the System

In a text console, execute the command **sdc -reboot** to immediately reboot the system. The result is shown below:



Figure 6-10

6.1.11 –shutdown: Shutdown the System

In a text console, execute the command **sdc -shutdown** to immediately shut down the system. The result is shown below:

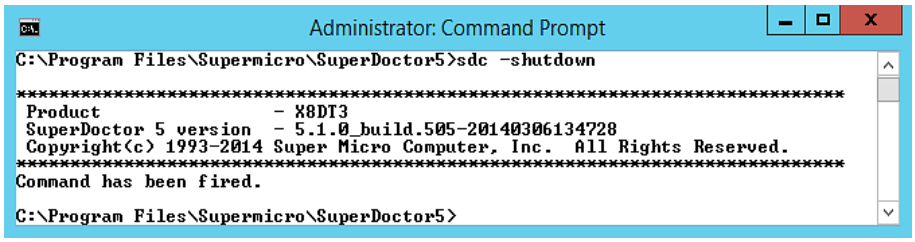


Figure 6-11

6.1.12 –abort: About the Shutdown or Reboot Command

In a text console, execute the command **sdc -abort** to immediately cancel the shutdown or reboot command. The result is shown below:

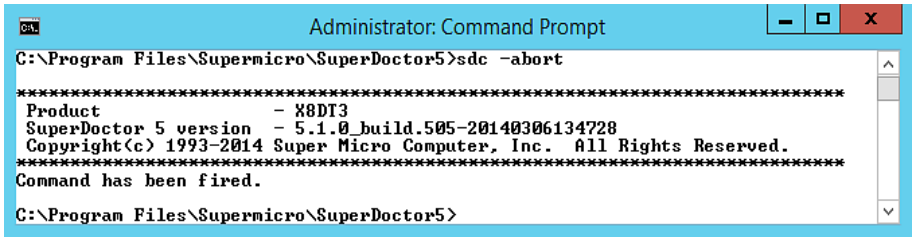


Figure 6-12

6.1.13 –dt: Delay Seconds to Run Power Command

In a text console, execute the command **sdc -reboot -dt 60** to reboot the system 60 seconds later. The result is shown below:



Figure 6-13

6.1.14 –flash: Flash BIOS

In a text console, execute the command **sdc -flash** to flash the BIOS. This function supports X9 series and later Supermicro motherboards on both Windows and Linux platforms. To execute the command **sdc -flash**, a BIOS binary file must be provided. The result is shown below:

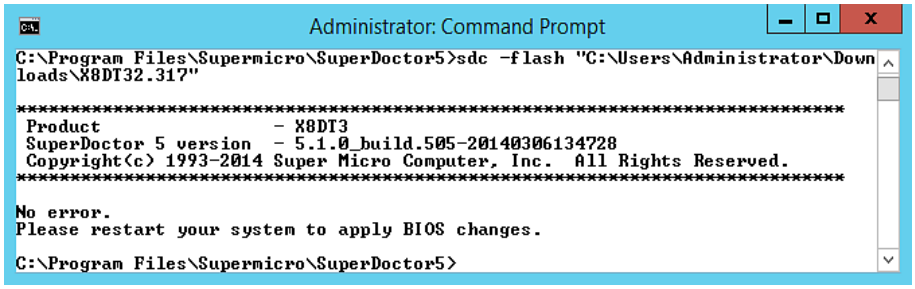


Figure 6-14

Notes:

- To avoid BIOS from being corrupted, you are required to disable ME (Intel Management Engine) before updating the BIOS. Find **disable ME** or **enable update ME** or **enable ME FW Image RE-flash** in the BIOS setup menu.
- The command cannot be cancelled. Once you enter the command, the system starts flashing BIOS.
- The BIOS binary file will be copied into **the [install folder]\BIOS\rom** folder so that you are able to see the file via the SD5 Web interface.
- It's recommended that you check the original settings of the boot order in the BIOS Setup. Flashing the BIOS can cause the system reboot from a boot device which is not previously set.
- If your system supports RoT, to flash BIOS on an X12/H12 system, you must provide an additional BMC username and password in the flash command for the -bmcid and -bmcpwd options, respectively. But for X13/H13 systems and later, an additional BMC username and a password are not necessary.

6.1.15 –flashlog: Show Flash History

The BIOS flashing completed via SD5 will be logged whether the flashing is successful or not. To view the flashing history, execute the command **sdc -flashlog**.

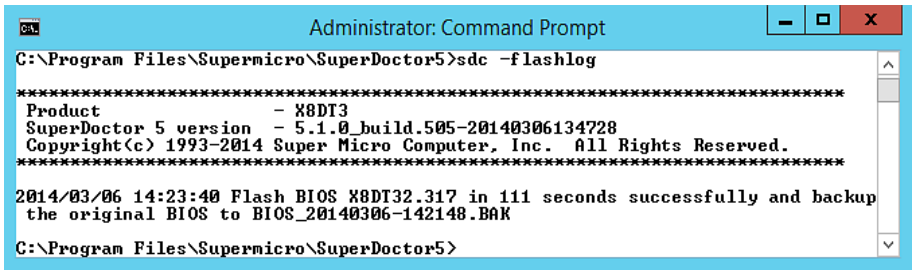


Figure 6-15

6.1.16 –et: Export Threshold Configuration

In text console, execute the command **sdc -et** to export the thresholds (high/low limits) of all monitored items.

