



# **Intel® Local Control Panel for EPSD Platforms Based on Intel® Xeon® Processor E5 4600/2600/2400/1600/1400 Product Families**

## ***Technical Product Specification***

*Intel order number G83726-001*



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**Enterprise Platforms and Services Division - Marketing**

## **Revision History**

Date	Revision Number	Modifications
November 2012	0.9	Preliminary release.
December 2012	1.0	Updated Firmware Functional Specification.

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# 1. Introduction

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The Intel® Local Control Panel (Intel® LCP) is an optional accessory that enhances the manageability of the EPSD Platforms Based on Intel® Xeon® Processor E5 4600/2600/2400/1600/1400 Product Families. The Intel® Local Control Panel provides a way to locally manage one of these Intel® servers. Combined with the Intel® Baseboard Management Controller (BMC), the Intel® Local Control Panel allows a user to monitor the health of an Intel® server platform or configure an Intel® server for remote IPMI management. This allows for monitoring, configuration, and control of the server, independently from the operating system.

This document describes the architecture, firmware features, and hardware parameters of the Intel® Local Control Panel.

## 1.1 Section Outline

This document is divided into the following chapters:

- Chapter 1 – Introduction
- Chapter 2 – Physical and Electrical Description
- Chapter 3 – Firmware Functional Specification
- Chapter 4 – Installing and Removing the Intel® Local Control Panel
- Appendix A – Installation/Assembly Safety Instructions

## 2. Physical and Electrical Description

### 2.1 Views and Usage Model

There are two versions of the Intel® Local Control Panel available:

- Product Order Code A1U2ULCP is for all Intel® Rack Server Systems R1000BB, R2000BB, R1000EP, R2000IP, R2000LH2/R2000LT2, R2000SC, R1000GZ/GL, and R2000GZ/GL Families.
- Product Order Code A4ULCP is for all Intel® Pedestal Server Systems P4000CR, P4000CP, P4000GP, P4000IP, P4000SC, S2400GP/P4000M, S2400SC/P4000M, S2600CO/P4000M, and S2600CP/P4000M Families.

The LCP is mounted to the front of the chassis using an existing front panel/IO tray for rack and pedestal. The rack version of the LCP is secured using one screw and supports the two USB ports. The pedestal version of the LCP snaps into place and has one USB port.

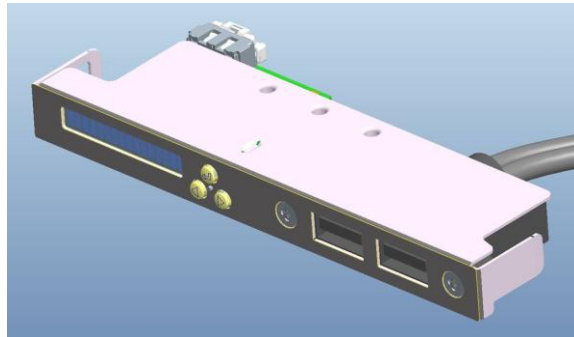


Figure 1: A1U2ULCP for Intel® Rack Server Systems

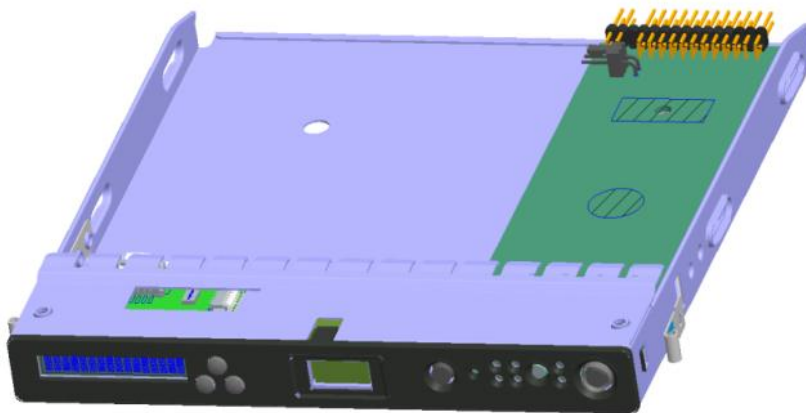
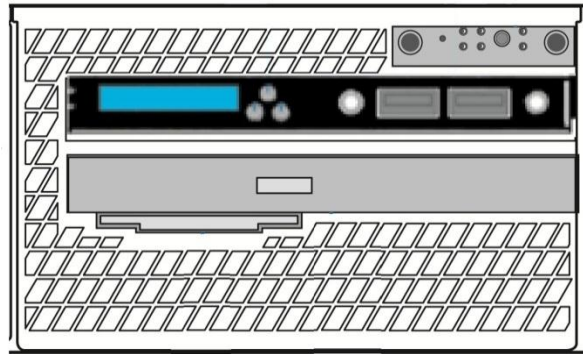


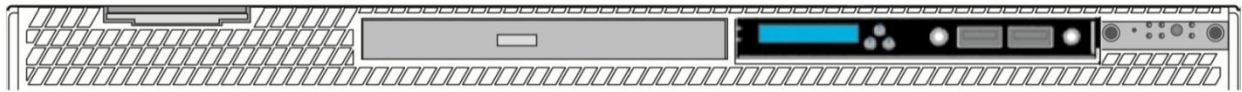
Figure 2: A4ULCP for Intel® Pedestal Server Systems



