Intel® Deployment Assistant v5.2 User Guide

Order Number: H13024-001

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Revision History

Date	Revision Number	Modifications
April 2013	1.0	Initial release.

Table of Contents

List of Figures

List of Tables

1 Introduction

This User Guide describes how to use the Intel® Deployment Assistant (IDA) v5.2 – an easy-to-use browser-based graphical application – to reduce the time associated with setting up Intel servers. It provides an overview of the features and instructions on how to set up and operate the IDA.

1.1 Target Audience

This guide is intended for system administrators who are responsible for upgrading, troubleshooting, and configuring the Intel® Deployment Assistant. As a system administrator, you can use it to update an Intel server with the latest system software, configure the most common options of the BIOS and firmware, and configure a RAID volume on attached hard drives.

1.2 Terminology

The following table lists the terminology used in this document and the description.

Table 1. Terminology

Term	Description
BIOS	Basic input/output system
BMC	Baseboard Management Controller
CLTT	Closed-loop Thermal Throttling
Firmware	Software embedded in flash memory that controls the BMC, HSC, and LCP
Flash	Non-volatile storage used to store server-resident firmware, including BIOS
FRU	Field Replaceable Unit
HSC	Hot Swap Controller (Hot Swap Backplane Controller)
IDA	Intel® Deployment Assistant
LCP	LED Local Control Panel
NIC	Network Interface Controller (RJ45 LAN connection)
OFU	One-Boot Flash Update
RAID	Redundant Array of Independent
SDR	Sensor Data Record
SUP	Juntura System Update Package (BIOS, firmware, FRU/SDRs)
SysConfig	System Configuration Utility. This includes BIOS and Firmware configuration.
UI	User Interface
XML	Extensible Markup Language
XUL	XML User Interface

2 Getting Started

2.1 Product Overview

Intel® Deployment Assistant reduces the complexity and the time associated with setting up Intel servers. Server deployment time is often cut by an hour or more per system, and even more time can be saved when using the cloning feature to deploy identical servers. The wizard automatically locates and retrieves the latest drivers, BIOS, and firmware updates. It guides you through questions to help quickly configure the server through automatic recognition of server hardware with minimal reboots. Intel® Deployment Assistant helps a system administrator do the following:

- Update an Intel server with the latest system software.

  Updates can be got from a set URL (http://www.intel.com/p/en_US/support which can be customized by OEM), a network drive, or removable media. The firmware components that can be updated using Intel® Deployment Assistant are: BIOS, Integrated BMC, ME, and FRUSDRs.
- Configure the most common options of the BIOS and firmware.
- Configure a RAID volume on attached hard drives.
- Clone all deployment work from one server to multi-servers.

Intel® Deployment Assistant is a browser-based graphical application that provides an easy-to-use, wizard style interface to the system administrator for performing all the tasks above. It is packaged onto a single CD which contains its own operating system (Linux*), a GUI, Intel® Deployment Assistant core, and supporting files for setup and deployment. Intel® Deployment Assistant boots automatically from a CD-ROM/USB drive and runs completely in a RAMDISK.

2.2 Supported Platforms

Intel® Server Boards based on Intel® Xeon® Processor E3-1200 V3 family.

2.3 Hardware Requirements

- CD-ROM Drive

  A USB, IDE, or SATA CD/DVD-ROM drive is required to be able to boot and run Intel® Deployment Assistant. The CD/DVD-ROM drive is mandatory for the OS installation.
- Mouse

  Some functions of the IDA require a standard mouse for navigation.
- USB Disk on Key device

  Some functions of the IDA require a USB disk on key. For example, update system firmware from USB key; save PXE image to USB key.
- RAM

  IDA requires a minimum of 1GB RAM. If available RAM is less than the minimum recommended value, IDA cannot function properly. To use thermal throttling feature for close loop, CLTT enable DIMMS are required.
- Network Adapter

Some optional functions of the IDA require network access. Any single on-board Intel® NIC adapter connection is supported.

- RAID Cards
  RAID Configuration is supported on the selected controllers.

3 Using Intel® Deployment Assistant (IDA)

This chapter details how to operate the Intel® Deployment Assistant.

IDA is a bootable application that uses an IDA CD to boot Intel® Server System to operate functions such as update server system firmware, setup BIOS, setup BMC, configure RAID logical volume, and so on. IDA is designed for one or a series of Intel® Server Systems. (If you use an IDA CD to boot from an unsupported server, IDA will generate an error message.)

You can burn the IDA ISO image into a CD and boot from the CD to launch IDA.

You can also transfer the IDA ISO image to bootable USB device and boot from the USB device. See Appendix E for the detailed steps to transfer.

After IDA booting up, the first interface is the End User License Agreement. You can select **I Accept** and click **Next** button to agree this license, or click **Cancel** button to disagree this license and exit IDA application.

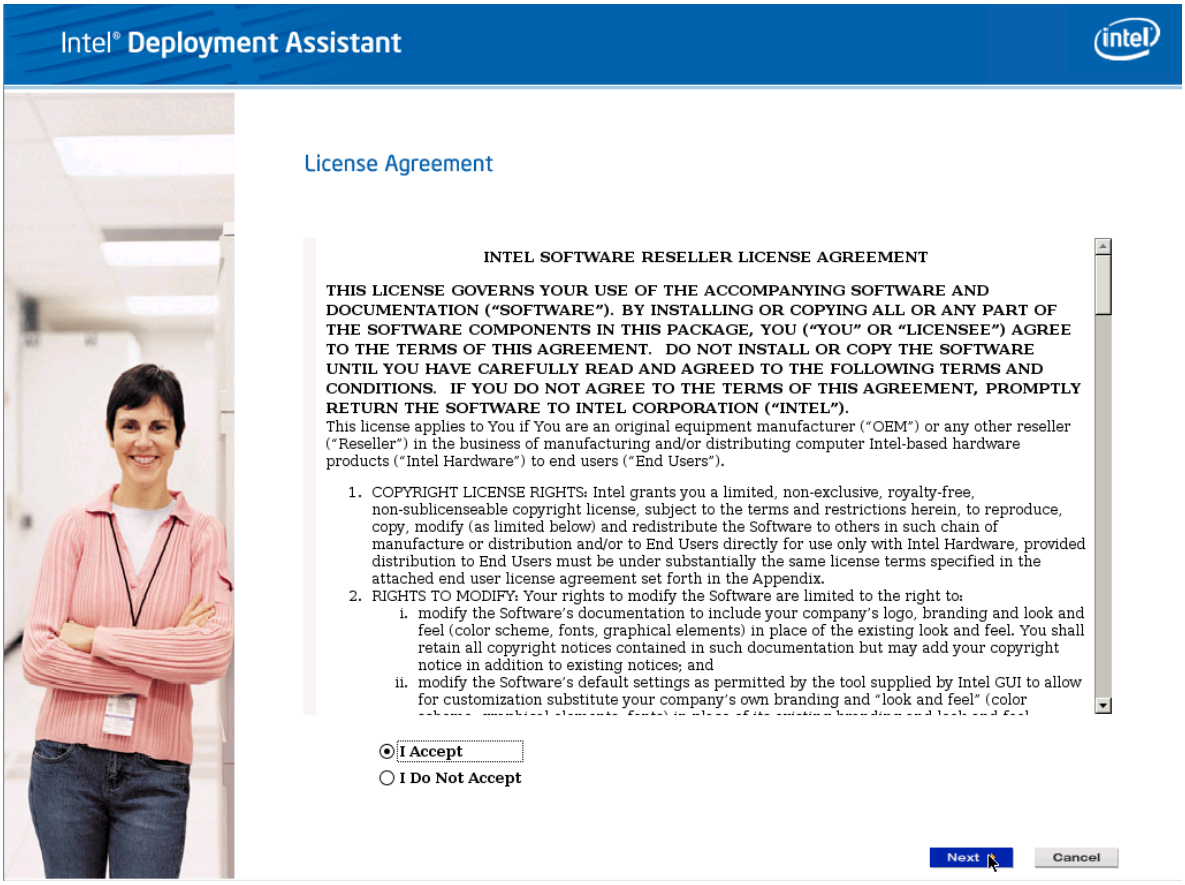

Figure 1. IDA End User License Agreement

3.1 My Server Page

IDA **My Server** page is the application homepage that contains main menu and buttons to help you navigate IDA functions.

Figure 2. IDA My Server Page

3.1.1 Main Menu

This section details the main menu tasks available as shown in the following figure.

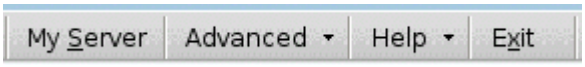

Figure 3. IDA Main Menu

The following table lists the main menu tabs and the corresponding tasks.

Table 2. IDA Main Menu Tabs

Menu Tab	Tasks
My Server (Shortcut: ALT+S)	Enters IDA **My Server** page.
Advanced	Menu **Advanced** contains the following submenu: ▪ **RAID Web Console 2** – Is used to invoke integrated Linux* version RAID Web Console 2 (RWC 2). RWC 2 is a professional utility to configure the Intel® RAID Controller. You can refer to the RWC 2 online user guide for details. If the server system does not have supported RAID controller, this submenu is disabled.

Menu Tab	Tasks
Help	Menu **Help** contains the following submenus: ▪ **Help** – Shows a general IDA introduction. ▪ **About** – Shows version and copyright information. ▪ **Upgrade to New Version** – This submenu is the portal of upgrading IDA to new version with patch file.
Exit (Shortcut: ALT+X)	Exits IDA application.

3.1.2 My Server Information Box

The IDA Homepage **My Server** information box detects and displays the server system configuration information as displayed in the following figure.

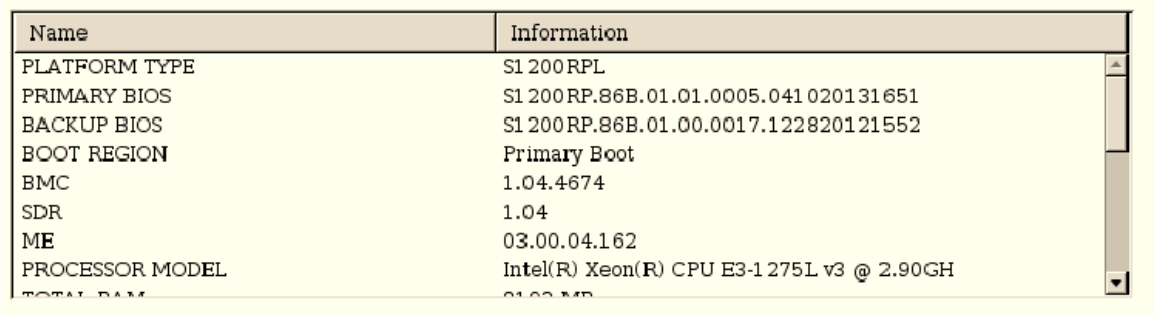

Figure 4. My Server Information Box

The information displayed, as listed in Table 3, depends on your server system hardware configuration. For example, some of the information listed in Table 3 may not be shown if the server does not have the related devices. You have the option to click button to extend this box and click  to hide it.

Table 3. My Server Information Box

Name	Information
Platform_Type	Intel® Server System ID name
PRIMARY BIOS	Primary BIOS version
BACKUP BIOS	Backup BIOS version
BOOT REGION	BIOS boot region
BMC	BMC firmware version
SDR	SDR version
ME	Management Engine version
Intel® RAID Controller XXXXX	Shows Intel® RAID Controller firmware, where XXXXX is RAID card name in system
Intel® Embedded Server RAID Technology II	Intel® onboard embedded RAID type, shown as SATA or SAS
Processor Model	Server CPU product name and frequency
Physical Processors	The number of physical CPU on server
Logical Processors	The number of logical CPU on server

Name	Information
Total RAM	Server memory capacity
Intel® Remote Management Module (Dedicate NIC)	Present / Not Present
Intel® Remote Management Module Lite	Present / Not Present
Physical Processors	The number of physical processors
Logical Processors	The number of logical processors
Hyper-Threading	Enable/Disable
Processor Type	Shows the core number of the processor
Asset Tag	Shows system asset name if it is set
System Manufacturer Name	Default value is Intel Corporation
System Product Name	Shown as Intel® Server Board name
Chassis Manufacturer Name	Default value is Intel Corporation
Chassis Product Name	Default value is Main Server Chassis
Network Adapters	Shows the number of onboard network cards

3.1.3 Primary Function Buttons

There are four primary function buttons in IDA **My Server** page as listed in the following table. They are portals to IDA primary functional areas.

Table 4. Primary Function Buttons

Button	Task
	Enters IDA Server System Firmware Update interface.
	Enters the interface to setup the server system information, BIOS, and server management (BMC parameters).
	This button is used to setup RAID logical volume. If the server system does not have RAID card, it is disabled.
	Enters IDA Multi-Server cloning interface.

3.2 Get System Update

If your server has internet connection, IDA can automatically locate and download the latest Intel® Server System update packages to upgrade server BIOS, ME, BMC FW, and SDR firmware. To do this, IDA uses the system update package that has been specifically developed for each platform.

You can either click the menu **Get Updates** or click the button **Get System Updates** to enter IDA Server Firmware Update interface. You can manually download this package from Intel® Server System page at http://www.intel.com/p/en_US/support.

The update package has a `.ZIP` file extension, and may contain the following components:

- System BIOS
- Integrated BMC (Integrated Baseboard Management) Firmware
- Sensor Data Records (SDRs)
- ME

IDA can get system firmware update package from three resources:

- **The Intel® support website** (http://www.intel.com/p/en_US/support) to get the latest update package
- **My Network** to browse to a network share containing the update package
- **USB media** to browse a USB key for the update package

3.2.1 Scenario 1: Updating Firmware When Server Has an Internet Connection

If your server has internet connection, IDA helps you automatically locate and download the current Intel® Server System firmware package from Intel® support website. The following are the steps to operate this function on IDA:

1. Make sure your server system is connected to the network internet.
2. Boot server with IDA, and accept IDA end user license.
3. Click IDA menu **Get Update** or button **Get System Updates** at **My Server** page.
4. Select **From www.intel.com (recommended)** at **Download Updates** page, and click **Next** button.

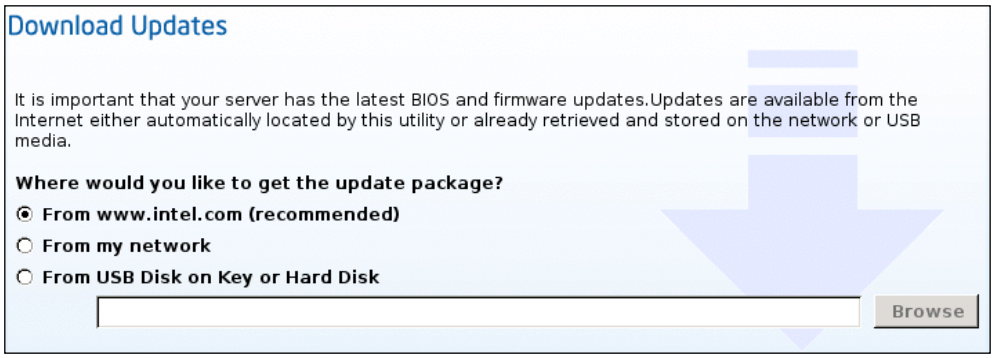

Figure 5. Update Firmware from http://www.intel.com/p/en_US/support

5. Set up your server network parameters to include IP address, subnet Mask, Gateway, DNS, and proxy configuration at the **Network Connection** page, and click **Next** button.