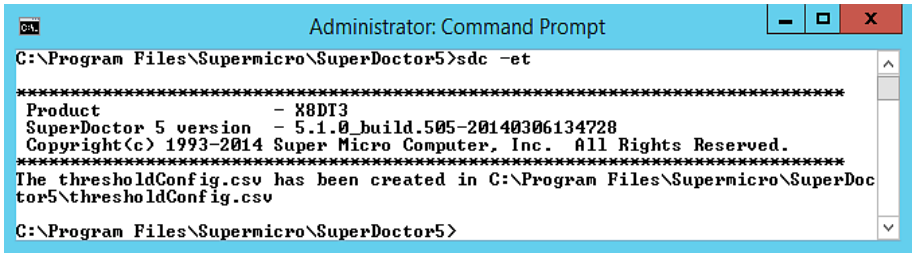


Figure 6-16

Open **thresholdConfig.csv** located in the **[install folder]** folder, you can see the details of monitored items, such as name, high limit, and low limit.

	A	B	C	D	E	F	G
1	Key	Type	IsMonitored	Name	HighLimit	LowLimit	Reading
2	1	103	TRUE	CPU1 Temp			LOW
3	2	103	FALSE	CPU2 Temp			NA
4	3	3	TRUE	System Temp	75		33
5	4	2	TRUE	CPU1 Vcore	1.352	0.672	0.952
6	5	2	FALSE	CPU2 Vcore	1.352	0.672	0
7	6	2	TRUE	CPU1 DIMM	1.648	1.2	1.584
8	7	2	FALSE	CPU2 DIMM	1.648	1.2	0
9	8	2	TRUE	+1.5V	1.656	1.336	1.512
10	9	2	TRUE	+3.3V	3.648	2.928	2.976
11	10	2	TRUE	+3.3VSB	3.648	2.928	3.216
12	11	2	TRUE	+5V	5.536	4.48	4.768
13	12	2	TRUE	+12V	13.25	10.706	11.872
14	13	2	TRUE	VBAT	3.648	2.928	3.216
15	14	1	FALSE	Fan1		675	0
16	15	1	FALSE	Fan2		675	0
17	16	1	FALSE	Fan3		675	0
18	17	1	TRUE	Fan4		675	2430
19	18	1	FALSE	Fan5		675	0
20	19	1	FALSE	Fan6		675	0
21	20	1	FALSE	Fan7		675	0
22	21	1	TRUE	Fan8		675	2430
23	96	3	TRUE	P1-DIMM1A Temp	80		40
24	97	3	FALSE	P1-DIMM1B Temp	80		0
25	98	3	TRUE	P1-DIMM2A Temp	80		43
26	99	3	FALSE	P1-DIMM2B Temp	80		0
27	100	3	TRUE	P1-DIMM3A Temp	80		43
28	101	3	FALSE	P1-DIMM3B Temp	80		0

Figure 6-17

6.1.17 –it: Import Threshold Configuration

The **-it** argument is provided to import threshold configuration data (high/low limits) for Supermicro SuperDoctor 5 without a web console. To execute the command **sdc -it**, it is required to have a CSV (Comma-separated values) file containing the threshold. Note that to have the CSV file, execute -et to export threshold configuration in advance.

Modify **thresholdConfig.csv** located in the **[install folder]** folder to suit your needs. Note that you can only decide if an item should be monitored (column: **IsMonitored**) and to change the threshold (column: **HighLimit** and **LowLimit**) of an item.

	A	B	C	D	E	F	G
1	Key	Type	IsMonitored	Name	HighLimit	LowLimit	Reading
2	1	103	TRUE	CPU1 Temp			LOW
3	2	103	FALSE	CPU2 Temp			NA
4	3	3	TRUE	System Temp	75		33
5	4	2	TRUE	CPU1 Vcore	1.352	0.672	0.952
6	5	2	FALSE	CPU2 Vcore	1.352	0.672	0
7	6	2	FALSE	CPU1 DIMM	1.648	1.2	1.584
8	7	2	FALSE	CPU2 DIMM	1.648	1.2	0
9	8	2	TRUE	+1.5V	1.656	1.336	1.512
10	9	2	TRUE	+3.3V	3.648	2.928	2.976
11	10	2	TRUE	+3.3VSB	3.648	2.928	3.216
12	11	2	TRUE	+5V	5.536	4.48	4.768
13	12	2	TRUE	+12V	14.25	10.706	11.872
14	13	2	TRUE	VBAT	3.648	2.928	3.216
15	14	1	FALSE	Fan1		675	0
16	15	1	FALSE	Fan2		675	0
17	16	1	FALSE	Fan3		675	0
18	17	1	TRUE	Fan4		800	2430
19	18	1	FALSE	Fan5		675	0
20	19	1	FALSE	Fan6		675	0
21	20	1	FALSE	Fan7		675	0
22	21	1	TRUE	Fan8		675	2430
23	96	3	TRUE	P1-DIMM1A Temp	80		40
24	97	3	FALSE	P1-DIMM1B Temp	80		0