The following figure shows where the LCP should be mounted in an Intel® Rack Server System:

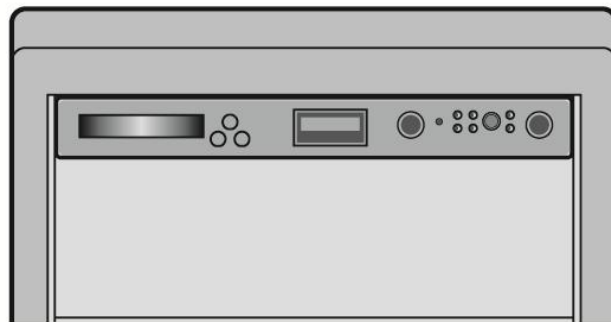


**Figure 3: Mounting the A1U2ULCP in an Intel® 2U Server Chassis**



**Figure 4: Mounting the A1U2ULCP in an Intel® 1U Server Chassis**

The following figure shows where the LCP should be mounted in an Intel® Pedestal Server System:



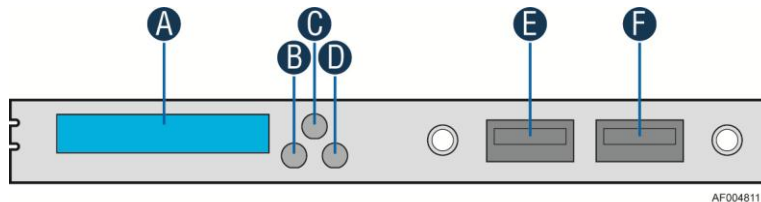
AF006039

**Figure 5: Mounting the A4ULCP in an Intel® Pedestal Server Chassis**

## 2.2 System Components and Functions

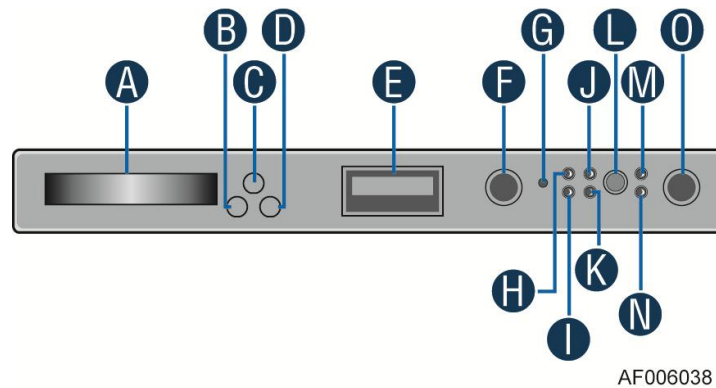
The LCD (Local Control Display) is a one line character display that resides on the LCP. It can display a maximum of 16 characters at a time. This device also contains three buttons (Left, Right, and Enter). The user can select the content that needs to be displayed on the LCD screen by operating these buttons.

The figures below show the Intel® Local Control Panel buttons and configuration:



Label	Description	Functionality
A	LCD Display	one line 16 character display
B	<b>Left</b> Control Button	moves the cursor backward one step or one character
C	<b>Enter</b> Button	selects the menu item highlighted by the cursor
D	<b>Right</b> Control Button	moves the cursor forward one step or one character
E	USB 2.0 Port	connect external USB device
F	USB 2.0 Port	connect external USB device

**Figure 6: Intel® A1U2ULCP Local Control Panel**



Label	Description	Functionality
A	LCD Display	one line 16 character display
B	<b>Left</b> Control Button	moves the cursor backward one step or one character
C	<b>Enter</b> Button	selects the menu item highlighted by the cursor
D	<b>Right</b> Control Button	moves the cursor forward one step or one character
E	USB 2.0 Port	connect external USB device
F	ID button	with ID LED integrated
G	NMI Button	issue a Non-Maskable Interrupt
H	NIC 2 LED	NIC 2 Activity LED indicator
I	NIC 1 LED	NIC 1 Activity LED indicator
J	NIC 4 LED	NIC 4 Activity LED indicator
K	NIC 3 LED	NIC 3 Activity LED indicator
L	System Reset Button	reset and re-initialize the system
M	HDD Activity LED	hard drive activity LED indicator
N	System Status LED	show the current health of the system
O	Power Button	system Power Button with Power LED

**Figure 7: Intel® A4ULCP Local Control Panel**

## 2.3 Electrical Description

The Intel® Local Control Panel is intended to control the display directly from the Baseboard Management Controller (BMC) with no firmware internal to the LCD module.

### 2.3.1 LCD Controller

The Intel® Local Control Panel includes a NXP PCF2116CU LCD driver. The PCF2116 supports 24 wide characters; LCD display is only 16 characters.

### 2.3.2 LCD Display

- Number of character: 16 Character x 1 Line
- Effective area: 34.8 mm (W) x 5 mm (H)
- Character pattern: 5 x 7 dots + cursor
- Character size: 1.7 mm (W) x 4.35 mm (H)
- Character pitch: 2.1 mm

### 2.3.3 LCD Backlight LEDs

The LCD has two backlight colors (green and amber).