   Note: If you are not familiar with your network settings, check with your IT administrator.

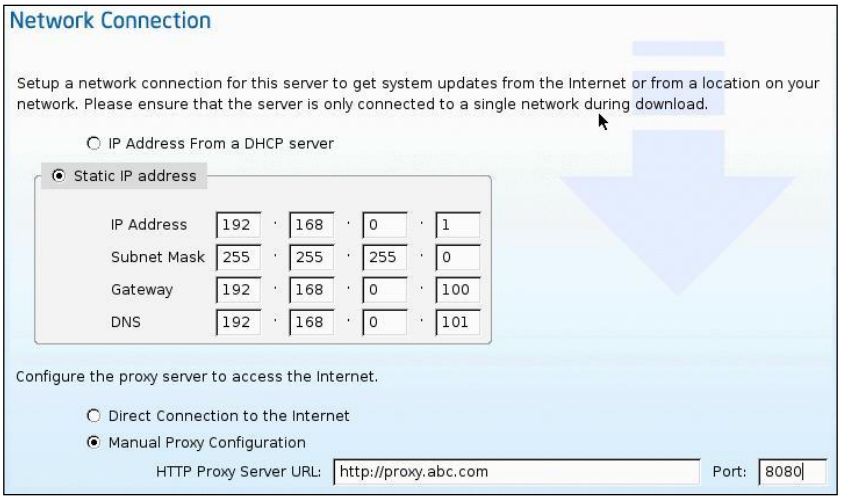

Figure 6. Network Setup for Download Firmware from the Internet

Note: IDA can automatically detect all available system firmware update packages. The latest version is recommended.

6. Click **View Contents** button to check the firmware update package version details. Select your update package and click **Download** button.

Figure 7. Available Online SUP

7. After downloading system update package, IDA requests you to select the components in firmware package. Click **Release Notes** button to view the system update package release notes containing the server firmware version details, known firmware issues, and new features. Then click **Apply** button to start the selected firmware update.

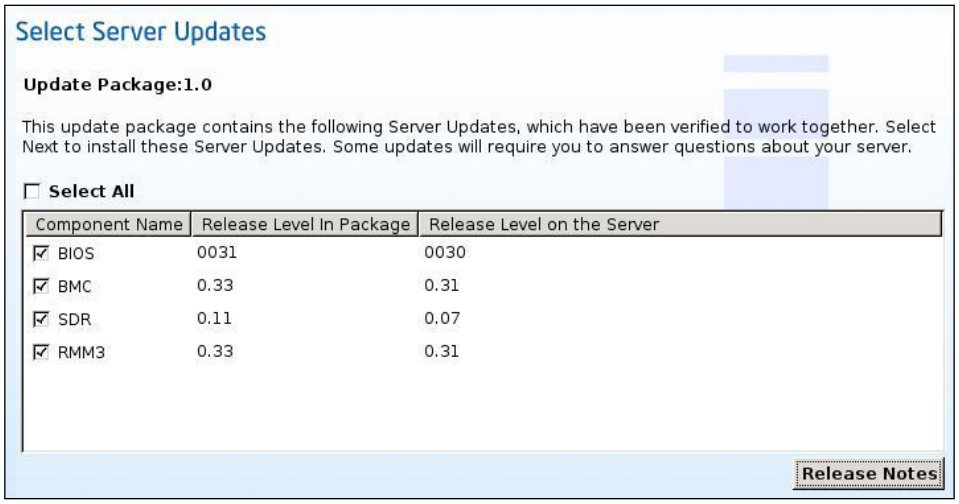

Figure 8. Select Firmware Components

8. During firmware upgrade, you cannot power off or reboot the server. After firmware upgrade process is complete, click **Reboot** button to reboot server.

3.2.2 Scenario 2: Update Firmware from My Network

If your server system cannot access internet, IDA can also download server system firmware update package from a Windows* file server. The following are the steps to update server firmware from the local network:

1. Download Intel® Server System update package from http://www.intel.com/p/en_US/support.
2. Intel® Server System update package for IDA is a `*.zip` file; do not unzip it, and copy it to a Windows* file server share folder.
3. Boot server with IDA, and accept IDA end user license.
4. Click IDA menu **Get Update** or button **Get System Updates** at **My Server** page.
5. Select **From my network** at **Download Updates** page, and click **Next** button.

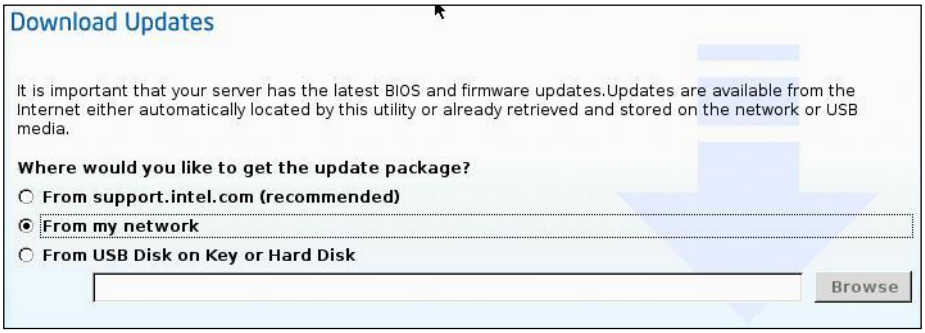

Figure 9. Download SUP from My Network

6. Configure network parameters at the **Network Connection** page. Make sure your server is connected to the local network. Otherwise, IDA will generate an error message. Click **Next** button to continue.

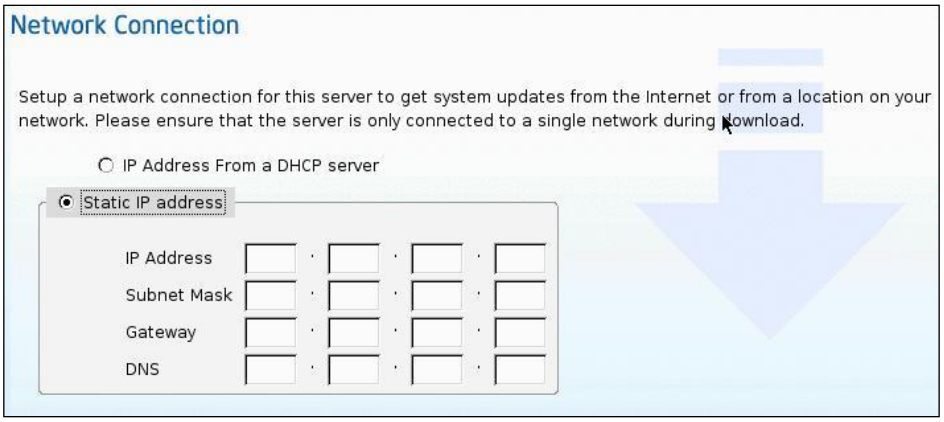

Figure 10. Network Setup for Download Firmware from LAN

7. Enter the network user name and password that you use to login the network file server. The network location is the file server name and share folder where the update package is stored. Click **Connect** button and choose the SUP file in a popup window.

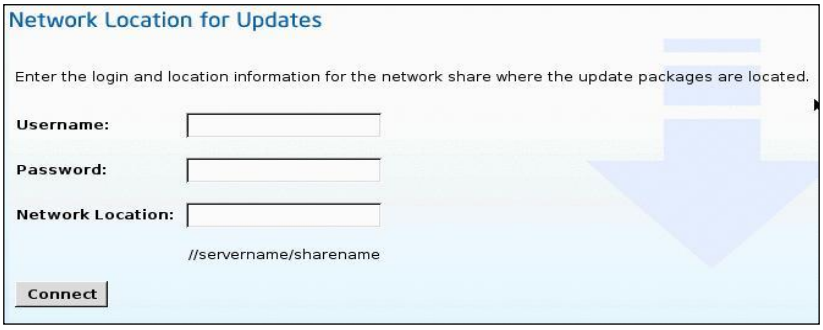

Figure 11. Login Window to a File Server

Note: For security reason, the file server administrator cannot be used. Use a normal account as login user.

8. IDA displays the share folder on the file server on a popup window for you to select the update package.

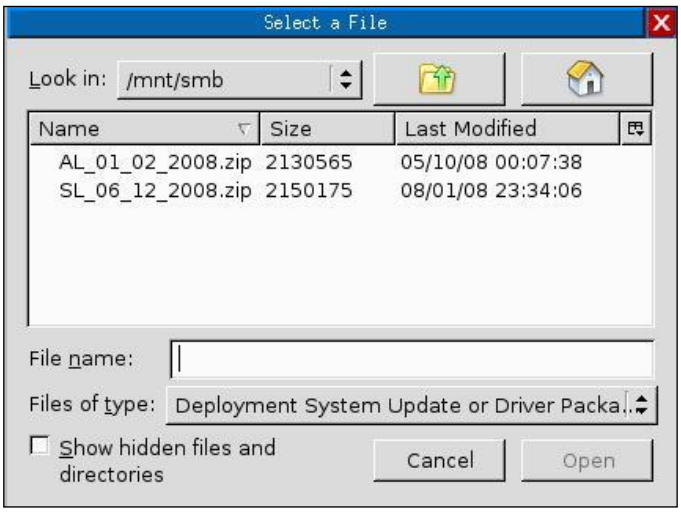

Figure 12. Select a SUP File in File Server

9. IDA shows up the firmware components in package file, for you to select. Click **Release Notes** button to view the system update package release notes containing server firmware version details, known issues, and new features. Click **Apply** button to start the selected firmware update.
10. During firmware upgrade, you cannot power off or reboot the server. After the firmware upgrade process is complete, click **Reboot** button to reboot the server.

3.2.3 Scenario 3: Update Firmware from USB Key

USB key is another kind of media that can store Intel® Server System firmware update package and recognized by IDA. Scenario 3 introduces how to update server firmware from a hot-plug USB key.

1. Download Intel® Server System update package from http://www.intel.com/p/en_US/support.
2. Intel® Server System update package for IDA is a `*.zip` file; do not unzip it, and copy it to the USB key.
3. Boot the server with IDA, and accept the IDA end user license.
4. Click IDA menu **Get Update** or button **Get System Updates** at **My Server** page.
5. Insert the USB key to the server USB port.
6. In the **Download Updates** page, select **From USB Disk on Key or Hard Disk** and click **Browse** button.

   Note: Only the USB keys with FAT partition are supported by IDA.

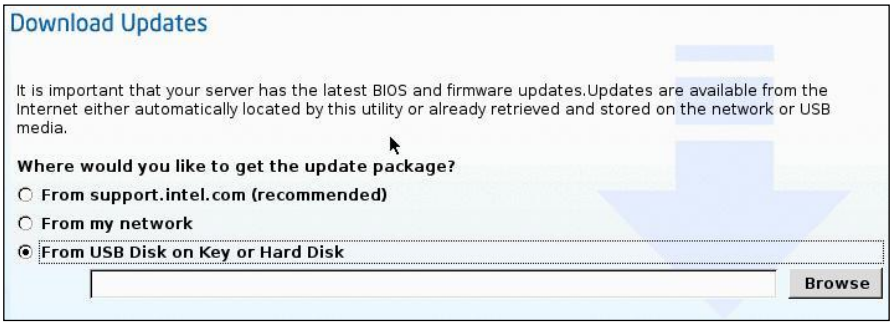

Figure 13. Download Update Package from USB Key

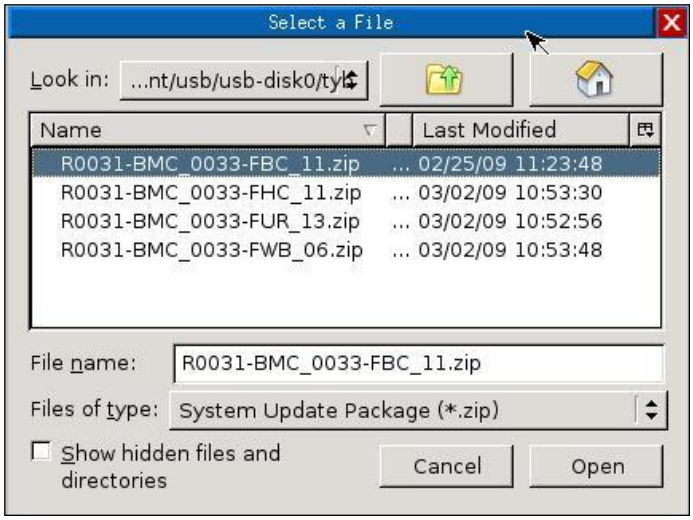

Figure 14. Select SUP File in USB Key Folder

7. Select package file in the popup windows and click **Open** button.
8. IDA shows up the firmware components in package file, and asks you to select. Click **Release Notes** button to view system update package release notes containing server firmware version details, known issues, and new features. Click **Apply** button to start selected firmware update.
9. During firmware upgrade, you cannot power off or reboot server. After firmware upgrade process is complete, click **Reboot** button to reboot server.

3.3 Configure a Server

The IDA **Configure a Server** function area provides three options: System Information, BIOS Settings, and Server Management Settings. These options allow you to set system asset tag, configure key BIOS settings, and configure server management parameters. To enter this function area from the IDA My Server > IDA main menu, click **Configure** tab or click the **Configure a Server** button.

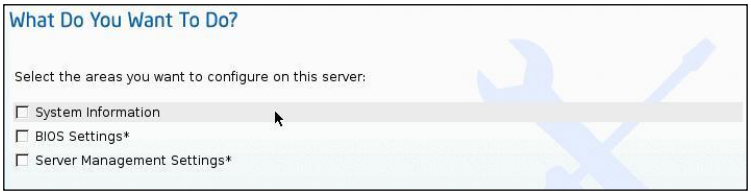

Figure 15. Configure a Server Function Area

3.3.1 System Information

This function area lets you set an asset tag for the server system, and also check the server system information and the chassis information. After setting the asset tag and applying it, IDA will require a reboot.