Figure 6-18

In text console, execute **sdcs -it [csv_file_name]** and you will see the import status of the threshold configuration file:

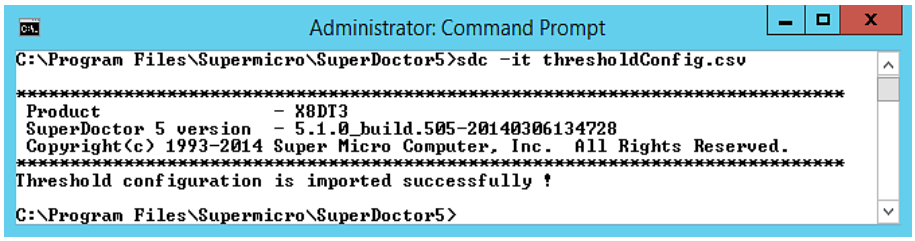


Figure 6-19

6.1.18 –rt: Reset Threshold to Default Settings

In text console, execute the command **sdc -rt** to reset the thresholds (high/low limits) to the manufacturer's default settings.

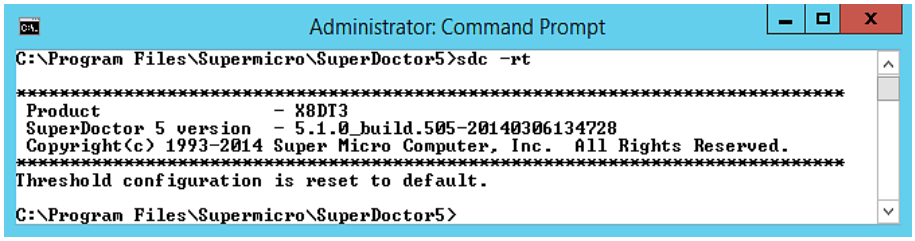


Figure 6-20

6.1.19 –is: Install Smartmontools

In text console, execute the command **sdc -is** to install smartmontools on Windows platforms online. Note that smartmontools including the smartctl utility is required for SD5 to monitor SMART health of hard drives. Read the GPL (GNU General Public License) 2.0 license agreement carefully before installing smartmontools. If you accept the terms or the agreement, input **Y** to continue installation.

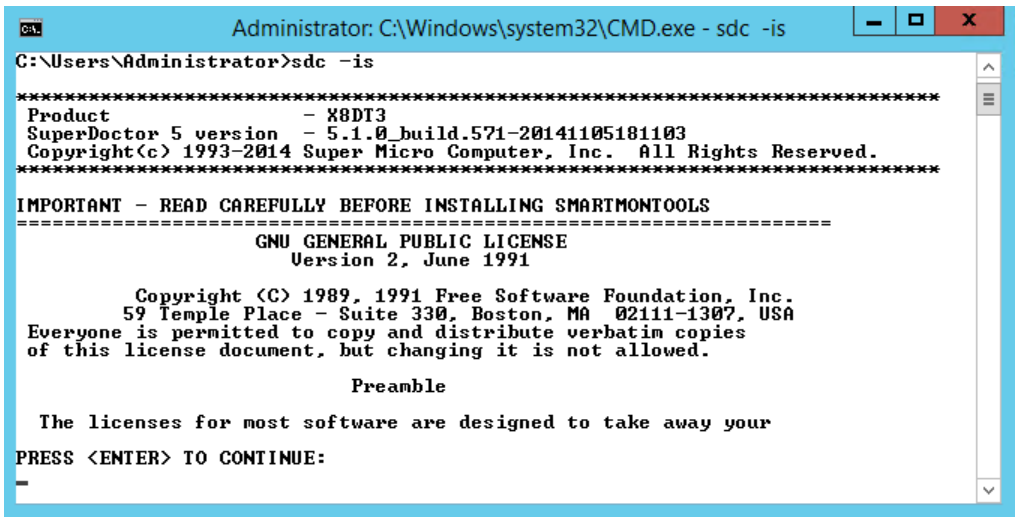


Figure 6-21

6.1.20 –pk: Show Node Product Keys

In text console, execute the command **sdc -pk** to show the activated node product keys.