Under normal conditions the backlight is to be driven green by the BMC. When a problem is detected with the server, the BMC will deactivate the green backlight and turns-on the amber backlight. When the baseboard BMC detects the problem has been cleared, the amber backlight is deactivated to turn-on the green backlight.

### 2.3.4 External Connectors

The Intel® Local Control Panel has either one or two USB connectors.

### 2.3.5 Internal Connectors

There is one internal connector for the Intel® A1U2ULCP and the A4ULCP Local Control Panels. It is a 7-pin header that provides power and control information to and from the server baseboard. A 7-pin cable connects the LCP to the server baseboard.

For the A4ULCP Local Control Panel, there is a second cable for the USB connector that will connect to the server baseboard

## 3. Firmware Functional Specification

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### 3.1 Overview

LCD (Local Control Display) is a one line character display that resides on the front panel of a chassis. It can display maximum of 16 characters at a time. However, a few special characters such as {, }, ` , ~, and ^ are not available in the current LCD controller supported set of characters. So these characters are mapped to their nearest lookalike characters of LCD. This device also contains three buttons (Left, Right, and Enter). The user can select the contents that need to be displayed on the LCD screen by operating these buttons. The BMC firmware drives the display of this LCD panel based on the user's selection. These three buttons are connected to the GPIO pins of the BMC and the LCD controller is connected to the BMC using I<sup>2</sup>C bus.

### 3.2 LCD Functionality

The LCD device provides the following features:

- Displays a banner when the system is healthy. The default banner is the **Server Name**. One exception is when a user sets a custom string using the command, "*Write LCD Custom String (0xB3)*", the set custom string will become the banner automatically, until the user changes the banner option in the banner configuration menu.
- Displays active error messages when the system is not healthy.
- Provides the ability to quickly see asset information on system without having to open the chassis.
- Provides basic server management configuration.

The LCD display is menu driven. Based on the user's selection, respective menu items are displayed. As soon as the system gets power, the LCD panel shall try to display the fault detected in the system. If more than one fault exists, it displays the latest high severity fault (event). If there are no faults, a banner is displayed. Default banner is **Server Name**. **Server Name** is the value specified as the product name in the product FRU information in the main board BMC FRU. User can set any of the parameters given under the banner configuration menu as a banner string, which will be discussed later in this section. When the system's status is degraded, the corresponding active event will be displayed in place of the banner. During an error, background color will be light amber in color. The LCD panel returns to a light green or blue background when there are no longer any degraded, non-fatal, or fatal events active. The LCD panel shall operate in lock-step with the system status LED. For example, if the system is operating normally and an event occurs that results in the system status LED to blink green, then the LCD shall display the degraded event that triggered the systems status LED to blink.



**Figure 8: Background color during normal scenario**



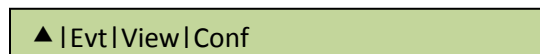
**Figure 9: Background color during error**

On pressing **Enter** button when the screen shows banner or error message, the **Main Menu** is displayed. The **Main Menu** contains **Evt**, **View**, and **Conf** items. Based on the user's selection in the **Main Menu**, respective sub-menu items will be displayed. At any point of time, if there is no user intervention for more than 10 minutes, latest high severity event in the system is displayed (if one exists or a banner is displayed if the system is healthy).

The following sections discuss about the individual menu items. It is assumed that no active event exists in the system during the LCD display in the following figures. That is the reason why the background color of LCD in the following examples is light green. If any event (fatal or non-fatal) occurs that degrades the system's health, the color of the LCD background turns into light amber. Even though all the contents (full text) are shown in the example screen shots in the following sections, by default, only the first 16 characters are displayed when a particular menu item is selected. The remaining text can be viewed by using **Right** or **Left** buttons.

### 3.3 Main Menu

On pressing **Enter** button, when **Banner/Error** screen is displayed, the following main menu is displayed. Using **Left** and **Right** buttons, the cursor can be moved under any one of the following four menu items.

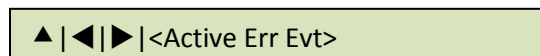


**Figure 10: Main Menu**

If the user selects menu item **▲**, then the LCD displays the previous screen, that is, **Banner/Error** string. Selecting the menu item means, moving the cursor under that item using **Left** or **Right** buttons and pressing the **Enter** button subsequently. In all the following sections (or for any screen shot), if the user presses **Enter** button, when the cursor is under the symbol **▲**, it displays the previous screen. Selecting any of the menu items; **Evt**, **View**, or **Conf**, leads the display to their corresponding screen shots and the details are given in the following sections.

### 3.4 Event Menu

If the **Evt** item is selected in the main menu, the LCD displays the following screen shown in the figure.



**Figure 11: Event Menu**

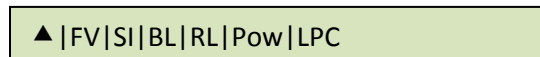
This screen is used to traverse the current active error event messages in the system. The latest high severity event is displayed in place of the banner if one exists. If more than one critical or degraded event exists in the system, this screen can be used to traverse all of them. However, at any given time, the LCD retains and displays a maximum of the 20 latest high severity events. When a higher or a same level of severity event happens as the 21<sup>st</sup> event, then the oldest low severity event will be discarded. It is assumed that a system will not have more than 20 active (asserted) critical events at any given time. The menu items, **◀** and **▶** are used to traverse among these event messages. Selection of the menu item **◀**, displays the previous event and the item **▶**, displays the next event in human readable format. By default, it

displays the latest high severity event if one exists or **System Health OK** message if there are no active (asserted) errors in the system currently. If there are more than two active events in the system, then they are displayed in the descending order of their severity when menu item, ► is selected. If two events have the same severity, then the latest one will be displayed first.