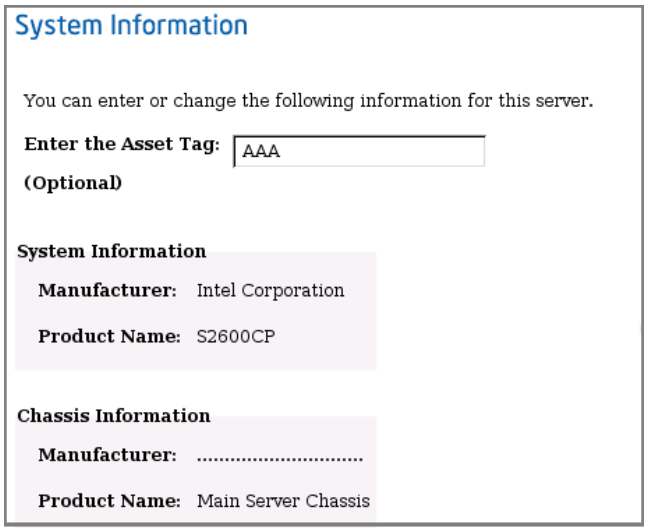

Figure 16. System Information

3.3.2 BIOS Settings

This function area lets you configure the server system BIOS settings, including the following:

- BIOS Time and Date (This change will take effect later when you choose **Apply**.)
- Load Factory Default Settings for the BIOS
- Hyper Threading Technology
- Fan Mode and Altitude (These settings are not available on all platforms or configurations. They may not be displayed depending on your hardware, Thermal Throttling mode BIOS setting, and the type of memory installed in your system.)
- Quiet Boot

- BIOS Administrator and User passwords
- Boot order

Note: Although the IDA BIOS settings function provides an alternative to Intel® Server System BIOS configuration, some special BIOS settings still need to be changed through the standard BIOS setup interface (to enter it by pressing **F2** during server POST).

3.3.2.1 Set System Date and Time

This option lets you update the server system BIOS date and time. You can either enter the system date or time with the MM/DD/YYYY HH:MM:SS format, or click  icon to select date and time at the popup window.

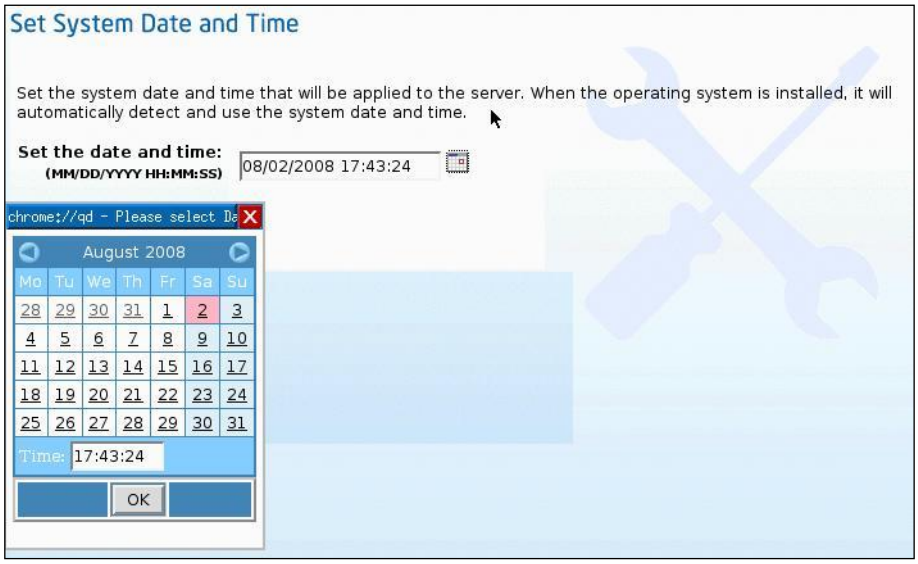

Figure 17. BIOS Setting – Set System Date and Time

3.3.2.2 Factory Default Settings

Loading factory default settings returns BIOS to its original configuration. This option lets you load factory default BIOS settings, if you select **Load factory default settings** and **Apply**.

To bypass this section, select **Do not load factory default settings**.

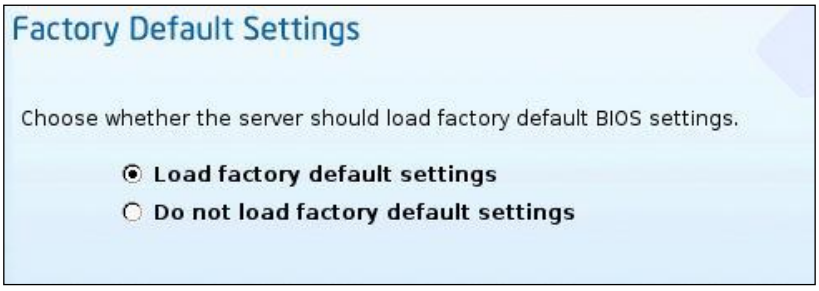

Figure 18. BIOS Setting – Factory Default Settings

3.3.2.3 Change BIOS Administrator Password and User Password

You can set BIOS administrator and user password at this section. You need to select option **Change BIOS Administrator Password** and **Change BIOS User Password** to enable corresponding **Enter new password** and **Confirm new password** boxes.

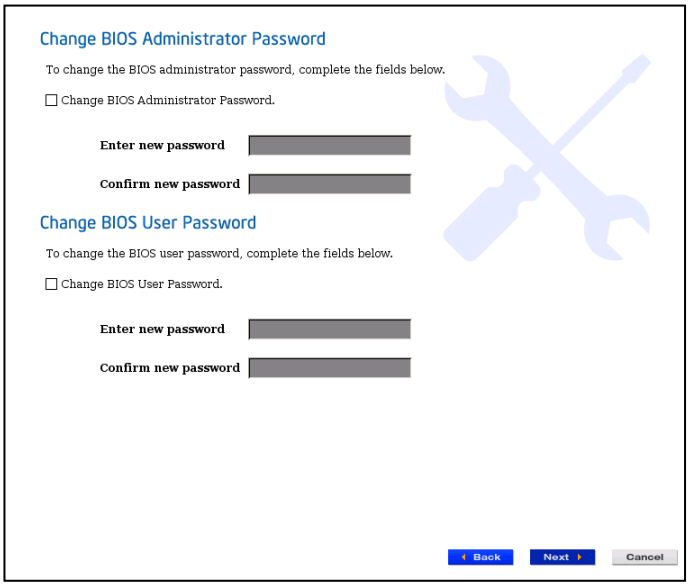

Figure 19. BIOS Setting – Change Password

Notes:

1. A User password can be set only if the admin password has been set.
2. If an admin password is set, it MUST be entered to set any other BIOS settings.
3. A BIOS Admin/User password must satisfy the following conditions – Allowed characters include lower case letters (a, b, c, and so on), upper case letters (A, B, C, and so on), digits (0 to 9), and special characters (!, @, #, $, %, ^, *, (,), -, _, +, =, ?, '). In addition, a password must be 8 characters long at least, and it must contain at least one digit and one special character.

3.3.2.4 Set Fan Mode

Note: This option is visible only if server BIOS **Closed Loop** setting is disabled, or is not supported. **Closed Loop** setting can be changed only through the standard BIOS setup interface (to enter it by pressing **F2** during server POST).

The **Fan Mode** allows you to select which SDR Fan T-control profile will be active. In the **Fan Mode** settings, choose the **Acoustic** mode to reduce the fan noise by throttling memory. Choose the **Performance** mode to allow high speed fan operation. It may be noisier, but this configuration results in a better processor performance.

If the **Closed Loop** option is set, and server system has the correct type of memory to support this mode, then **Acoustic** mode is the default option.

Refer to the relevant *Intel® Server System User Guide* for more information on BIOS options and supported memory.

3.3.2.5 Set Altitude

You can select an altitude scope according to the position where the server will be resided. This setting will impact the server fan speed.

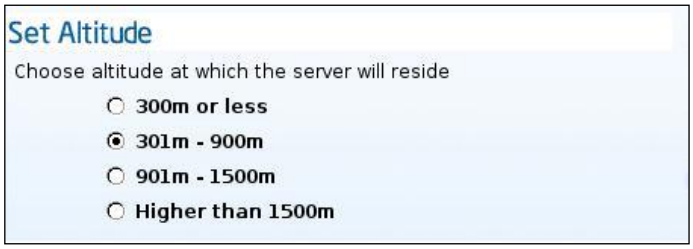

Figure 20. BIOS Setting – Set Altitude

3.3.2.6 Set Boot Order

IDA can show a list of all bootable devices on the server system. You can highlight a device and click **Move Up** or **Move Down** button to arrange the server boot order.

The Boot Order will be saved on this server. The boot device names are determined by your System BIOS. For example, Network boot devices might be listed as "IBA GE Slot..." for the NIC PXE boot capability. Most Intel® Server Boards will also have the list "EFI Shell" for the Extensible Firmware Interface shell that is included in the firmware.

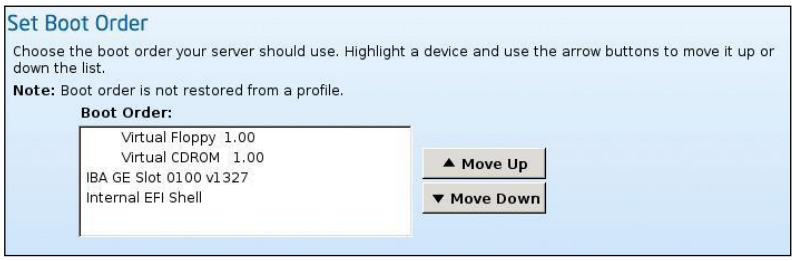

Figure 21. BIOS Setting – Set Boot Order

After you set all available BIOS settings, IDA will ask you to apply it and reboot server.

3.3.3 Server Management Settings

This section allows you to configure the BMC parameters that include:

- BMC LAN Channel
  - Enable LAN Failover
  - Enable/Disable LAN
  - Set IP source as static or DHCP configuration
  - Enable/Disable Serial over LAN
  - Enable/Disable LAN Alerting
  - LAN alert destination IP addresses
  - Platform event filter configuration
  - Enable/Disable ARP for LAN channel
- Set privilege access

- Enable/Disable a user
- Add or Edit the user name (except anonymous and other non-changeable users)
- Add or Edit the user password

Note: Server Management Settings is not available if the server system has no BMC.

The following subsections describe the BMC Communication Options.

3.3.3.1 LAN Failover

The BMC FW provides a LAN failover capability so that the failure of the system HW associated with one LAN link will result in traffic being rerouted to an alternate link.

IDA provides an option of **Enable LAN Failover** to set up this feature; after enabling this option, only LAN Channel 1 will be allowed to configure. Other active LAN channels will share the same configuration when the network connection of LAN channel 1 is broken.

3.3.3.2 BMC LAN Channel

You can select which channel device needs to be configured at **Communication Options** page. Select the channel that you want to configure and click the **Next** button to enter the following screens.

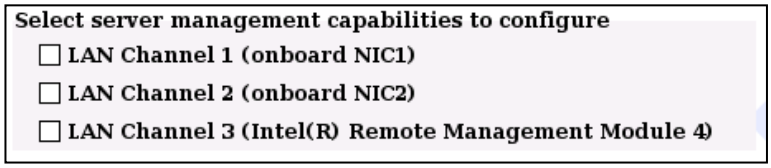

Figure 22. BMC Communication Option

IDA shows options that include:

- LAN Channel 1 (Onboard NIC1)
- LAN Channel 1 (Onboard NIC1)
- LAN Channel 3 (Intel® Remote Management Module 4 Dedicate NIC)

Note: Intel® Remote Management Module 4 (RMM4) includes two daughter cards on the server board, RMM4 Lite and RMM4 dedicate NIC. RMM4 Lite can provide KVM over IP and media redirection functions, and RMM4 dedicate NIC can provide additional network path to BMC (LAN channel 3).

You can configure the following options for LAN Channels 1, 2, 3.

Enable LAN Channel

Select this option to enable BMC network communication through the server onboard NIC IP source, which can be set from a DHCP server or static IP address. If you select BMC IP source that is from the DHCP server, IDA allows the user to enter a hostname for BMC. So you can always find the BMC with its hostname and domain name, even if the IP address has been changed. If you select Static IP Address, IDA requests you to enter IP address, subnet mask, and gateway.

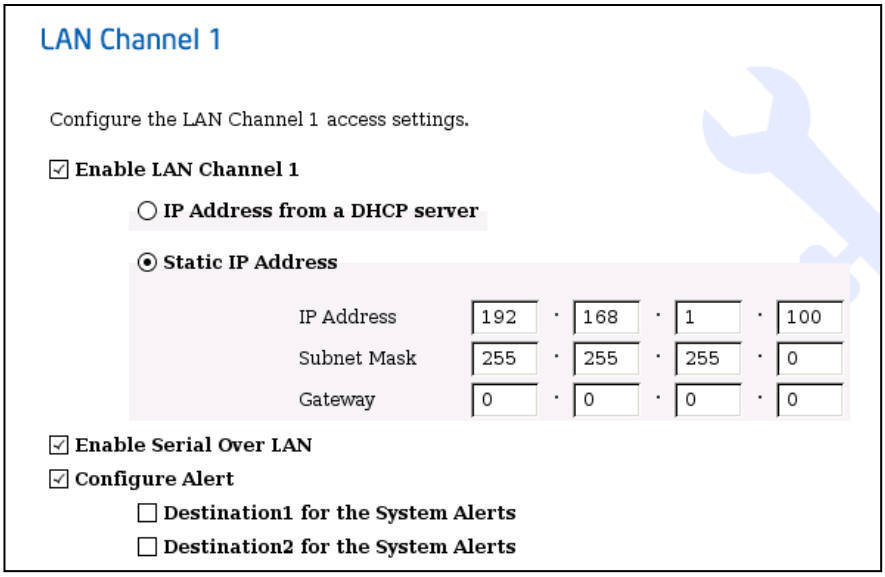

Figure 23. Enable BMC LAN Channel

Enable Serial Over LAN

This option allows you to enable BMC Serial Over LAN (SOL). Serial Over LAN provides a mechanism that enables the serial controller of a managed system to be redirected over an IPMI session over IP. This enables remote console applications to provide access to text-based interfaces for BIOS, utilities, operating systems, and applications while simultaneously providing access to IPMI platform management functions. You also need to enable Console Redirection in the Intel® Server System BIOS configuration.

Enable LAN Alerting

When the server system has hardware issues, BMC can generate an alert to the administrator. The type of BMC alert includes SNMP alert message and BMC alert email. After you select this option, IDA will display an extended section as shown in the following figure.