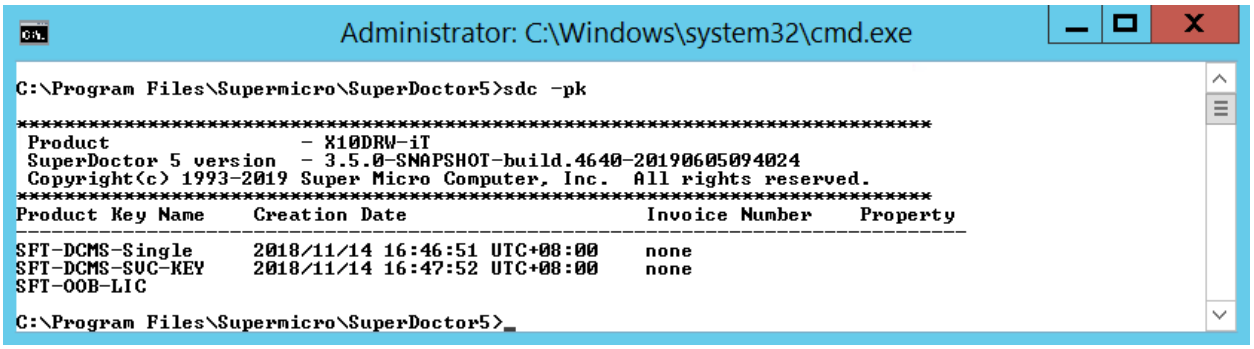


Figure 6-22

7 SD5 Tray

Supermicro SuperDoctor 5 provides a program called **SD5 Tray** allowing the Windows user to get alert messages on the desktop. To use this function, you have to configure SD5 notification methods in advance, see *4.5.1 Alert Configuration* for more information. Note that this function is only available on Windows platforms.

7.1 Verifying SD5 Tray on Windows

When you install Supermicro SuperDoctor 5 with SD5 Tray a SD5 tray icon will appear in your system tray (note that SD5 Tray is disabled in SD5 installer by default). To enable SD5 Tray manually after installation, you can execute the **enable_tray.bat** script in the **[install_folder]\tray** folder. When you install Supermicro SuperDoctor 5, SD5 will insert an SD5 tray icon into your system tray. To see the SD5 tray icon (see the figure below), use the same account you install SD5 to log on the Windows system.



Figure 7-1

When the SD5 Tray receives alert messages, the tray icon will change.



Figure 7-2

Click the SD5 tray icon. The detailed alert messages are displayed in the dialog box.

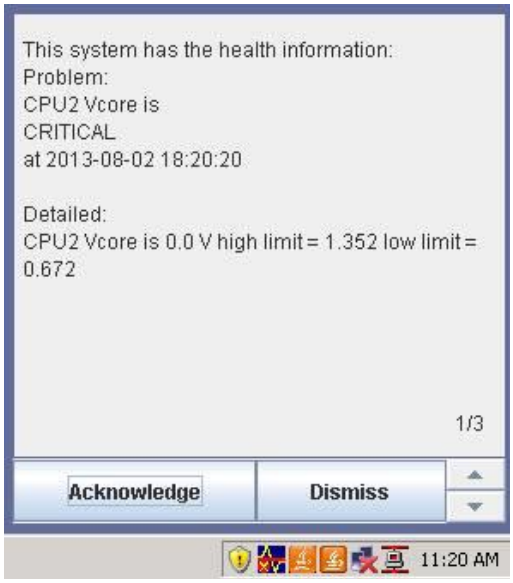


Figure 7-3

The buttons in the dialog box:

- **Acknowledge:** Acknowledges an alert. Every alert will be kept until it is acknowledged. If acknowledged, it will no longer display in the dialog box.
- **Dismiss:** Minimizes the dialog box.
- **Previous:** Reads the previous alert.
- **Next:** Reads the next alert.

7.2 Manually Controlling SD5 Tray

Besides the SD5 tray icon, you are able to see a minimized window showing on the task bar.



Figure 7-4

You can close the SD5 Tray by right-clicking the SD5 window and then selecting **Close**.

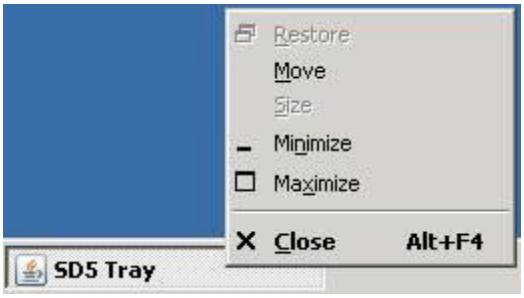


Figure 7-5

To start the SD5 Tray on the desktop, click the Windows **Start** button, select **All Programs**, click the **Startup** folder, and click **Start SuperDoctor 5 Tray**.