Each error event scrolls once automatically so that the entire message can be read without pressing either the **Left** or **Right** buttons. To make the event message scroll again from the start, **Right** button has to be pressed when the cursor is under the event message. Pressing any other button will stop scrolling and the corresponding action for that button press will be taken. Switching between scrolling and freezing the screen and vice-versa is not supported due to the limitation of LCD controller.

## 3.5 View Menu

The following screen is displayed when **View** item is selected in the main menu.



**Figure 12: View Menu**

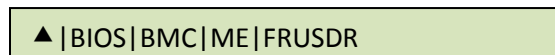
The meaning of the menu items of the above screen are as follows:

- **FV** - Firmware Versions
- **SI** - System Information
- **BL** - BMC LAN Information
- **RL** - RMM LAN Information
- **Pow** - Current Power usage
- **LPC** - Last POST Code

Based on the user's selection, details of the specific item will be displayed. The following sub sections explain the above menu items in detail.

### 3.5.1 Firmware Version (FV)

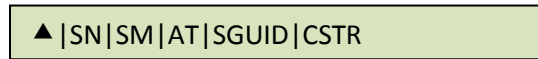
Selecting **FV** item in the **View** menu displays the list of firmware items available in the system as shown in the following figure. Selecting any item in the following screen displays its version string or version number:



**Figure 13: System Firmware Versions Menu**

### 3.5.2 System Information (SI)

Selecting **SI** item in the **View** menu displays the following screen.



**Figure 14: System Information menu**

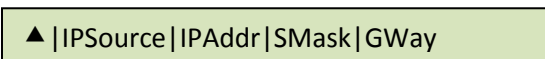
The menu items for the above screen are described below:

- **SN** (System Name): Value specified in the product name in the product FRU information in the main board BMC FRU.
- **SM** (Server Model): Value specified in the product part number in the product FRU information in the main board BMC FRU.
- **AT** (Asset Tag): Value specified in the product asset tag in the product FRU information in the main board BMC FRU.
- **SGUID** (System GUID): System UUID stored by BIOS.
- **CSTR** (Customizable String): Custom string placed by the OEM/end user.

Selecting any item in the above screen displays its value.

### 3.5.3 BMC LAN (BL) Configuration

Selecting **BL** item in the **View** menu displays the following screen.



**Figure 15: BMC LAN Configuration**

The items displayed on selection of the above menu options are as follows:

- **IPSource**: Source of the BMC IP address will be displayed. Either **Static** or **DHCP** will be displayed on selecting this item.
- **IPAddr**: Displays the BMC IP address.
- **SMask**: Displays the subnet mask of the BMC.
- **GWay**: Displays default Gateway of the BMC.

### 3.5.4 RMM LAN (RL) Configuration

Selecting **RL** item in the **View** menu displays the same screen as above, but selection of individual items displays the values of RMM (Remote Management Module) rather than that of BMC.



### 3.5.5 Power (Pow)

Selecting **Pow** item in the **View** menu displays the amount of AC power drawn by the system in Watts.



Figure 16: Power Consumed by the System Currently

### 3.5.6 Last POST Code (Last PC)

Selecting **LPC** item in the **View** menu displays the last BIOS POST (Power On Self Test) code in hexadecimal. If the Last POST Code details are not available with the BMC, then **No BIOS POST CODE** message is displayed. The last POST code is displayed only when the POST is in progress. Once the POST is complete, then it displays **POST Complete** message.

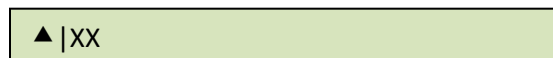


Figure 17: Last BIOS POST Code

## 3.6 Configuration (Conf) Menu

If the user selects **Conf** item in the main menu, then the following options will be displayed to configure:

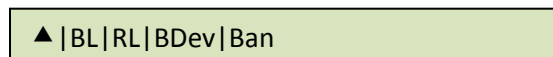


Figure 18: Configure Menu Items

The following sub-sections will explain individual items of the configuration menu.

### 3.6.1 BMC LAN (BL) Configuration

If the user selects **BL** item in the **Conf** menu, then the following options will be displayed:

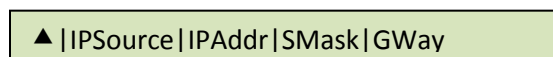


Figure 19: BMC IP Configuration Menu

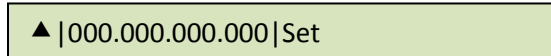
Selecting **IPSource** in the above menu leads to the following screen. Based on the user's selection in the following menu, BMC IP source will be set either as **Static** or **DHCP**.