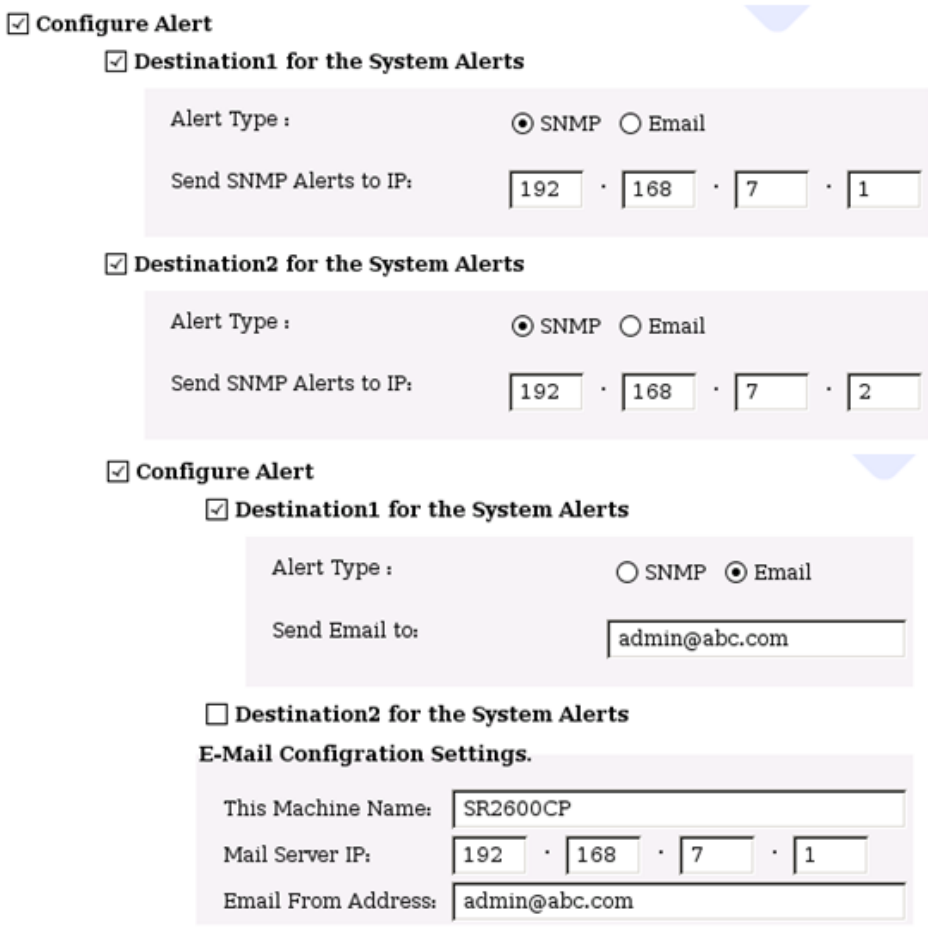

Figure 24. BMC Alert

BMC supports two Alert Destinations:

- Select Alert Destination console 1 and enter the SNMP alert receiver IP address in IP Address box.
- Select Alert Destination console 2 and enter other SNMP alert receiver IP address.

IDA sets the SNMP trap community name as "public" by default. You can also select the Email option to send an alert by the email server. The email configuration options include:

- **Send Email to:**
  Enter the email address to which you want to send the BMC alert email.
  Note: This email address should be a real address in the email system, or you will not receive email from BMC.
- **This Machine Name:**
  Define a name for the current server.
- **Mail Server IP:**
  Enter SMTP email server IP address.
- **Email From Address:**
  Enter email address for the sender. Click **Next** button to set up channel 2 and 3 with the same network parameters as channel 1.

Alert Filter

At the section **Select the events that will trigger alerts**, select events that you want BMC to generate alerts for.

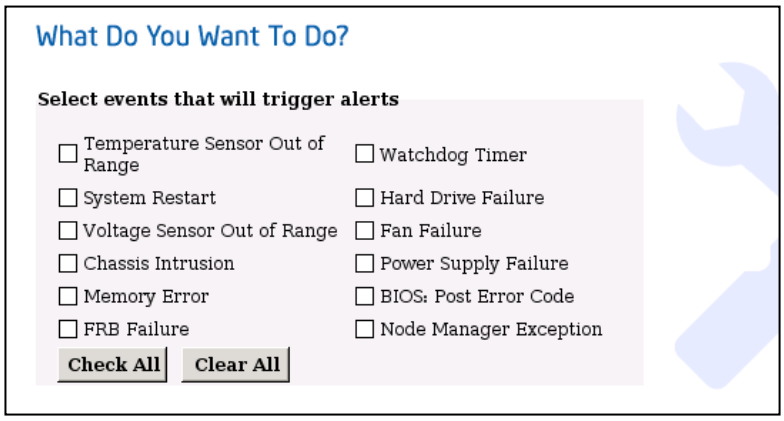

Figure 25. Alert Filter

3.3.3.3 Set Up Users

The BMC user accounts settings include BMC user name, password, and its access privilege. Each account has a single privilege level (User or Admin) across all communication channels and BMC features. Accounts with the User privilege level can only read BMC settings. User Accounts with Administrator privilege level have full control of the BMC. IDA can set up four accounts for BMC, and default BMC account is Anonymous that user name is anonymous and cannot be changed. You can update Anonymous account password and privilege.

Note 1: When management software access BMC with anonymous account, user name should be blank, not “anonymous”.

Note 2: User name “root” is reserved by BMC, so you cannot assign “root” as BMC user account name.

You can update the BMC account user name, password, and privilege.

Select one of the BMC accounts in the IDA **Set Up Users** page, and click the **Edit** button to enable or disable accounts, set the passwords, and set the user privilege level in the popup window.

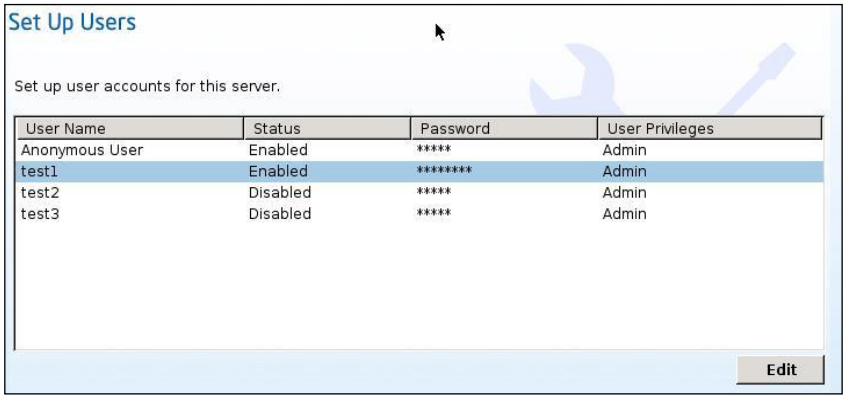

Figure 26. Set Up BMC Account

Figure 27. Edit BMC User Information

After completing all selected BMC settings, the IDA will request you to apply it and reboot server system.

3.4 RAID Configuration

3.4.1 Supported RAID Devices

IDA provides a simplified, common interface; and easy-to-understand user interface for RAID configuration. IDA supports many RAID devices on Intel® Server Boards and Systems that include:

- RMS25JB080
- RS2PI008
- SAS9211-8i
- RS25DB080
- RMS25KB080
- RMS25PB080
- RS25GB008
- RMS25CB080
- Intel® Embedded Server RAID Technology 2 (ESRT2) FOR AHCI
- Intel® Matrix Storage Manager SATA Controller (RSTe SATA)

For details on Intel® RAID cards, refer to the Intel® website http://www.intel.com/products/server/raid/.

Note: Only Raid Level 0 is supported with Intel® RSTe SATA. On the **My Server** page you can enter IDA RAID configuration function area by clicking the main menu **RAID Configuration** button. If multiple RAID controllers are available in the server system, IDA will show a list of all available RAID cards at **Choose RAID Controllers** page.

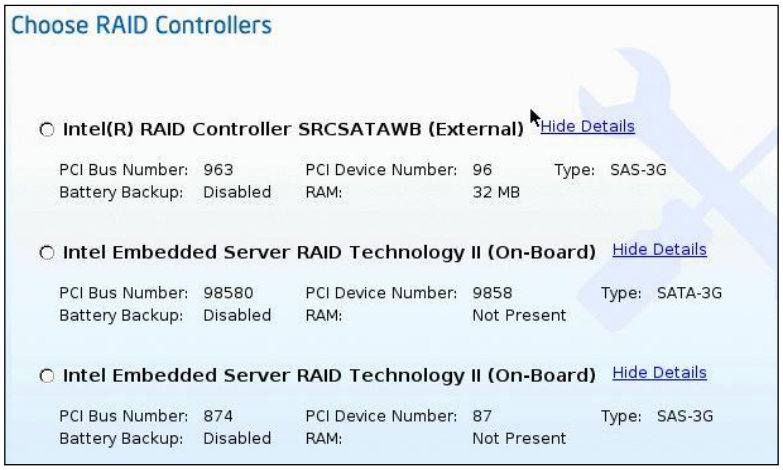

Figure 28. Choose RAID Controllers

Choose the RAID controller that you want to set up for a new RAID array.

Note: The IDA RAID configuration utility detects the physical drivers only once when you enter this function area.

Do not remove or add hard disk drivers while navigating within this function area.

3.4.2 IDA RAID Configurations

IDA RAID configuration contains three configurations.

3.4.2.1 Automatic Setup with Redundancy

This configuration requires at least two hardware drives. If your server system has two drives, IDA creates RAID 1 for you. If it requires more than two, IDA will recommend creating RAID 5. (If the controller does not support RAID 5, IDA will create RAID 1.)

Figure 29. Automatic Setup RAID with Redundancy

3.4.2.2 Automatic Setup without Redundancy

IDA will only use all the drives to create a RAID 0 array.

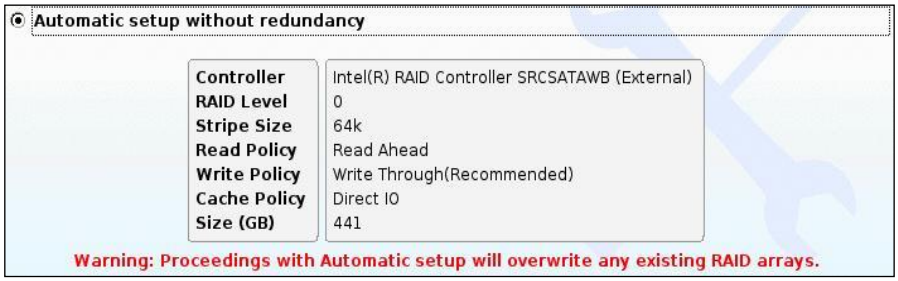

Figure 30. Automatic Setup RAID without Redundancy

Note: The common parameters except for the total size will be the default values for the controller.

3.4.2.3 Custom Configuration

When you select the **Create customer or multiple RAID arrays** option, IDA displays a window for you to select the physical hard disks.

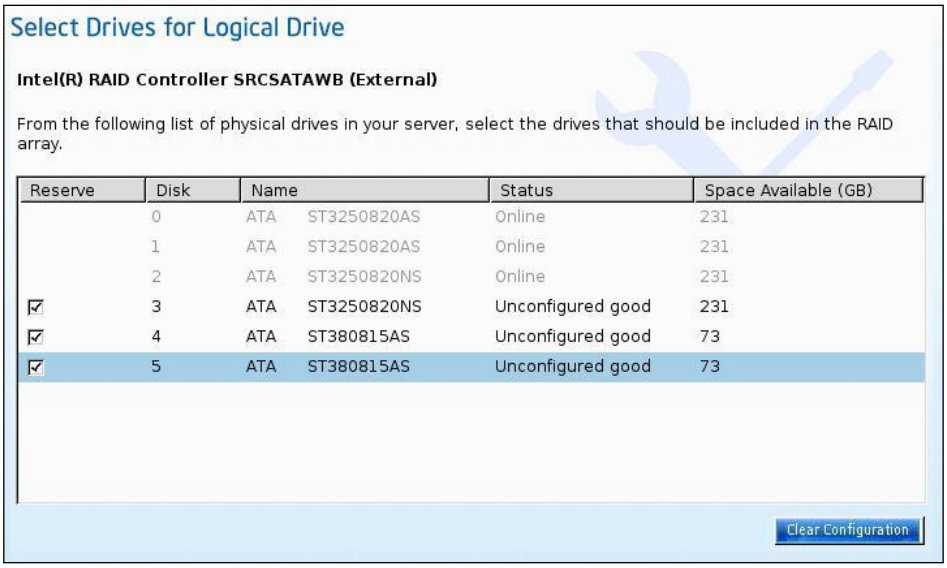

Figure 31. Select Drivers for RAID Configuration

Clear the configuration to make all the disks status as **Unconfigured good**.

Note: Only the disk whose status is **Unconfigured good** can be used for RAID configuration.

To select drives for a new Logical array, do the following:

1. Select the **Unconfigured good** physical drives that you want to include in the RAID array.
2. Check the **Status** column to verify that the drive is **Unconfigured good**.
3. Choose **Create Array**.

The following table lists the status conditions and their explanations.

Table 5. Disk Status Condition and Explanation

Status Condition	Explanation
Online	The drive is already used in another array.
Hotspare	The drive will be used to repair any array in the system that had a drive failure if the failed drive is equal to, or smaller than, the hot spare drive.
Unconfigured good	Drive is unused/available.
Ready	Drive is online and operating correctly.
Offline	Drive is offline or absent. No actions can be performed on the drive until it is back online.
Unconfigured bad	Drive is not operational and needs to be replaced. **Note:** Disks with a status of **Unconfigured bad** cannot be used for RAID configurations.
Foreign	Drive is part of an array created on a different controller or created within one enclosure and moved to another on the same controller. It can be used to create a new array after clearing configuration. You can choose RAID level, LD size, stripe size, read policy, write policy, and IO policy settings, and can allow optional single GLOBAL Hot Spare in the page shown in *Figure 32*.

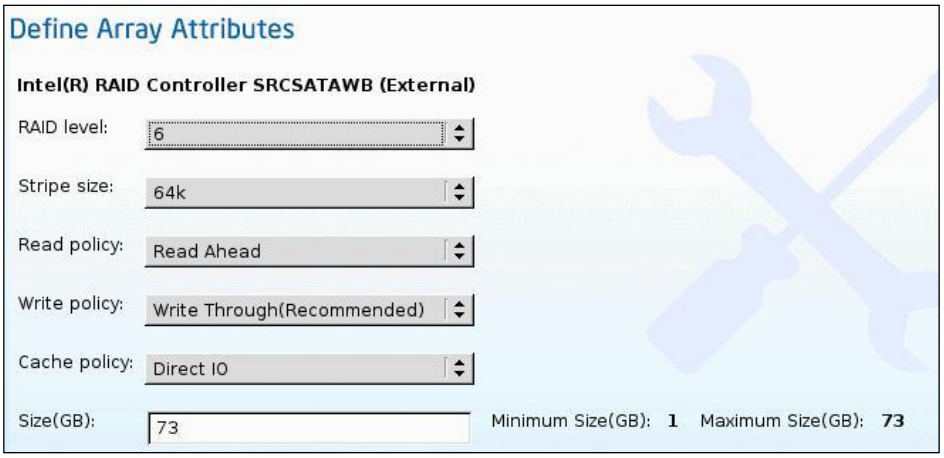

Figure 32. Define RAID Array Attributes

The following table lists the options available and their explanations.

Options	Explanation
RAID level	RAID 0 (Data Striping), 1 (Disk Mirroring), 5 (Data Striping with Striped Parity), 6 (Distributed Parity and Disk Striping), 1E (a hybrid of RAID 10 that is available on some platforms).
Stripe size	Size of the data stripe across all disks. Each physical disk has a smaller strip of data. The sum of all the strips equals the stripe size.
Read policy	No Read Ahead, Read Ahead, Adaptive. Read Ahead will read additional consecutive stripes. Adaptive will turn on Read Ahead for sequential reads and turn it off for random reads.
Write policy	Write Through or Write Back. With Write Through, I/O completion for write operations is signaled when the data is written to the disk. With Write Back, I/O completion is signaled when the data is transferred to cache.
Cache policy	Direct I/O or Cached I/O. Choose Direct I/O for uncached read and write operations. Choose Cached I/O to cache all write operations and check the cache first for read operations.
Size	Logical drive size. The maximum value depends on the RAID level selected.