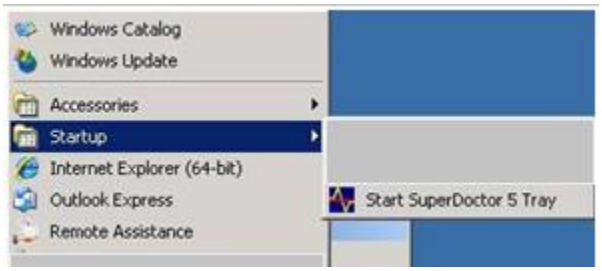


Figure 7-6

Part 3 Advanced Topics

8 SSM Utilities

Two Supermicro Server Manager (SSM) utility applications, **changejvm** and **change_cert_pwd**, are provided to change Java VM and to assign the password used in the agent key store used by SD5. This chapter shows you how to use the utilities.

8.1 Using ChangeJVM to Change a Java VM

When users install Supermicro SuperDoctor 5, they can choose the kind of Java VM to be used. The utility **changejvm** located in the **[install folder]\tools** folder can be used to change a Java VM.

Usage:
changejvm [-p <arg>] [-h | --help] [-j <arg>]

Options:

-p	The root folder of SD5. The argument is optional and the default value is **[install folder]**.
*-j	The kind of Java VM to be used, e.g., /usr/java/jdk1.8.0_51/jre/bin/java
-h, --help	Shows the help menu.

(*indicates a required attribute)

The following figure shows how the command

changejvm.bat –j "C:\Program Files\Java\jre1.8.0_45\bin\java.exe" –p "C:\Program Files\Supermicro\SuperDoctor5" is used to change to another version of Java VM (JRE 1.8.0_45).

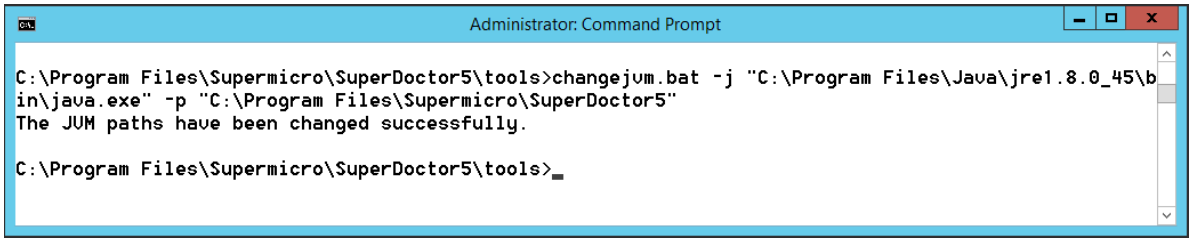


Figure 8-1

The following figure shows how the command **changejvm.bat –j "C:\Program Files\Supermicro\SuperDoctor5\jre\bin\java.exe" –p "C:\Program Files\ Supermicro\SuperDoctor5"** is

used to change to the built-in Java VM of SD5. The built-in Java VM is located in the **[install folder]\jre\bin** folder.

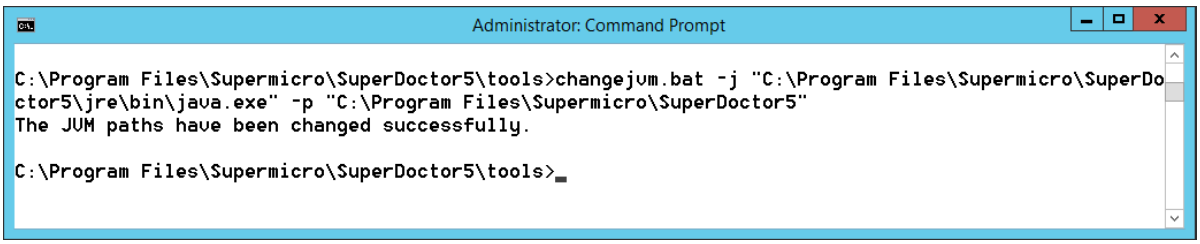


Figure 8-2

Notes:

- You need to stop the Supermicro SuperDoctor 5 service before changing Java VM if Supermicro SuperDoctor 5 is still running.
- You need to manually restart the Supermicro SuperDoctor 5 service after changing Java VM.
- The architecture of Java VM you selected must suit the installation program. For example, to use an x86 version of SD5, you need to install an x86 version of Java VM first.
- It's recommended that you use the latest version of OpenJDK 8 in SD5. Other Oracle JREs (i.e. JRE 6, JRE 7, and JRE 11+) and Non-Oracle Java VMs (i.e. OpenJDK 6, OpenJDK 7, and OpenJDK 11+) are not supported in this version.

8.2 Using Change_cert_pwd to Change the Certificate Password

When you create a customized certification with the SSMCertificate program, you can reassign the certificate password to be used in SD5. The utility **change_cert_pwd** located in the **[install folder]\tools** folder can be used to change the certificate password defined in the agent.cfg.

Usage:
change_cert_pwd [-p <arg>] [-h | --help] [-s <arg>]

Options:

*-p	The password to be encoded in agent.cfg.
-s	The root folder of SD5, e.g., /opt/Supermicro/SuperDoctor5. The argument is optional and the default value is SD5_HOME.
-h, --help	Shows the help menu.