Figure 20: BMC IP Source Configuration Menu

If the user selects **DHCP** or the existing IP source is **DHCP**, then the other menu items, that is, IP Address, Subnetmask, and Gateway are not configurable. If the user selects **Static** or the existing setting is static for IP source, then the user is allowed to change the other menu items

and the following screen is displayed on selecting any of **IPAddr**, **SMask**, and **GWay** items. The selected item will be set with the configured value once **Set** is selected in the following figure.

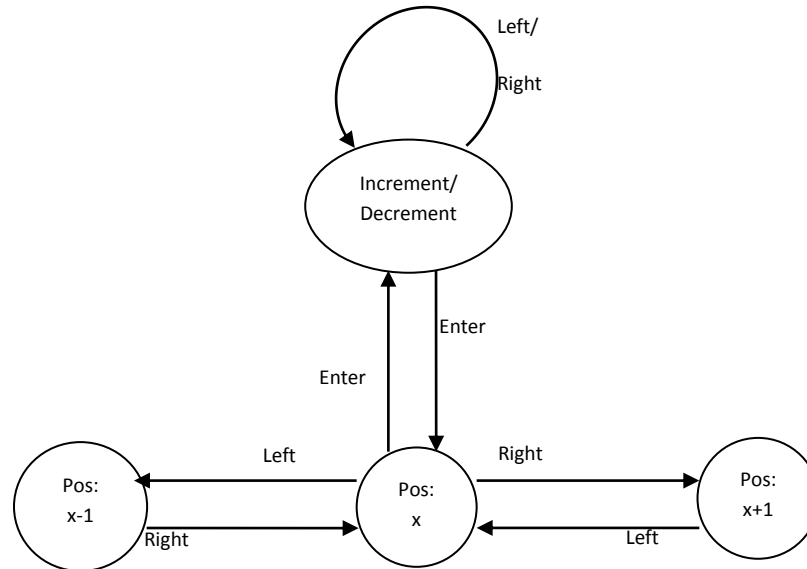


**Figure 21: Screen shot for Configuring IP Address, Subnet Mask, and Gateway**

By default, the cursor will be under the symbol, ▲ and the IP address is displayed as 000.000.000.000. A **Right** button will take the cursor to the first position (first 0) of the IP address. When the cursor is under the second menu item, the functionality of **Left**, **Right** and **Enter** buttons is different from the previous screens. The second token consists of twelve 0's separated by '.' character in IP address format. The behaviors of these buttons are as follows when the cursor is under this item.

1. **Left** and **Right** buttons inside the second menu item traverses among the 0 positions within the same item.
2. If the cursor is under last position inside the second menu item, then a **Right** button will move the cursor to next item, that is, **Set**.
3. If the cursor is under first position inside the second menu item, then a **Left** button moves the cursor to the previous item, that is ▲.
4. First **Enter** button at any "0" position makes that position to be selected to increment or decrement the value at that position. The values allowed are between and including 0 and 9.
5. Any further **Left** or **Right** buttons will decrement or increment the value at that position.
6. Second **Enter** button at that position makes the cursor to be ready for moving left or right. Any further left or right movement shifts the cursor to the previous or next position respectively.
7. So, the **Enter** button is used to select a position at the first time and to leave the position at the second time.

The following state transition diagram explains the above steps pictorially, while setting an IP address using the LCD device. After entering an IP address, the user has to select **Set** item to set the entered IP address to the corresponding parameter (IP Address, Subnet Mask, or Gateway).



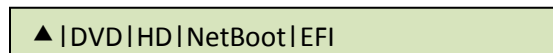
**Figure 22: State transition diagram for setting IP Address**

### 3.6.2 RMM LAN (RL) Configuration

Same screen shots and the same description as mentioned in BMC LAN (BL) Configuration are applicable for RMM LAN configuration menu also. However, the values configured will be assigned to LAN parameters of RMM module rather than that of BMC.

### 3.6.3 Boot Device (BDev)

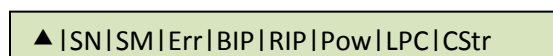
If the user selects **BDev** in the **Conf** menu, then the following options will be displayed. The selected item will be set as the next boot option.



**Figure 23: Boot options configuration menu**

### 3.6.4 Banner (Ban)

When the user selects **Ban** in the **Conf** menu, the following options will be displayed. The selected item will be set as the banner and the same will be displayed from the next banner screen onwards.



**Figure 24: Banner configuration menu**

Each of the menu items are explained below:

- **SN** (System Name): Displays the value specified in the product name in the product FRU information in the main board BMC FRU. System Name is the default banner.