3.4.3 Advanced RAID Configuration

IDA still integrates Intel® RAID Web Console 2 (RWC2), the Java* based graphical application that provides full functions for the Intel® RAID configuration. Those functions contain RAID configuration, monitoring, and maintenance. For details, refer to the *Intel® RAID Software User's Guide*.

You can enter RWC 2 interface by clicking the main menu **Advanced** > **RAID Web Console 2**.

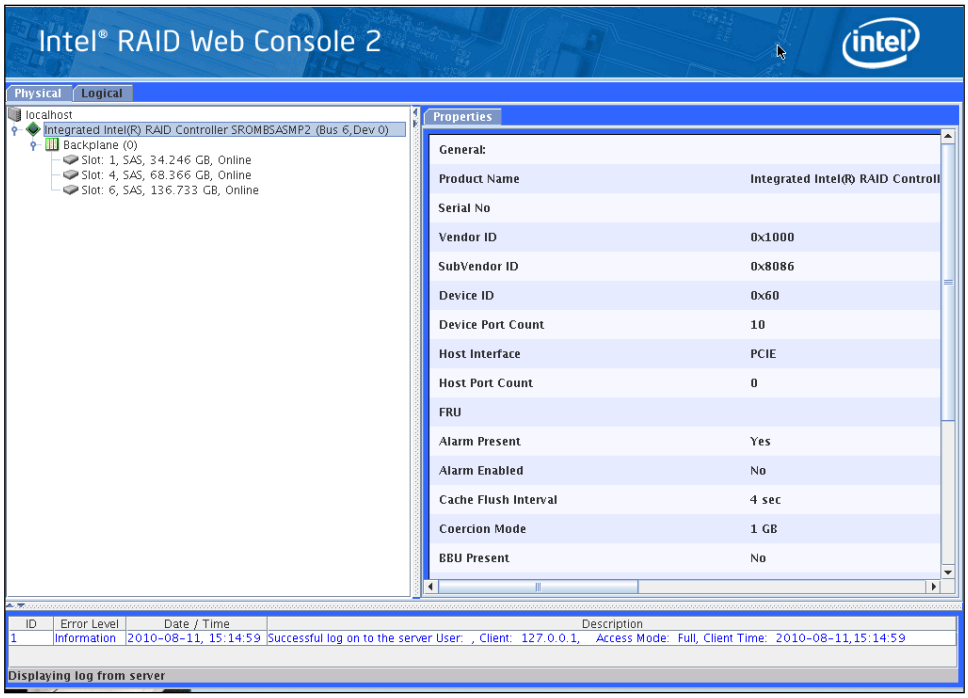

Figure 33. RAID Web Console 2

3.5 Multi-Server Cloning

The IDA multi-server cloning feature is designed for users who need to repeat the same deployment work on more than one server which have the same hardware configuration. This feature deployment can improve server efficiency and save user's human resource by copying all the deployment work on the first server to other servers automatically.

Uses of this feature include:

- In mass deployment environments by placing on a PXE or WDS server.
- Build templates for future deployments on similar systems.
- Help user quickly recover server configuration for crashed systems or replacements.
- Supply to technicians for quick fix of systems without the need for Internet access. All the parts can be included with the image.

IDA can record user's operations, including system firmware update, server asset, BIOS and BMC configuration, RAID configuration, and OS unattended installation on the first server, and create a self-contained bootable image. The image is called the IDA multi-server cloning image.

There are two methods to deliver the IDA multi-server cloning image to other servers:

- IDA can save the image to a USB key and make the USB key bootable. User can then boot the other servers with this USB key and the image can copy all deployment work to the target server.
- IDA image can be delivered to other servers over network by a PXE server. The image boots the target servers and copies all deployment work to them.

Some parameters within the IDA multi-server cloning image can be modified during the cloning phase, such as BMC IP address, OS host name, and so on, so that the user can avoid conflicts between the first server and the other servers. Multi-server cloning image reads the `config.ini` file, which contains the settings to those parameters. Parameters for each target server are organized in one section and start with the server onboard NIC1 MAC address that is used to recognize different target servers by the image. Refer to Section *3.5.3* for `config.ini` format.

The first server and the other servers should have similar hardware configuration. However, depending on what is being cloned, they do not necessarily have to have the exact same configuration. The following are the different requirements for configurations based on what is being cloned:

- Cloning the asset, BIOS and BMC configuration, and the server board should be the same.
- Cloning the system firmware update including BIOS, BMC and FRUSDR, the server board, and chassis should be the same.
- Cloning the RAID configuration, the RAID card, and hard disks should be the same.

3.5.1 Multi-Server Cloning Options

After clicking the **Multi-Server Cloning** button on the IDA home page, IDA enters the **Multi-Server Cloning Options** page. IDA provides three options that are allowed to copy to multiple servers:

- Get System Update
- Configure a Server
- RAID Configuration

User can select all options or any options at one time.

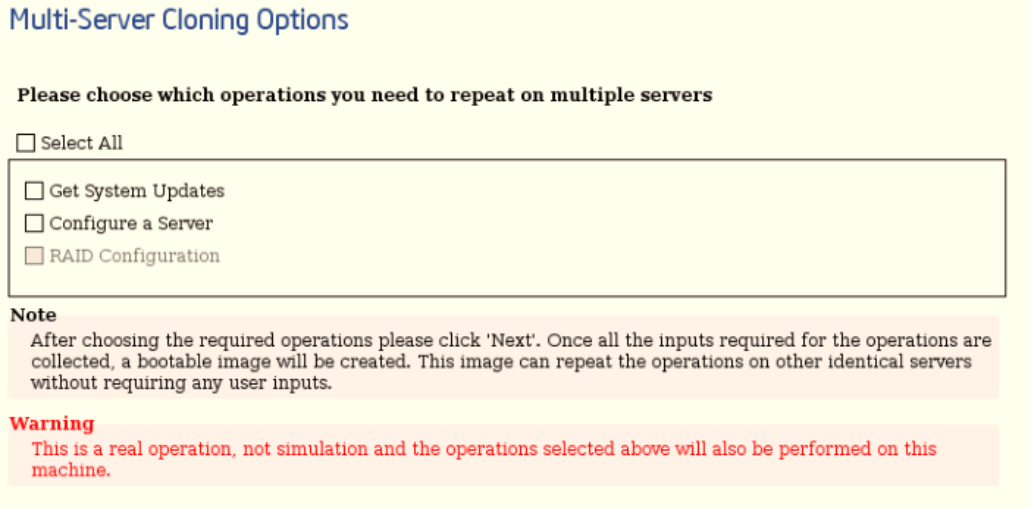

Figure 34. Multi-Server Cloning Options

The operations for the three options in Cloning Mode are the same as those in the IDA normal mode.

Refer to Section *3.2* for detailed operations of **Get System Updates**, Section *3.3* for detailed operations of **Configure a Server**, and Section *3.4* for detailed operations of **RAID Configuration**.

Note: These operations will be performed on your server, and the original configuration or the partition will be changed.

3.5.2 Creating IDA Multi-Server Clone Image

After IDA has collected all the inputs on the first server, multi-server clone image can be created as bootable image on USB key or packaged as PXE image file to save to a USB key at the IDA **Create Clone Image** page.

3.5.2.1 USB Bootable Option

Select the **USB bootable** option and insert a USB key (available free space must be larger than 512 MB), then click **Refresh** button. After IDA recognizes the USB key, click **Next** button to create the bootable image to the USB key.

Note: The USB key will be formatted and all original data will be erased.

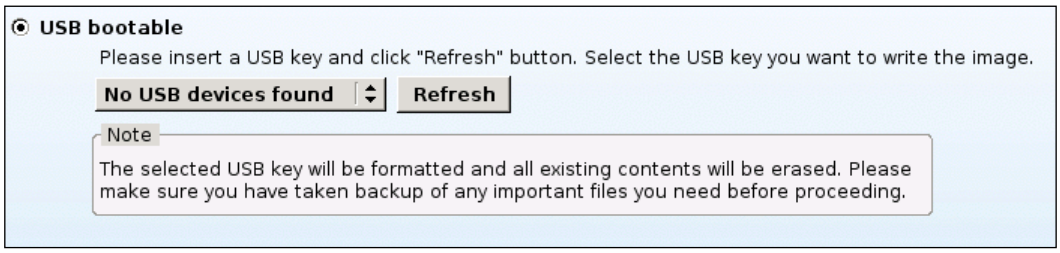

Figure 35. Make Bootable USB Key

Creating a bootable USB key takes about five minutes. IDA will copy the multi-server clone image to the USB key and make it bootable. The bootable USB key contains a Linux* ext3 format partition and a FAT format partition. User can edit the `config.ini` file and save it to the FAT

partition (refer to the Section *3.5.3* for details of `config.ini`). After all the processes are completed, user can boot other servers with this USB key and start the server cloning.

3.5.2.2 PXE Image Option

Select the **PXE Image** option and insert a USB key (available free space must be larger than 512 MB). After about five seconds, click the **Browser** button. If the USB key can be recognized, IDA will pop up a window that allows you to define a filename for the PXE image package.

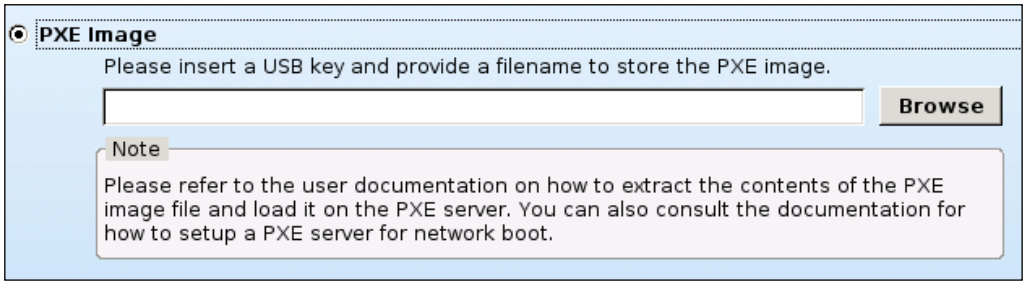

Figure 36. Save PXE Image

After clicking the **Next** button, IDA will automatically save PXE image package as a ZIP format file, which usually contains the following files and folder.

- vmlinuz
- initrd.gz
- update_package.zip
- conflig_template.ini
- stage2.tar.gz

The `update_package.zip` file will not be included in the PXE image package, except that the user selects firmware upgrade cloning.

Note: Refer to Appendix C for how to integrate IDA multi-server cloning PXE image with Linux* version PXE server.

3.5.2.3 Create More Multi-Server Cloning Images

IDA allows the user to select an option to repeat the cloning process to create more bootable USB keys or PXE bootable images.

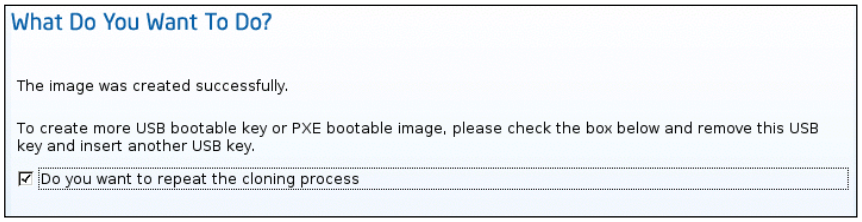

Figure 37. Option to Repeat the Cloning Process

3.5.3 config.ini

IDA multi-server cloning image supports the ability to change parameters of the target servers according to the `config.ini`, which includes:

- BMC channel 1 IP address

- BMC channel 3 IP address (RMM module IP address)
- BMC DHCP_HOSTNAME
- Machine Name for Email Alerting
- From Email Address for Email Alerting

Those parameters for each target server are organized in one section and start with the onboard NIC1 MAC address that is used to recognize different target servers by the image.

```
[Server onboard NIC1-MAC-ADDRESS]
Comments: Enter onboard NIC1 MAC address of target server at here.
```

Example: [00:15:17:8B:4E:12]

Note 1: The MAC address here is case sensitive, but only capitals may also be accepted.

Note 2: Onboard NIC1 MAC address usually can be found as a label on a server board or a chassis. User also can find this address at BIOS configuration interface. Refer to the Server Technical Specification or User Guide about onboard NIC MAC address.

```
lan1_i =
Comments: Enter BMC LAN channel 1 IP address.

lan1_netmask =
Comments: Enter subnet mask for BMC LAN channel 1.

lan1_gateway =
Comments: Enter BMC LAN channel 1 gateway address of BMC LAN
channel 1.

lan3_ip =
Comments: Enter BMC LAN channel 3 (RMM) IP address.

lan3_netmask =
Comments: Enter subnet mask of BMC LAN channel 3 (RMM).

lan3_gateway =
Comments: Enter Gateway address of BMC LAN channel 3 (RMM).

dhcp_host_name =
Comments: Enter BMC host name if BMC IP address is assigned by
DHCP server.

from_addr =
Comments: Enter sender's email address of BMC Lan channel 1 alert
email.

from_addr_lan3 =
Comments: Enter sender's email address of BMC Lan channel 3 alert
email.

machine_name =
```

```
Comments: Enter machine name of BMC Lan channel 1 alert email.

machine_name =
Comments: Enter machine name of BMC Lan channel 3 alert email.
```

Note: Refer to Appendix A for `config.ini` templates.

3.6 Online Patch Update

IDA online patch update provides the user a quick path to get new IDA features or fix critical issues. IDA can search http://downloadcenter.intel.com and automatically find the online patch files that match with the user server system. User can save the patch files to a USB key, and IDA can load it from the USB key next time and does not need to download patch file again.

Click IDA menu **Help** and select **Upgrade to New Version** to enter the **Upgrade Intel® Deployment Assistant** page.

3.7 OS-HTML

OSHTML is a set of HTML pages containing links to download drivers, utilities, and latest IDA ISO image. The HTML pages are located in DVD and can automatically run when the DVD is put in a machine running Windows* or Linux* operating systems. This HTML page gets executed in a default browser which is an Internet Explorer or Mozilla Firefox* browser.

You can get the following information when OS-html automatically loads by browser:

1. Home page
   This page introduces the Intel® Server System hardware features.
2. Server Deployment Toolkit
   This page introduces the Intel® Deployment Assistant features.
3. System Management Software
   This page introduces the System Management Software stacks.
4. Drivers and Utilities
   On this page, you can download server hardware drivers and utilities that are organized on different OS sub-pages. For example, click **Microsoft Windows*** to enter a sub-page that contains all available drivers and utilities in DVD.
5. Configuration and Management Tools
   This page introduces multiple tools that are available for updating and/or configuring the BIOS, firmware, FRUSDRs, as well as for specialized applications including SEL log viewing.
6. Documentation
   You can find the current Intel® Server System and devices User Guides or specification documents on this page.
7. Customer Support
   This page contains the Intel® Server System technical support information.

4 Rebranding Intel® Deployment Assistant

4.1 Important Syntax Requirements

Filenames in this utility are case dependent. For consistency, all filenames including the file extension use only small case letters. If you use upper case letters, the files will not be found by the utility. You must use underscore to separate words in the filename. If you use dash, the files will not be found by the utility.