(*indicates a required attribute)

The following figure shows how the command **change_cert_pwd.bat –p 123456 –s ..** is used to change the password in agent.cfg used by SD5.

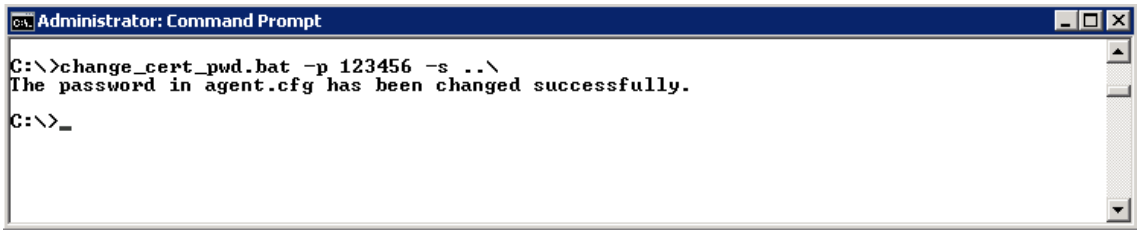


Figure 8-3

Note that you need to restart SD5 service for the new certificate password to take effect.

9 SSM Certification

When server-side applications (i.e. SSM Server and SSM Web) communicate with Supermicro SuperDoctor 5, the communication channel can be configured to use Secure Sockets Layer (SSL). SSM supports secure communications with SSL and a public key infrastructure (PKI). A built-in key pair shared by the SSM Server and SSM Web and a key pair for Supermicro SuperDoctor 5 are included in the SSM installation program. By default, SSM uses the built-in key pairs to establish an SSL channel for communications.

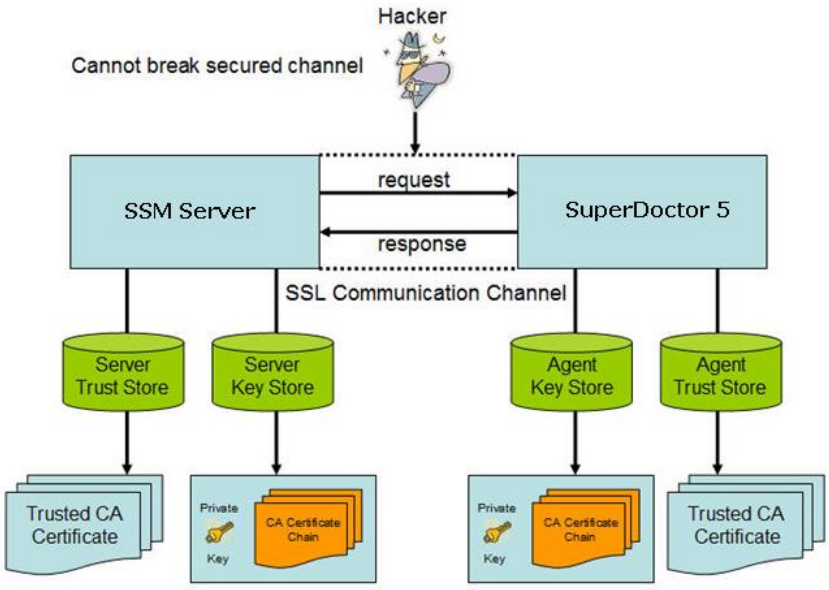


Figure 9-1

As shown above, the SSM Server and Supermicro SuperDoctor 5 use two key stores to preserve their key pairs and the trusted client's public keys, respectively. (Note that the SSM Server and SSM Web use the same Server Trust Store and Server Key Store to establish secure communication channels with Supermicro SuperDoctor 5.) For the SSM Server, the Server Key Store contains an SSM Server private key. For Supermicro SuperDoctor 5, the Agent Key Store contains a Supermicro SuperDoctor 5 private key. The Agent Trust Store contains SSM Server public keys. To ensure secure communications, the SSM Server uses the Supermicro SuperDoctor 5's public key to encipher messages and sends the enciphered messages to Supermicro SuperDoctor 5. The enciphered messages can only be deciphered with the Supermicro SuperDoctor 5's private key, which is safely kept by Supermicro SuperDoctor 5. When Supermicro SuperDoctor 5 sends messages back to the SSM Server, it uses the SSM Server's public key to encipher the messages that are then deciphered by the SSM Server with its own private key. Even if the messages are sniffed by hackers, they cannot understand the enciphered messages.

Note that you do not need to manually replace the built-in key pairs if you install Supermicro SuperDoctor 5 only. For more information on replacing the default key pairs by using the **SSM Certificate** program, please refer to *15 SSM Certification* in *SSM User's Guide*.

Part 4 Appendices

A Log Settings

Supermicro SuperDoctor 5 uses a log file to record runtime information and errors. By default, SD5 backs up 10 copies of 1 log file when it reaches a maximum size of 8 MB. The backup files are sequentially numbered. For instance, backup files are named sd5.log.1, sd5.log.2, sd5.log.3, and so on. You can change the maximum log file size and maximum number of backup copies.