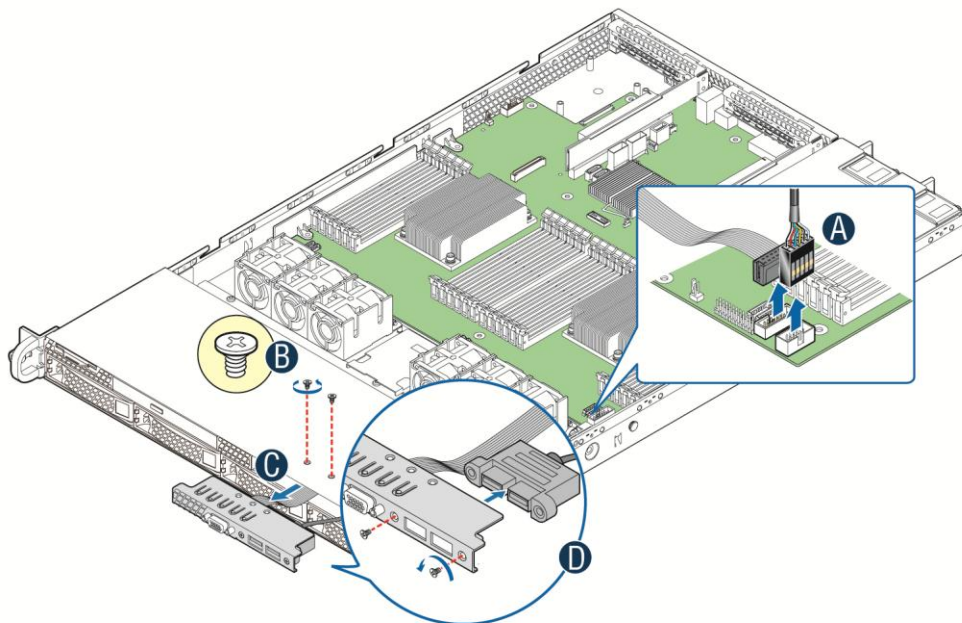
- **SM** (System Model): Displays the value specified in the product part number in the product FRU information in the main board BMC FRU.
- **Err** (Error): Displays the last active system event. The last active event may be degraded, non-critical or critical only. It shall not display an informational message. If the system is healthy then it displays **System Health Ok**.
- **BIP** (BMC IP): Displays BMC's IP address as banner.
- **RIP** (RMM IP): Displays RMM's IP address as banner.
- **Pow** (Power): Displays the current system power consumption in Watts as a banner.
- **LPC** (Last POST Code): Displays last BIOS POST code as the banner.
- **CStr** (Customizable String): Displays a customizable text string. The custom text string is modifiable through BIOS setup or a utility by using the Intel® General Application (Net Function: 0x30) command 0xB3 (Write LCD Custom String).

## 4. Installing and Removing the Intel® Local Control Panel

This section will describe how to install and remove the Intel® Local Control Panel in your server system

### 4.1 Installing the Intel® A1U2ULCP Local Control Panel in a 1U server system

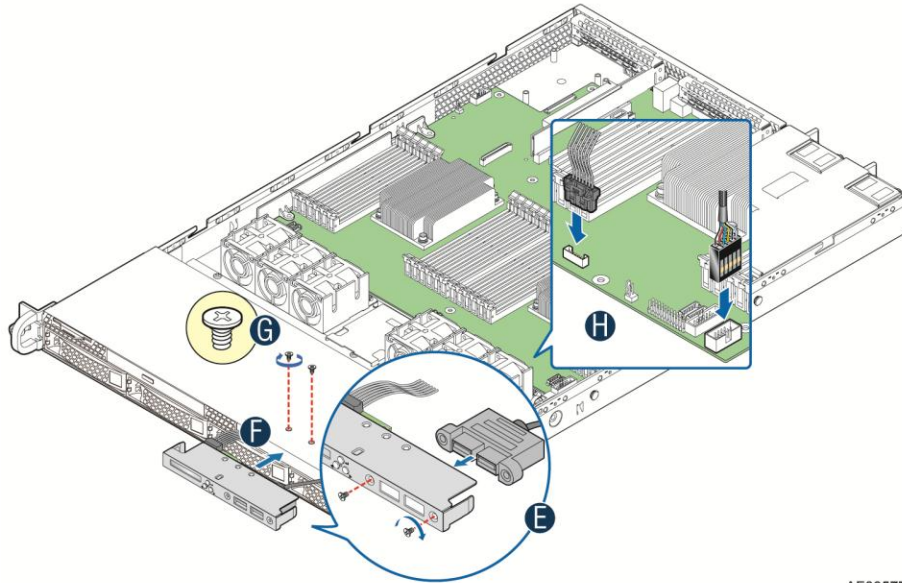
1. Disconnect the front video cable and the front USB cable from the server board (see letter **A**)
2. Remove the two screws (see letter **B**).
3. Slide out the bracket from server chassis together with cables (see letter **C**).
4. Remove the two screws and slide out the front USB connector from the bracket (see letter **D**).



AF005767

**Figure 25: Removing the bracket in a 1U server system**

5. Install the front USB connector to the Intel® Local Control Panel bracket and secure the two screws (see letter **E**).
6. Connect the LCP cable to the LCP board and install the Intel® Local Control Panel bracket into server chassis together with cables (see letter **F**).
7. Secure the two screws (see letter **G**).
8. Connect the Intel® Local Control Panel cable and the front USB cable to the server board (see letter **H**).