Branding should only be performed on the files as explained in this document. Additional information will be available later.

All files can be edited with a simple text editor and should not be edited using Microsoft Word* or any other tool that adds formatting characters or line breaks.

Almost all branding is contained in graphic files which are obtained from the `\ui\rebrand\qd-oem.css` file. All graphics are located in `\ui\images\` subfolder.

In most cases, there are two different methods to change the image displayed. In either case, all images must be of the same size (height x width in pixels) as the file they replace.

Method 1: Use the image with a filename of your choice, and change the filename of the graphic used in the CSS file accordingly.

The syntax of calling a graphic in the CSS is always as follows:

```
(
   list-style-image: url("folder/yourfile.gif");
 )
```

Where items in bold are constant.

Method 2: Keep the graphics filename the same and change the image content. (Take `yourfile.gif` and rename it `intel_logo.gif`. Then overwrite the existing `intel_logo.gif` with your file.)

4.2 Common Screen Elements

Every screen shares a common look and feel. The screen is divided into the following major areas:

- Title Bar
- Menu Bar
- Left Pane
- Presentation Pane (that contains the Content Title, Content Area, and Navigation Buttons)

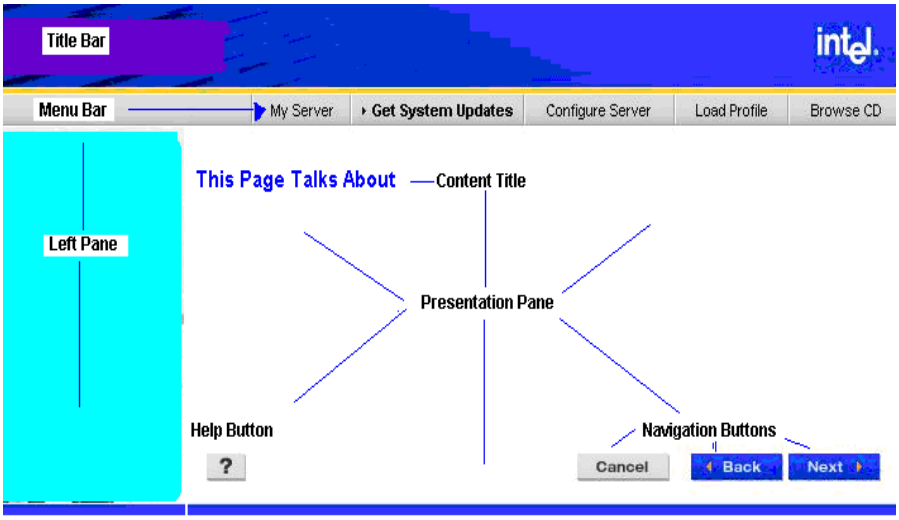

Figure 38. Common Screen Elements

The Title Bar, Menu Bar, Left Panel, Screen Title, and Buttons are made entirely using graphic files. Any text in this area is part of an image. Actual text on the Presentation Pane cannot be changed in this version.

4.2.1 The Title Bar

The Title Bar appears on every screen. Any change to the graphics in the Title Bar will reflect on all pages.

4.2.2 The Menu Bar

The Menu Bar appears on most of the screens after the introductory screen (for example, after the license and loading screens) and provides buttons to the minor navigation areas: My Server, Get System Updates, Configure Server, Load Profile, and Browse CD. There is no Intel® brand element in the Menu Bar.

4.2.3 The Left Pane

The Left Pane appears on all pages, but the content varies. The Left Pane may contain an image of a person or may include a left “breadcrumb” navigation list. There is no Intel® brand element in the Left Pane. If you change any graphic in the Left Pane, it will reflect on all the screens that use that graphic.

4.2.4 The Presentation Pane

The Presentation Pane appears on every page (after the initial splash screen) and contains a Content Title unique to the specific screen, the Navigation Buttons, and the "Content", which is text describing the current task. All user interaction (other than choosing a navigation link from the Menu Bar) occurs on this panel. Some Intel® branded text may occur in the GUI and the Help content. Changing of this text is not supported in this release.

4.2.4.1 The Content Title

The Content Title is unique to each screen and each one is a graphic file. Changing of these graphic files is not supported in this release.

4.2.4.2 The Help and Navigation Buttons

The Help and Navigation Buttons are graphic files (text is part of the image), but these buttons do not contain any Intel® brand elements. Changing the image used for a button will change the image of that button on every screen on which it appears.

4.3 Unique Screens

4.3.1 Initial Splash Screen

After booting up, the Splash Screen is displayed. This image is located at `\ui\images\juntura_splash.jpg`. The image is 1024x768 pixels in 24-bit color at 72 dpi.

Figure 39. Splash Screen

4.3.2 License Screen

The License Screen is not available for branding at alpha release. At final release, the Intel® license will be required, but additional OEM licensing may be added.

4.3.3 Loading Screens

Screens that show the progress bar used when copying, downloading, or updating files are not branded and change is not supported.

4.4 Rebranding the Common Elements

Method 1

Most of the graphic files that can be rebranded are obtained from the cascading style sheet (CSS) file located at `\ui\rebrand\qd-oem.css` except the unique screens such as the Splash Screen. To change an image using Method 1, you must change the name of the graphic file used in the `qd-oem.css` file.

Recap of Method 1: Use your image with a filename of your choice and change the filename listed in the `qd-oem.css` file. The new filename graphic must match the pixel dimension of the graphic file it is replacing. You do not need to match the file location if you provide the complete path in the URL.

Example of implementing a change with Method 1:

1. Start with your logo file named `logo.jpg` (matching the pixel size of the file from Intel `images/js_topnav/intel_logo2.gif`).
2. Place `logo.jpg` in the `images` directory.
3. Change the `qd_oem.css` file from:

```
#img_intel_logo
{
     list-style-image: url("images/js_topnav/intel_logo2.gif");
}
```

To:

```
#img_intel_logo
{
     list-style-image: url("images/logo.jpg");
}
```

Important NOTE: There are some branding changes that cannot use Method 1 because the graphic filename is specifically called by software code to which you do not have access. This will be noted in the affected sections.

Method 2

The alternative method, which can be used in all cases, requires that you use the same graphic filename that Intel used and replace the image.

Recap of Method 2: Use the graphic filename set by Intel, but change the image to one of your choice. You must match the filename, the file format (`.gif`, `.jpg`), and the pixel dimensions of Intel's original file. But you do not need to edit the CSS file.

Example of Method 2:

1. Start with your logo file named `logo.gif` (matching the pixel size of the file from Intel `images/js_topnav/intel_logo2.gif`).
2. Rename `logo.gif` as `intel_logo2.gif`.
3. Place your `intel_logo2.gif` into the `/images/js_topnav/` folder (overwriting Intel's file of the same name).

The following tables list:

- The graphic filename and its directory location
- The `qd-oem.css` section for Method 1
- The Intel provided image of that filename with pixel size requirements

For Method 1, change the URL of the graphic filename. This is always in the following format; you need to change only the sections in bold.

```
list-style-image: url("images/directory/filename.format");
```

For Method 2, do not edit the `qd-oem.css` file. Name your graphic file the same as listed and place the renamed file in the listed directory.

4.4.1 Display Screen

To change the display screen, modify the `display.cfg` file at `boot\isolinux` to contain the desired name of the product.

4.4.2 The Title Bar

This is the main section. Any change will apply to all pages.

Table 6. Title Bar

Filename/Location	CSS Section	Intel Image
images/js_topnav/ topheader2.jpg (also topheader.jpg)	#img_topheader	 97x58
images/js_topnav/ my_topheader_bk.jpg	#my_topheader_bk	
images/js_topnav/ intel_logo2.gif	#img_intel_logo	 85x70 for intel_logo2
images/js_topnav/ intel_logo.gif images/js_lftnav/ intel_logo.gif	97x58 pixels	

4.4.3 Other Common Frame Graphics

Table 7. Color Bar Graphics

Filename/Location	CSS Section	Intel Image
images/js_topnav/ yellow_band.gif	#img_yellow_band (yellow line)	750x5
images/js_topnav/ footer.gif	#footer	 750x8
Cannot change	White Space	1x1

4.4.4 The Menu Bar

To change the navigation choices, the images need to be changed, but the filenames must remain the same. Changing these menu text graphics is not supported in this release. These files are located in `\ui\images\js_topnav` and each graphic has both a non-bold and also a bold (selected state) image. The plain state is named `topnav_(text).gif`. The bold state naming convention is `topnav_(text)_on.gif`.

Table 8. Menu Bar

Filename/Location	CSS Section	Intel Image
images\js_topnav\ topnav_horizontal_bg.gif	Not changeable	Gray Background 10x20
images\js_topnav\ topnav_v_divider.gif	Not changeable	Vertical divider 2x21
images\js_topnav\ topnav_black_arrow.gif	Not changeable	Black >> arrow 7x7
images\js_topnav\ topnav_black_arrow_ back.gif (left)	Not changeable	Black << arrow 7x7

4.4.5 The Left Pane

The files are stored in `\ui\images\js_lftsd_photos` in `.jpg` format. Images that include top navigation colors are 200x621 pixels and images without top navigation are 174x139 pixels.

Table 9. Left Pane

Filename/Location	CSS Section	Intel Image Size
Images/js_lftsd_photos/ lftside_photo_man.jpg	#img_photo_manwithservers	200X621
Images/js_lftsd_photos/ lftside_photo_woman.jpg	#img_photo_noTopNav_ womanserver	200X621

4.4.6 The Content Title

Changing the Content Title is not supported in this release. The text is in graphic files stored in `\ui\images\js_headers` using the naming convention `hdr_(description).gif` and the filenames must not be changed. Each image is 440x25 pixels.

4.4.7 The Help and Navigation Buttons

Buttons are graphics (including any text) and are stored in `\ui\images\js_buttons\`. Buttons except icons are 18 pixels high; the width varies by the volume of text.

Button Naming Conventions:

- Bottom navigation button files → btn_(color)_(description)_(state).gif
- Main Menu Icon based buttons → btn_Icon_(text).gif (36 pixels high)
- Plain arrow buttons → btn_(arrow type)_(color).gif

Most buttons exist in three styles – normal, down, and inactive.

- inactv (not available for user to choose)
- dwn (a darker blue indicating user has clicked this button)
- normal (not selected but available)

Table 10. Save Buttons

Filename	Button	Remarks
btn_blu_save_inactv.gif		Inactive (not available)
btn_blu_save_dwn.gif		Down (user clicked)
btn_blu_save.gif		Normal state

4.4.8 Watermark Graphics

The three watermark (semitransparent) images showing navigation use the same style images as the three main menu icons. They are kept in `\ui\images\js_bkgrnd_icons` and are 280x280 pixels.

4.4.9 Product Name

You can change the default product name "Intel® Deployment Assistant" by modifying the entry for productName in the `ui/rebrand/qd-oem.dtd` file.

4.4.10 Changing Font Styles and Sizes

You can change font properties and background color of the main Presentation Pane by editing the `qd-oem.css` file.

qd-oem.css Location	Settings	Value
vbox#vbox_main	background-color:	White;
vbox#content_box	font-family:	Arial;
	font-weight:	Normal;
	font-size:	12px;
	background-color:	White;
	max-width:	59em;

4.5 Rebranding the Help Files

To rebrand the Help files, you must update each file in `/ui/help` folder. On Linux* systems, you can use the `sed` command to replace the files with the desired company name.

For example: `sed –i "s,Intel,companyname,g" *`

4.6 Rebranding the Update Packages

System Software Update Packages must be packed in `.zip` format and placed at any known web path location; that path must be listed in the `jmaster.xml` file. All packages must be enumerated (described) in a file named `jmaster.xml` which follows a very strict format and syntax. The location of the `jmaster.xml` file is called out in the `qd_oem.dtd` file.

4.6.1 The Update Package

The actual Update Package contains system software files for one particular model server board at a certain time. There is no changeable branding in the package. (Branding may occur within files that go into an Update Package; their customization is not covered in this document.)

4.6.1.1 Contents of the Update Package

Update Packages must have the following listed system configuration files compressed into a `.zip` format. There is no required naming format for the Update Packages other than the `.zip` file extension. It is suggested that the files be named to easily distinguish their version, board model, and date.

- `frusdr.exe` (utility to update the FRU/SDR records)
- `master.cfg` (contains the FRU/SDR config questions)
- One or more FRU/SDR Records (`*.fru` and `*.sdr`)
- `autoexec.bat` (to call `frusdr.exe`, optional)
- Firmware files (`*.hex` or `*.ima` files for BMC, HSC, and LCP)
- `flashupdt.cfg` (contains FW, BIOS, FRUSDR filenames)
- BIOS update file (`*.rom`)
- Front Panel information files (`*.pef`)
- BMC sensor bridge table records (`*.tbl`)

4.6.1.2 Location of the Update Packages

Update Packages may be placed in any location which can be described using a URL address. This address is listed in the `jmaster.xml` file per package, so each package may be stored in a separate location if desired.

4.6.2 The Update Packages Description File: jmaster.xml

The single file that describes all available Update Packages is named `jmaster.xml`. You do not need to change the file on the Intel® Deployment Assistant media; you need to change the file on the update website that is set up for the Update Packages. The location of this file is obtained from the utility which learns the location of this file from the `qd_oem.dtd` file located on the Intel® Deployment Assistant media at `\ui\rebrand\`.

Only one `jmaster.xml` file can be used and may refer to multiple Update Packages at one or multiple web based addresses where the packages are stored.

4.6.3 Web Location of the jmaster.xml File

The web address of the `jmaster.xml` file is specified in the `qd_oem.dtd` file. (This is not necessarily the address of the Update Packages themselves.) This is currently the only definition in the `qd_oem.dtd` file.

```
<!--Web location of the Sup Server-->
      <!ENTITY remoteSupServer "http://(IP#)/ofu/jmaster.xml">
```

The URL can be either the IP address or the "name" (text address) of a webhost (for example, www.intel.com) along with any subdirectory structure to navigate to the `jmaster.xml` file.

4.6.4 File Structure of the jmaster.xml Content

The xml file must follow very strict structure and syntax.

The header section of `jmaster.xml` must not be changed.

```
<?xml version="1.0" encoding="UTF-8"?>
<ofu-meta xmlns:xsi=http://www.w3.org/2001/XMLSchema-instance
xsi:noNamespaceSchemaLocation="jmaster.xsd">
```

Packages should be grouped by exact platforms. The first information to provide is the Platform IDentification (pid).

```
<platform pid="SE7520BD22">
```

Each package needs to have its file location, filename, date, and overall version plus repeat of platform type provided.

```
<sup loc="http://support.intel.com/SE7520BD22/Dec.zip" date="dec-
2005.zip" sup_date="Dec-2005" sup_ver="1.0"
platform_type="SE7520BD22">
```

Each package must then provide the content information per component listing element name (bios, bmc, frusdr, hsc, lcp), version, filename, and date.

```
<sup_element name="bios" ver="SE7520BD22.86B.P.07.20.0066.03"
file="sbd2a066.rom" date="07-MAR-2005"/>
<sup_element name="bmc" ver="0.42" file="7520BD42.hex" date="07-
MAR-2005"/>
<sup_element name="frusdr" ver="6.6.2" file="SBD2BMCM.SDR,
SBD2m_VM.SDR" date="21-Feb-2005"/>
```

After each package listing, close the package information.

```
</sup>
```

You can then add additional packages for the same board (exact model).

```
<sup loc="http://.....
      ……..
</sup>
```

At the end of a list of packages for the first model of board, close the platform type.

```
</platform>
```

Add additional board types by starting with the PID.

```
<platform pid="SE7520BD23">
```

When finished, close the file.

```
</ofu-meta>
```

In the future, it may be possible to have more than one `jmaster.xml`; only one file and one file URL address is supported in the `qd_oem.dtd` file now.