Configure the log properties of Supermicro SuperDoctor 5:

1. Find **log4j2.properties** located in **[install folder]\config** and open it with a text editor.
2. Find the content that contains this line:
   appender.logfile.policies.size.size = 8000KB
   Modify 8000KB to an appropriate value. Allowable units are KB, MB and GB. This line may be commented out if no file size constraint is to be applied.
3. Find the content that contains this line: **appender.logfile.strategy.max = 10**
   Modify the keyword 10 to an appropriate value.
4. Save the file.

B Third-Party Software

The open source libraries used by SD5 are listed below:

Name	License	Component Source URL	Note
Antlr	BSD	https://repo1.maven.org/maven2/org/antlr/antlr-complete	SD5
Apache commons	Apache License	https://commons.apache.org	SD5
Apache xmlsec	Apache License	https://santuario.apache.org	SD5
asm	BSD	https://repo1.maven.org/maven2/org/ow2/asm/asm	SD5
c3p0	LGPL	https://www.mchange.com/projects/c3p0/	SD5
cdi-api	Apache License	https://repo1.maven.org/maven2/javax/enterprise/cdi-api	SD5
cglib	Apache License	https://repo1.maven.org/maven2/cglib/cglib	SD5
classindex	Apache License	https://repo1.maven.org/maven2/org/atteo/classindex/classindex	SD5
gson	Apache License	https://repo1.maven.org/maven2/com/google/code/gson/gson	SD5
guava	Apache License	https://repo1.maven.org/maven2/com/google/guava/guava	SD5
guice	Apache License	https://repo1.maven.org/maven2/com/google/inject/guice	SD5
guice-multibindings	Apache License	https://repo1.maven.org/maven2/com/google/inject/extensions/guice-multibindings	SD5
httpclient	Apache License	https://repo1.maven.org/maven2/org/apache/httpcomponents/httpclient	SD5
httpcore	Apache License	https://repo1.maven.org/maven2/org/apache/httpcomponents/httpcore	SD5
Jackson	Apache License	https://github.com/FasterXML/jackson	SD5
JACOB	LGPL	https://repo1.maven.org/maven2/net/sf/jacob-project/jacob	SD5
Java Native Access	LGPL	https://repo1.maven.org/maven2/net/java/dev/jna/jna	SD5
JavaMail (mail.jar)	CDDL	https://repo1.maven.org/maven2/javax/mail/mail	SD5
javassist	Apache License, LGPL, MPL	https://repo1.maven.org/maven2/org/javassist/javassist	SD5
javax.annotation-api	GPL, CDDL	https://repo1.maven.org/maven2/javax/annotation/javax.annotation-api	SD5
javax-ejb-api	GPL, CDDL	https://repo1.maven.org/maven2/javax/ejb/javax.ejb-api	SD5
javax.inject	Apache License	https://repo1.maven.org/maven2/javax/inject	SD5
Javax.servlet-api	GPL, CDDL	https://repo1.maven.org/maven2/javax/servlet/javax.servlet-api	SD5
javax.annotation-api	GPL, CDDL	https://repo1.maven.org/maven2/javax/annotation/javax.annotation-api	SD5
javax-ejb-api	GPL, CDDL	https://repo1.maven.org/maven2/javax/ejb/javax.ejb-api	SD5
javax.inject	Apache License	https://repo1.maven.org/maven2/javax/inject	SD5
Javax.servlet	GPL, CDDL	https://repo1.maven.org/maven2/javax/servlet/javax.servlet-	SD5