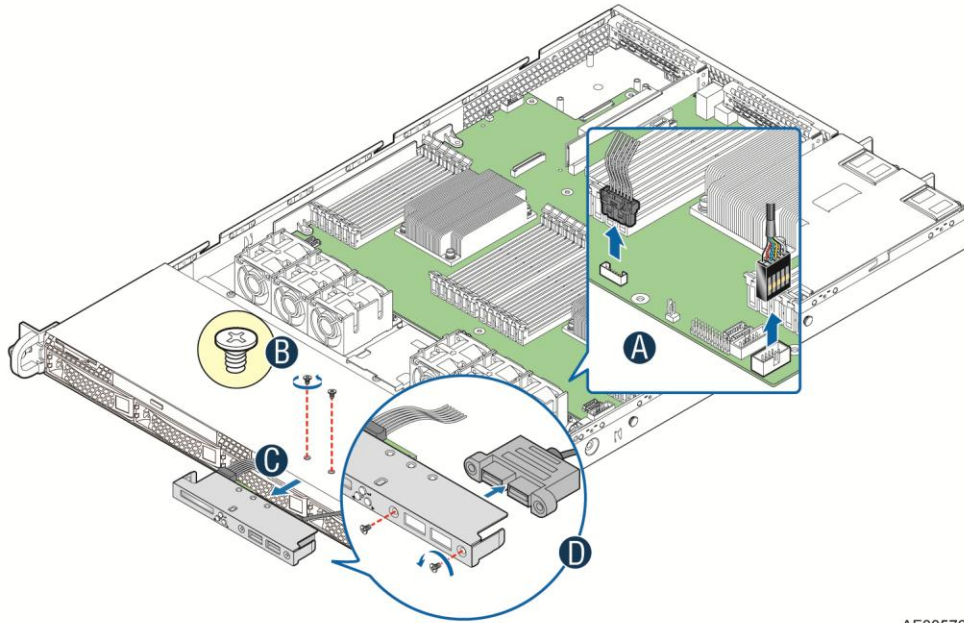


AF005770

**Figure 26: Installing the Intel® A1U2ULCP Local Control Panel in a 1U server system**

## 4.2 Removing the Intel® A1U2ULCP Local Control Panel in a 1U server system

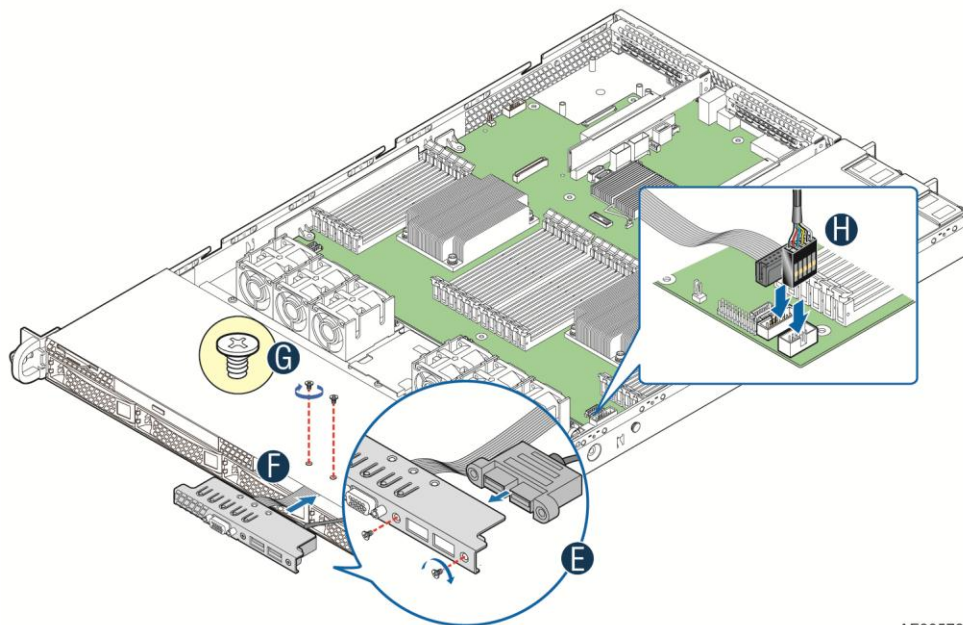
1. Disconnect the Intel® Local Control Panel cable and the front USB cable from the server board (see letter **A**).
2. Remove the two screws (see letter **B**).
3. Slide out the Intel® Local Control Panel from server chassis together with cables (see letter **C**).
4. Remove the two screws and slide out the front USB connector from the bracket (see letter **D**).



AF005769

**Figure 27: Removing the Intel® A1U2ULCP Local Control Panel in a 1U server system**

5. Install the front USB connector to the bracket and secure the two screws (see letter **E**).
6. Install the bracket together with cables (see letter **F**).
7. Secure the two screws (see letter **G**).
8. Connect the front video cable and the front USB cable to the server board (see letter **H**).