4.7 Customizing Software Feature

The customizing software feature allows an OEM to remove/hide specific features available in the Intel® Deployment Assistant utility. Unpack the `.ISO` and edit the `customize.ini` file located in the `ui/rebrand` directory of the CD. Then create a new ISO using the provided rebranding script.

Each feature in the UI is identified by a string with a value set to 1. The feature can be removed from the UI by setting the value of the corresponding feature string to 0. Additionally the list of supported OS can be limited. No new OS can be added to the list, but those present can be removed from the list by setting their value to 0.

The following are the steps to remove the feature:

1. Extract the ISO using the rebranding script.
2. Locate the `customize.ini` file in the `ui/rebrand` directory.
3. Identify the feature to be removed.
4. Edit `customize.ini` by altering the value from 1 to 0 for the feature to be removed.
5. Create the ISO using the rebranding script as described in section 10.

Note: Removing the feature string line will not remove the feature. The string must remain and have its value set to 0.

4.7.1 Default customize.ini Contents

```
# Feature Configuration options
SystemUpdate=1
SystemConfigure=1
SystemInformation=1
BIOSConfigure=1
BMCConfigure=1
RaidConfigure=1
MultiServerClone=1
```

4.8 Customizable UI Screens

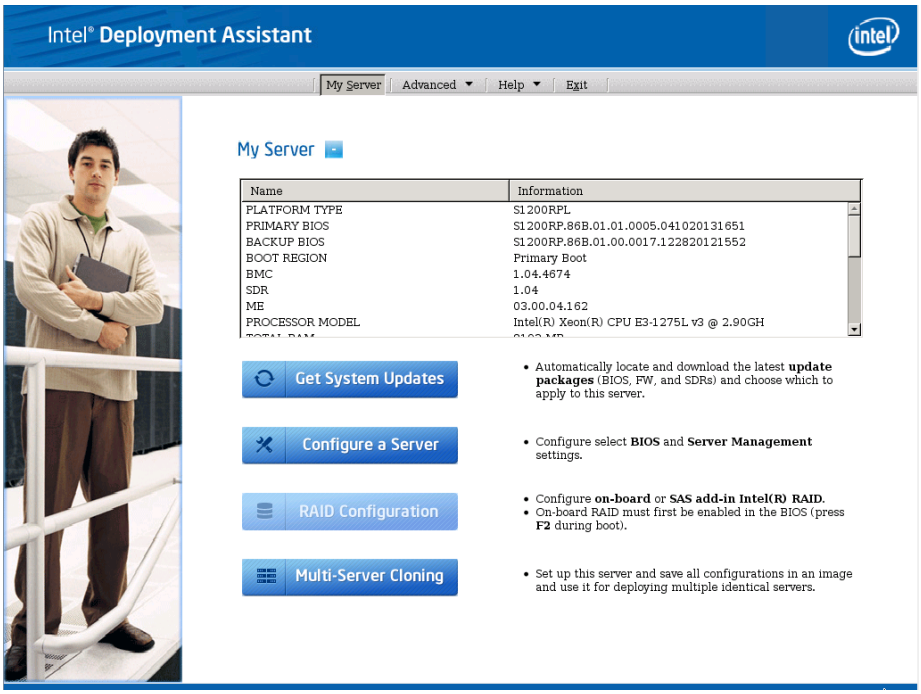

Figure 40. Customizable UI Screens

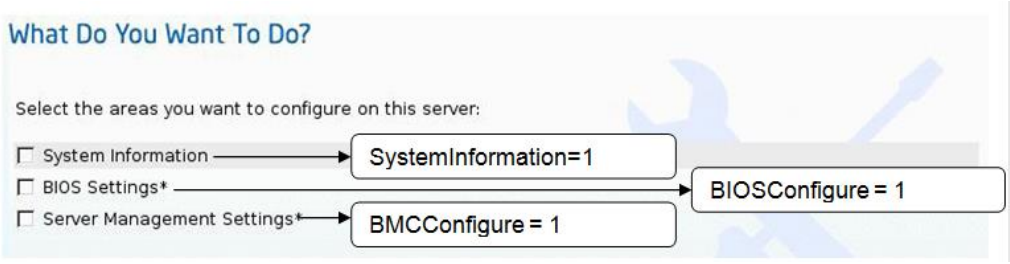

Figure 41. Screenshot Showing Associated Feature String with the GUI Buttons

4.8.1 Example

If the user wants to remove the features BIOS Settings and Server Management Settings under Configure Server, the `customize.ini` should be modified as follows:

```
# Feature Configuration options
SystemUpdate=1
SystemConfigure=1
SystemInformation=1
BIOSConfigure=0
BMCConfigure=0
RaidConfigure=1
MultiServerClone=1
```

Figure 42. UI Screen after Customization

4.9 Recreating the ISO Image

You must follow the steps below to recreate the OEM branded version of the Intel® Deployment Assistant CD.

Step-by-step instructions (for Linux* OS only)

1. Make sure you have appropriate permissions.
2. Mount the ISO so that it can be modified.

   Example:

   ```
   # mkdir /home/oem
   ```

   a. If you have the ISO file, issue the following command:

      `# mount -o loop ida.iso /home/oem` (This will be a read-only file system.)

   b. If you have CD ROM already mounted, issue the following command:

      `# mount /dev/cdrom /mnt/cdrom` (Assuming `/dev/cdrom` is the CD ROM device)

   c. `# mkdir /home/oem_new`

   d. `# cp -r /home/oem/ /home/oem_new/`

   e. `# cd /home/oem_new/`
3. Copy the `iso_creator.sh` (refer to Appendix E) to `/home/oem_new/`.
4. Modify the files as described for the component you wish to rebrand.
5. Run the `iso_creator.sh` script in the directory above from where the CD contents were extracted.

   For example:

   ```
   # sh ./iso_creator oem_assistant.iso /home/oem_new
   ```

The `iso_creator.sh` requires mkisofs (version: mkisofs-2.01.1-5) to be installed on the system. The script requires two arguments: the name of the ISO to be created and the folder to create the ISO from.

If successful, the newly created ISO image (`oem_assistant.iso`) can be found in the current directory (that is, `/home/oem_new`).

Appendix A: Summary of Rebrandable Elements

Table 11. Rebrandable Elements

Element Name	Filename/Location	Image Resolution, Bitmap	CSS Location
Splash Screen	\ui\images\juntura_splash.jpg	1024x768, 24bit color at 72dpi	N/A
Display Screen	\boot\isolinux\display.cfg	N/A	N/A
Title Bar	images/js_topnav/topheader2.jpg (also topheader.jpg) images/js_topnav/my_topheader_bk.jpg	854X70, 24 bits	#img_topheader #my_topheader_bk
Logo	images/js_topnav/intel_logo2.gif	85x70, 8 bits	#img_intel_logo
Color Bar Graphics	images/js_topnav/yellow_band.gif images/js_topnav/footer.gif	750x5, 8 bits 750x8, 8 bits	#img_yellow_band (yellow line) #footer
Save Button	\ui\images\js_buttons\btn_blu_save_inactv.gif \ui\images\js_buttons\btn_blu_save_dwn.gif \ui\images\js_buttons\btn_blu_save.gif	73X18, 8 bits 73X18, 8 bits 73X18, 8 bits	
Left Pane	Images/js_lftsd_photos/lftside_photo_man.jpg Images/js_lftsd_photos/lftside_photo_woman.jpg	200X621, 24 bits 200X621, 24 bits	#img_photo_manwithservers #img_photo_noTopNav_womanserver

Appendix B: config.ini Template

```
## Description:
## ============
##    Sample config file for providing system specific settings
during server cloning
##                     with Intel(R) Deployment Assistant.
##
##    This file helps in customizing system specific settings
during server cloning.
##
## Notes:
## ======
## 1. Any line starting with the symbol '#' is a comment, and
hence ignored.
## 2. For use with USB key based cloning, the filename has to be
renamed to 'config.ini'
## 3. This file is just an example, please modify the values as
required.
##
## Tip:
## ====
##    The configuration parameters are commented out below,
starting with a single '#'.
##    They can be uncommented (by removing the leading '#') and
proper values need to
##    be entered.
##================================================================
## The GENERAL section contains settings that are common to all
servers during PXE-based
## deployment
# [ GENERAL ]
#mode = "network_share"                # Possible values are:
network_share (Windows*), nfs (RHEL* and SUSE*), cdrom (common
for all OS), usb(Windows*)
                                      # ** NOTE ** The parameter
"mode" with value "usb" is applicable only for USB based cloning
#dir = "share"               # ** IMPORTANT ** The directory/folder
name that is being shared,
                             # it should _NOT_ be a sub-directory
within a shared folder.
                             # For # Windows(R) installations, this
directory should contain
                             # the 'i386' folder
#username = "user"           # Username for the Windows(R) share or
NFS
```

```
#password = "password"           # Password
#workgroup="WGROUP"        # Only required for Windows(R) share
## Any setting that is specific to a server needs to be grouped
under a section with the
## MAC address of the first NIC
# [ 00:15:17:8B:4E:12 ]               ## Server Specific setting
##
##-- Basic LAN Configuration -
#lan1_ip = "xxx.xxx.xxx.xxx"          # IP address of BMC LAN
channel 1
#lan1_netmask = "xxx.xxx.xxx.xxx"     # Netmask for BMC LAN
channel 1
#lan1_gateway = "xxx.xxx.xxx.xxx"       # Gateway address of BMC
LAN channel 1
#lan3_ip = "xxx.xxx.xxx.xxx"          # IP address of LAN3
#lan3_netmask = "xxx.xxx.xxx.xxx"       # Netmask of LAN3
#lan3_gateway = "xxx.xxx.xxx.xxx"     # Gateway address of LAN3
##-- Email alert settings --
#from_addr = "some_user@domain.com"         # Sender email
address for LAN channel 1
#machine_name = "mc_name"             # Sender machine name for
LAN channel 1
#from_addr_lan3 = "some_user@domain.com"    # Sender email
address for LAN channel 3
#machine_name_lan3 = "mc_name"              # Sender machine name
for LAN channel 3
#dhcp_host_name = "hostname"                # DHCP hostname
```

Appendix C: Setting Up a Linux* PXE Server and Integrating IDA Multi-server Cloning Image HOWTO

Overview

This appendix describes how to set up a Pre-boot eXecution Environment (PXE) server on Red Hat* Linux 6.1 and how to integrate Intel® Deployment Assistant (IDA) multi-server cloning bootable image with the PXE server.

Setting up a Linux* PXE server requires an Intel® Xeon® based server and two key software components that provide PXE functionality: 1> the DHCP server; 2> the TFTP server.

The PXE portion will be handled by the syslinux package. The Syslinux 4.02 package is included in Red Hat* Linux 6.1.

Note: Refer to Section *3.5* on how to create IDA multi-server cloning bootable image.

Refer to Intel® server TPS on how to enable PXE client on PXE-enabled network interface controller (NIC) on Intel® Server Board or System.

Pxelinux Functionality

The pxelinux functionality occurs in this order:

1. The client machine (the server that needs to be cloned) boots from PXE client which requests a DHCP address.
2. The DHCP server responds with an IP address for the client machine along with the address of a TFTP server and filename to load `pxelinux.0` from that server.
3. The client machine downloads `pxelinux.0` from the TFTP server and executes it.
4. Then `pxelinux.0` searches the `pxelinux.cfg` directory on the PXE server for a configuration file that matches the IP address of the machine. If no matches are found, it will attempt to load a file called `default`.
5. The configuration file loaded by `pxelinux.0` will have instruction on what to do next. Some of the choices include boot to local hard drive, boot to an image file, or load `vmlinuz` and `initrd.img`.

Setting up the PXE Server

1. Install Red Hat* Linux 6.1 on a suitable Intel® Xeon® based server as PXE server.
2. Install the following packages:
   - dhcp-4.1.1-19.P1.el6.x86_64
   - tftp-server-0.49-5.1.el6.x86_64

   Additional NFS and Samba services may need to be installed:
   - nfs-utils-1.2.3-7.el6.x86_64
   - nfs-utils-libs-1.1.5-3.el6.x86_64

- samba-common-3.5.6-86.el6.x86_64
- samba-client-3.5.6-86.el6.x86_64
- samba-3.5.6-86.el6.x86_64

3. Set up a static IP and hostname for PXE server, for example, IP=192.168.5.1, hostname =pxeserver.pxe.com.
4. Setup DHCP service.
   a. Run the following command to ensure that DHCP server can be started at each boot:
      `chkconfig --level 345 dhcpd on`
   b. A sample DHCP server configuration file `dhcpd.conf` is located at: `/usr/share/doc/dhcp-3.0.5/dhcpd.conf.sample`. Copy this sample to `/etc/dhcpd.conf`.
   c. Edit `/etc/dhcpd.conf`.
      The following is an example for `dhcpd.conf`. Item `next-server 192.168.5.1` defines the tftp server address, and item `filename "pxelinux.0"` indicates the first file that the PXE client downloaded from tftp server.

```
ddns-update-style interim;
#ignore client-updates
subnet 192.168.5.0 netmask 255.255.255.0 {
range 192.168.5.100 192.168.5.150;
default-lease-time 86400;
max-lease-time 86400;
option ip-forwarding off;
option broadcast-address 192.168.5.255;
option subnet-mask 255.255.255.0;
option ntp-servers 192.168.5.100;
option domain-name-servers 192.168.5.100;
option netbios-name-servers 192.168.5.100;

next-server 192.168.5.1;
filename "pxelinux.0";
                        }
```

   d. After modifying `/etc/dhcpd.conf`, notify the dhcpd server of the changes by using the following command:
      `service dhcpd restart`
      Note: Do not run a new DHCP server on a network with an existing one unless you have configured the network for multiple DHCP servers. Running two or more DHCP servers on the same network without taking special precautions causes conflicts.
5. Configure TFTP service.
   a. TFTP service is started and stopped by demon `xinetd`, using the following command to ensure xinetd can be started at each boot:
      `chkconfig --level 345 xinetd on`
   b. Notify xinetd that the TFTP service has been enabled with the following command:
      `service xinetd restart`

c. Install pxelinux.0 and memdisk into the `/tftpboot` directory with the following commands:

```
mkdir –p /tftpboot/pxelinux.cfg
cp –a /usr/share/syslinux/pxelinux.0   /tftpboot/
```

6. Enable NFS on the server.
   a. Enable the NFS server by using the following commands:

```
chkconfig  --level  345  nfslock  on
chkconfig  --level  345  nfs  on
```

   b. Edit `/etc/exports`. The following is an example that allows accessing the NFS share folder `/nfs1` with anonymous user. Access NFS help for more information of NFS setting.

```
/nfs1         *(ro,
sync,all_squash,anonuid=40,anongid=40)
```

   c. Start or restart NFS service by using the following commands:

```
service  nfslock  restart
service  nfs  restart
```

7. Enable Samba service.
   a. Enable Samba service by using the following command:

```
chkconfig –level 345 smb on
```

   b. Edit `/etc/samba/smb.conf`. The following is an example that allows accessing the Samba share folder `/share/win2003r2` with anonymous user. Access Samba help for more information of the Samba setting.

```
[global]
workgroup = mygroup
server string = Samba
security = share
wins support = no
guest ok = yes
netbios name = myserver
[win2003r2]
path = /share/win2003r2
guest ok = yes
available = yes
public = yes
```

   c. Test `smb.conf` by following command:

```
testparm
```

d. Start or restart Samba service by using the following command:
```
service  smb  restart
```
e. Linux* may prevent Samba from searching the share folder, such as `/share`, alter file context by using the following commands:
```
chcon –R –t samba_share_t  './share'
```

The following are steps to integrate IDA multi-server cloning image with Linux* PXE server:

1. Unzip IDA multi-server cloning image to Linux TFTP root folder `/tftpboot`. IDA multi-server cloning image is a zip file, containing:

```
Input zip contains:
-   vmlinuz
-   initrd.gz
-   drivers.zip
-   update_package.zip
-   conflig_template.ini
-   stage2.tar.gz
```

2. Create `config.ini` file at the `/tftpboot/` folder. You can find a `config.ini` template in the package of IDA multi-server cloning image.