Name	License	Component Source URL	Note
-api		api	
javax.transaction-api	GPL, CDDL	https://repo1.maven.org/maven2/javax/transaction/javax.transaction-api	SD5
javax.ws.rs-api	GPL, CDDL	https://repo1.maven.org/maven2/javax/ws/rs/javax.ws.rs-api	SD5
jboss-logging	Apache License	https://repo1.maven.org/maven2/org/jboss/logging/jboss-logging	SD5
jboss-servlet-api	GPL, CDDL	https://repo1.maven.org/maven2/org/jboss/spec/javax/servlet/jboss-servlet-api_3.1_spec	SD5
jcl-over-slf4j	Apache License	https://repo1.maven.org/maven2/org/slf4j/jcl-over-slf4j	SD5
jcommon	LGPL	https://repo1.maven.org/maven2/jfree/jcommon	SD5
jdk-serializable-functional	MIT	https://repo1.maven.org/maven2/org/danekja/jdk-serializable-functional	SD5
jetty	Apache License, Eclipse Public License	https://repo1.maven.org/maven2/org/eclipse/jetty	SD5
JFreeChart	LGPL	http://sourceforge.net/projects/jfreechart	SD5
JLine	BSD	https://repo1.maven.org/maven2/org/jline	SD5
Joda Time	Apache License	https://repo1.maven.org/maven2/joda-time/joda-time	SD5
jQuery	MIT	https://code.jquery.com	SD5
json-simple	Apache License	https://code.google.com/archive/p/json-simple	SD5
Log4J 2	Apache License	https://logging.apache.org/log4j/2.x/	SD5
Logback-classic	EPL, LGPL	https://repo1.maven.org/maven2/ch/qos/logback/logback-classic	SD5
Logback-core	EPL, LGPL	https://repo1.maven.org/maven2/ch/qos/logback/logback-core	SD5
openjson	Apache License	https://repo1.maven.org/maven2/com/github/openjson	SD5
pci-ids	Apache License	https://mvnrepository.com/artifact/com.github.marandus/pci-ids	SD5
Quartz	Apache License	https://repo1.maven.org/maven2/org/quartz-scheduler/quartz	SD5
reflections	BSD	https://repo1.maven.org/maven2/org/reflections/reflections	SD5
resteasy	Apache License	https://repo1.maven.org/maven2/org/jboss/resteasy	SD5
SLF4J	MIT	https://repo1.maven.org/maven2/org/slf4j	SD5
Smiparser	Apache License	http://jsmiparser.sourceforge.net/jsmiparser-api	SD5
SNMP4J	Apache License	https://repo1.maven.org/maven2/org/apache/servicemix/bundles/org.apache.servicemix.bundles.snmp4j	SD5
Spring Framework	Apache License	https://repo1.maven.org/maven2/org/springframework	SD5
typetools	Apache License	https://repo1.maven.org/maven2/net/jodah/typetools	SD5
Wicket	Apache License	https://repo1.maven.org/maven2/org/apache/wicket	SD5
xerces XML parser	Apache License	https://xerces.apache.org	SD5

Name	License	Component Source URL	Note
xml-apis	Apache License	https://mvnrepository.com/artifact/xml-apis/xml-apis	SD5
xstream	BSD	https://repo1.maven.org/maven2/com/thoughtworks/xstream/xstream	SD5

C Updating Configurations

For non-IPMI SKU motherboards, Supermicro SuperDoctor 5 automatically detects the monitored sensors based on the configuration files. When the message “The health information of the XXXXX motherboard is not available” on the Heath Info page, it is necessary to update Supermicro SuperDoctor 5 and the configuration files since the older version of Supermicro SuperDoctor 5 may fail to detect the sensors. The steps below guides you to update the configuration files manually.

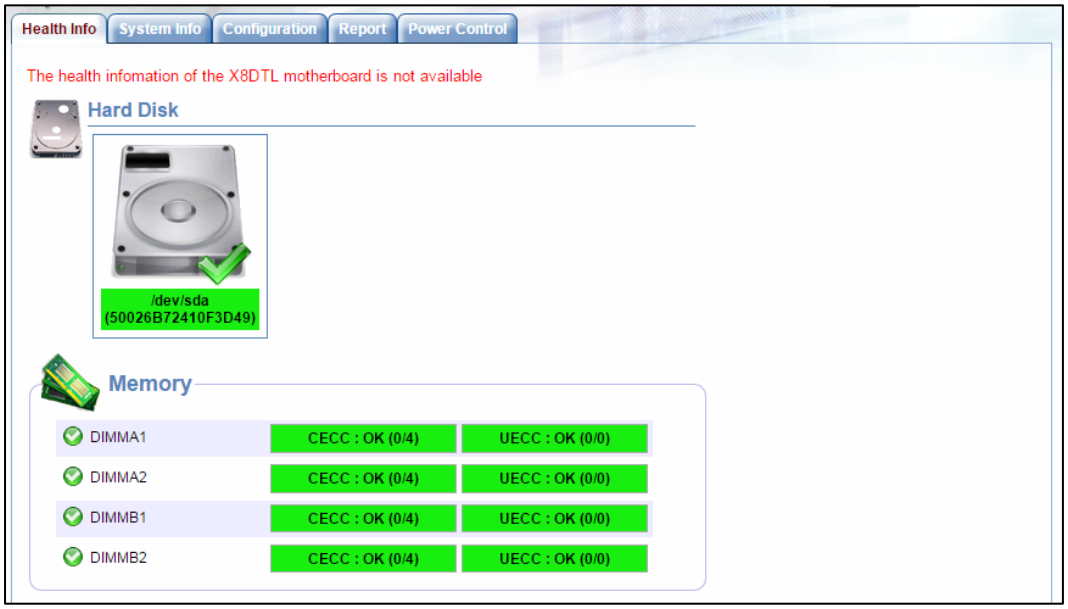


Figure C-1

To update the configuration files, follow these steps:

1. Download the latest file **TMHealth2-resource-XXX.jar** from the Supermicro FTP site: http://www.supermicro.com/wftp/utility/SuperDoctor_5/.
2. Copy and paste this file to replace the existing file **[install folder]/plugin/builtin/TMHealth2-resource-XXX.jar**.
3. Execute the command sdc with the argument **-rd** to redetect the monitored items with the new configuration file.

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