   Note: Refer to Section *3.5.3* for detailed `config.ini` definition.
3. We have created the `/tftpboot/pxelinux.cfg` directory. The pxelinux.0 configuration files will be stored in this directory. Because more than one system may be booted from the same server, the configuration filename depends on the IP address of the booting machine. PXELINUX will search for its configuration file on the boot server in the following way:
   a. First, it will search for the configuration file using the hardware type (using its ARP type code) and address, all in lower case hexadecimal with dash separators; for example, for an Ethernet (ARP type 1) with address 88:99:AA:BB:CC:DD it will search for the filename 01-88-99-aa-bb-cc-dd.
   b. Next, it will search for the configuration file using its own IP address in upper case hexadecimal, for example, 192.0.2.91 -> C000025B (192->C0, 0->00, 2->02, 91->5B). If that file is not found, it will remove one hex digit and try again. Ultimately, it will try looking for a file named `default` (in lower case). As an example, if the boot file name is `/mybootdir/pxelinux.0`, the Ethernet MAC address is 88:99:AA:BB:CC:DD and the IP address 192.0.2.91, it will try following files (in that order):

```
/mybootdir/pxelinux.cfg/01-88-99-aa-bb-cc-dd
       /mybootdir/pxelinux.cfg/C000025B
       /mybootdir/pxelinux.cfg/C000025
       /mybootdir/pxelinux.cfg/C00002
       /mybootdir/pxelinux.cfg/C0000
       /mybootdir/pxelinux.cfg/C000
       /mybootdir/pxelinux.cfg/C00
       /mybootdir/pxelinux.cfg/C0
       /mybootdir/pxelinux.cfg/C
       /mybootdir/pxelinux.cfg/default
```

Example of `default` file:

```
DEFAULT Example
prompt  0

label  Example
kernel vmlinuz
append initrd=initrd.gz  server_ip=192.168.5.1
stage2_path= quiet
```

`vmlinuz` and `initrd.gz` are files from the IDA multi-server cloning image zip package.

`server_ip` is the PXE server IP address.

`stage2_path` is the sub-folder name that contains the `stage2.zip` file. The sub-folder means the sub-folder under the TFTP root folder `tftpboot`. At this example, the value of `stage2_path` is blank, as `stage2.zip` is at TFTP root folder `tftpboot`.

4. Multi-server cloning image also can be integrated to a sub-folder under TFTP root folder. PXE server supports boot menu function, so user can arrange several multi-server cloning images on one PXE server, and can select them by boot menu.
   a. Copy `menu.c32` file from syslinux package to TFTP root folder `tftpboot`.
   b. Create `test1` folder under `tftpboot`, and unzip multi-server cloning image to `/tftpboot/test1` folder.
   c. Create `config.ini` file at the `/tftpboot/test1` folder. You can find a `config.ini` template file at multi-server cloning image.

      Note: Refer to Section *3.5.3* for a detailed `config.ini` definition.
   d. Edit `/tftpboot/pxelinux.cfg/default` as following:

```
default menu.c32
PROMPT   0
TIMEOUT 300
MENU TITLE PXE Boot Menu

label SR1625 MPHW RAID 15G Windows2003
MENU DEFAULT
kernel test1/vmlinuz
append initrd=test1/initrd.gz server_ip=192.168.7.1
         stage2_path=test1 quiet

label SR1625 FW update
kernel test2/vmlinuz
append initrd=test2/initrd.gz server_ip=192.168.7.1
 stage2_path=test2 quiet
```

Example of deploying firmware update multi-server cloning with the PXE server:

a. Create multi-server image that contains firmware update and server management configuration with IDA and save PXE image to a USB key.
b. Unzip the image to `/tftpboot/test2`.
c. Check `/tftpboot/pxelinux.cfg/default`, it should follow step 4d.
d. Create `/tftpboot/test2/config.ini`. The following is an example of `config.ini`. After system firmware updated, BMC DHCP hostname will be updated with a different name.

   Note: If the multi-server cloning image only contains firmware update operation, `config.ini` is not needed.

```
[ GENERAL ]
mode =
server =
dir =
username =
password =
workgroup =

[ 00:15:17:DE:D9:84 ]
dhcp_host_name = "BMC001"

[ 00:15:17:DE:84:08 ]
dhcp_host_name = "BMC002"
```

e. Start other servers and enter the **F12** key to boot from the PXE client.

Figure 43. Booting from the PXE Client

f. Select update FW menu from the PXE menu in this example.

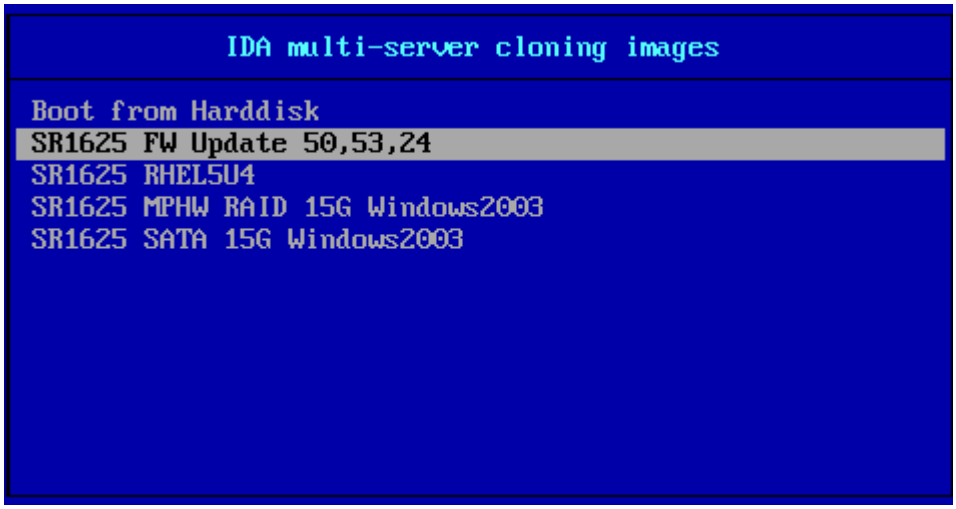

Figure 44. Selecting the FW Menu

g. Multi-server cloning image starts to update server firmware. Reboot server when the process is completed.

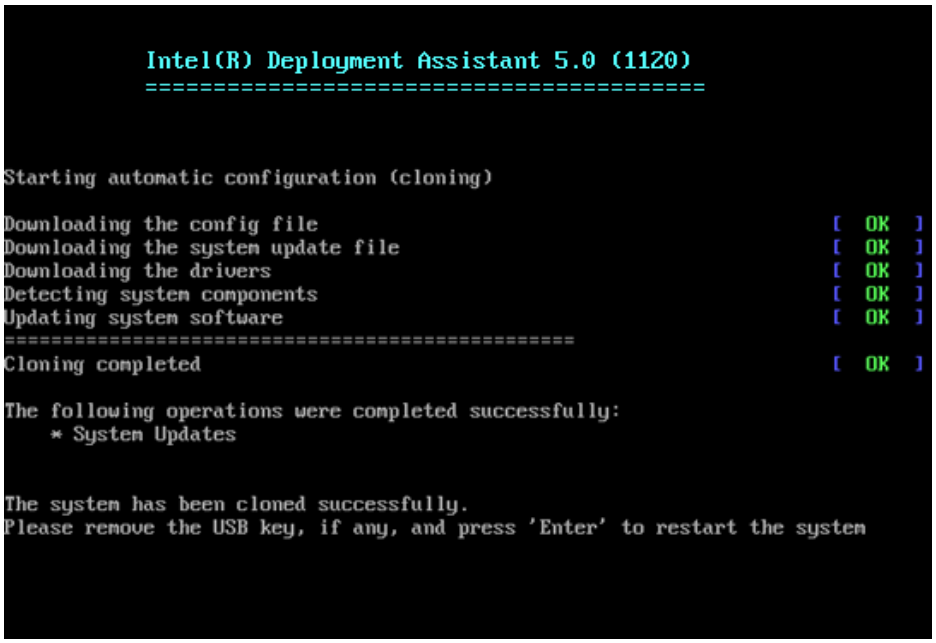

Figure 45. Updating Server Firmware

Notes:

1. Server onboard NIC1 is usually recommended to connect to network. If other onboard NIC are not connected to server, multi-server cloning image may report those unconnected NIC as failed to get IP address from DHCP server. This is working as design and will not impact the deployment cloning.
2. When multi-server cloning image is updating server firmware, do not power off the server. Otherwise system firmware may be damaged. If server loses power due to an accident during FW updating, multi-server cloning image will fail to run on this server again. User needs to force update system BIOS, BMC, and FRUSDR to recover it. Refer to the server system TPS on how to force update system firmware.

Appendix D: Transfer IDA ISO Image to Bootable USB Device

Requirements:

- IDA ISO image for the supported Intel® Server Board or System
- Red Hat Enterprise Linux* 6.2 system
- `usbrecord.sh` script from the CD or support site
- A USB device that is sized 700 MB or more

Steps to complete the image transfer:

1. Place the ISO image and the `usbrecord.sh` onto the Linux* system.
2. Run the following command to make the script executable:
   ```
   # chmod +x usbrecord.sh
   ```
3. Connect the USB key to the system. Do NOT mount any of its partitions.
4. Run the `fdisk -l` command to ensure the disk is detected by Linux*.
5. Run the following command to make the USB key bootable containing the Intel® Deployment Assistant only:
   ```
   # ./usbrecord.sh <ISO file name> <usb_partition>
   ```
   Example:
   ```
   # ./usbrecord.sh /root/IDA-v5.2-Build-19.iso /dev/sda1
   ```
   The example assumes that the following conditions are already in place:
   - ISO image filename is `IDA-v5.2-Build-19.iso`.
   - USB device is at `/dev/sda1`.

   The script takes several minutes to complete the operation. Upon completion, the USB key will be ready.

Appendix E: iso_creator.sh

```
#!/bin/bash
#
# Script to re-create Intel(R) Deployment Assistant CD ISO image
after
# re-branding.
#
# Copyright (c) 2001-2005  Intel Corporation.
# All Rights Reserved.
#
# Author: jjjohn, 31/Mar/06
#

#set -x
if [ $# -lt 2 ];then
      echo "Usage: $0 <output ISO file name> <CD contents
folder>"
      exit 1
fi

ISO_NAME=$1
CD_LOC=$2
SPLASH_IMG=$CD_LOC/ui/images/juntura_splash.jpg

INITRD_LOC=$CD_LOC/boot/isolinux
MKISOFS=/usr/bin/mkisofs
CFG_LOC=$INITRD_LOC/initrd_extract

echo "ISO_NAME=$ISO_NAME, CD_LOC=$CD_LOC"
if [ ! -x $SPLASH_UTIL ]; then
      echo "Boot splash utility is not installed! Please install
and continue.."
      exit 1
fi

if [ ! -x $MKISOFS ];then
      echo "'mkisofs' command not found. Please install and
continue.."
      exit 1
fi

# Append splash image to initrd
if [ -f $SPLASH_IMG ];then
      gzip -d $INITRD_LOC/initrd.gz
```

```
      echo "decompressing done.."
      mkdir $INITRD_LOC/initrd_extract
      mount -o loop $INITRD_LOC/initrd
$INITRD_LOC/initrd_extract/
      echo "Mounting done..."
      # geting the label
      label=`grep "LABEL"
$INITRD_LOC/initrd_extract/etc/platform`
      length=${#label}
      LABEL=${label:6:$length-6}
      echo "$LABEL"
      cp $SPLASH_IMG
$INITRD_LOC/initrd_extract/etc/bootsplash/themes/jtheme/images/
      cp
$INITRD_LOC/initrd_extract/etc/bootsplash/themes/jtheme/config/bo
otsplash.cfg
$INITRD_LOC/initrd_extract/etc/bootsplash/themes/jtheme/config/re
brand.cfg

      echo "Copying done ........."

      sed -i "s,jpeg=,jpeg=$CFG_LOC,g"
$INITRD_LOC/initrd_extract/etc/bootsplash/themes/jtheme/config/re
brand.cfg

      echo "Updated the cfg file.."
      gzip $INITRD_LOC/initrd
      echo "gzip done..."
      $INITRD_LOC/initrd_extract/sbin/splash -s -f
$INITRD_LOC/initrd_extract/etc/bootsplash/themes/jtheme/config/re
brand.cfg >> $INITRD_LOC/initrd.gz

      umount $INITRD_LOC/initrd_extract/
      echo "Umounted the initrd.."
      rm -rf $INITRD_LOC/initrd_extract/
else
      echo "New Splash image not found. Skipping.."
fi

# Create ISO image
echo "Creating ISO Image.."
#LABEL="DA 1.3 (0117)"
chmod +w $CD_LOC/boot/isolinux/{boot.cat,isolinux.bin}
$MKISOFS -o $ISO_NAME -b boot/isolinux/isolinux.bin \
      -c boot/isolinux/boot.cat -no-emul-boot -boot-load-size 4 \
      -boot-info-table -allow-lowercase -allow-leading-dots \
      -ldots -allow-multidot -d -relaxed-filenames -joliet-long \
```

```
      -l -R -r -hide-rr-moved -V "$LABEL" $CD_LOC

if [ $? -ne 0 ];then
      echo "ISO creation failed !"
else
      echo -e "\n\nRe-branded ISO image ($ISO_NAME) is created
successfully!"
fi

### end ###
```