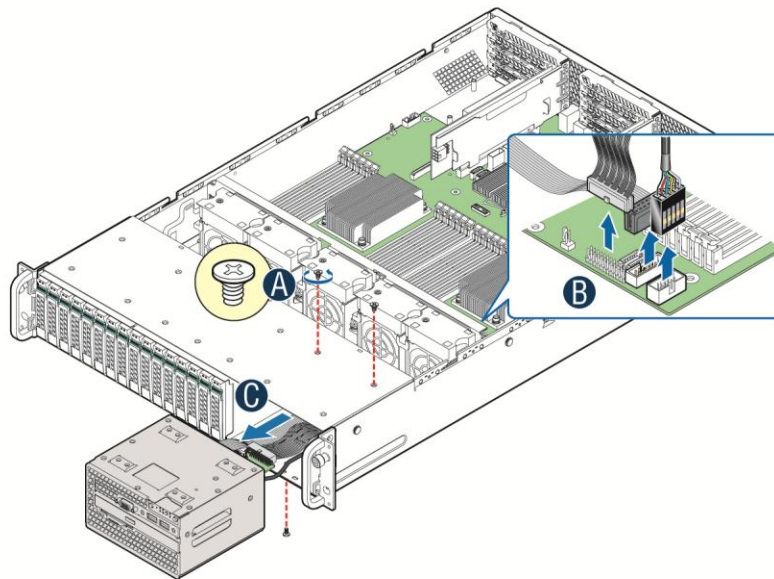
AF005768

**Figure 28: Installing the bracket in a 1U server system**



### 4.3 Installing the Intel® A1U2ULCP Local Control Panel in a 2U server system

1. Remove the system top cover.
2. For 2U system with 2.5" hard drive configuration, remove the stiffener first. Please refer to the *Intel® Server System Service Guide* for detailed instructions.
3. For 2U system with 2.5" hard drive configuration, remove the three screws to release the hard drive cage (see letter **A**). For 2U system with 3.5" hard drive configuration, remove the six screws to release the hard drive cage. Please refer to the *Intel® Server System Service Guide* for detailed instructions.
4. Disconnect the front video cable and the front USB cable from the server board (see letter **B**).
5. Slide out the cage from server chassis together with cables (see letter **C**).

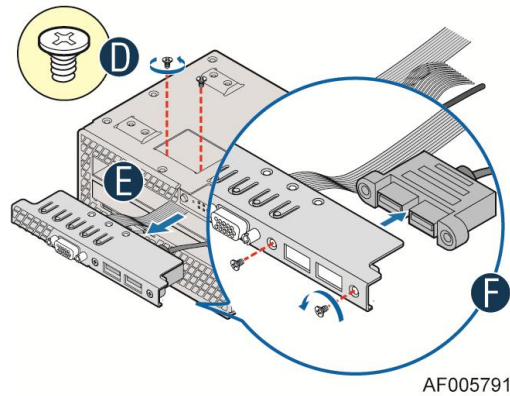


AF005790

**Figure 29: Removing the cage in a 2U server system**

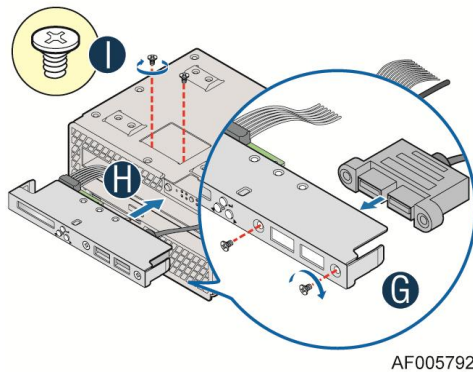
6. Remove the two screws to release the bracket (see letter **D**).
7. Slide out the bracket from cage together with cables (see letter **E**).
8. Remove the two screws and slide out the front USB connector from the bracket (see letter **F**).





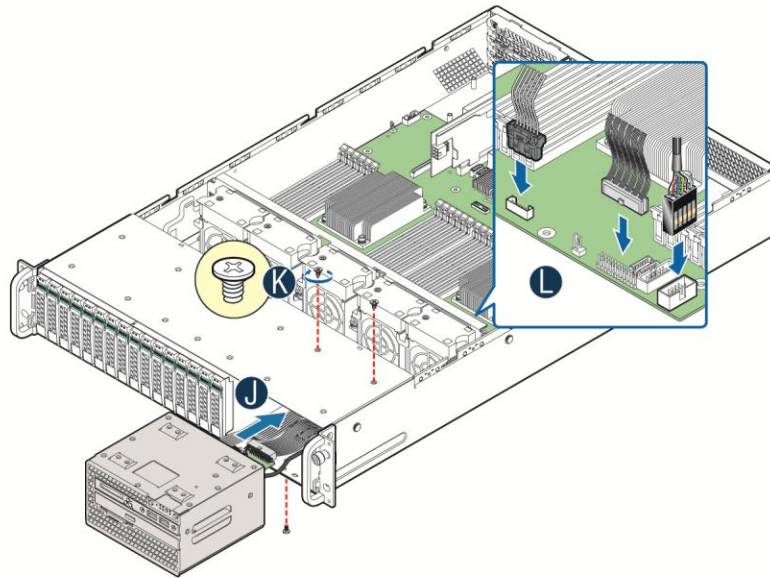
**Figure 30: Removing the bracket in a 2U server system**

9. Install the front USB connector to the Intel® Local Control Panel bracket and secure the two screws (see letter **G**).
10. Connect the LCP cable to the LCP board and install the Intel® Local Control Panel bracket into server chassis together with cables (see letter **H**).
11. Secure the two screws (see letter **I**).



**Figure 31: Installing the Intel® A1U2ULCP Local Control Panel in a 2U server system**

12. Install the cage into server chassis (see letter **J**). For 2U system with 3.5" hard drive configuration, install the clip to server chassis.
13. For 2U system with 2.5" hard drive configuration, secure the three screws (see letter **K**). For 2U system with 3.5" hard drive configuration, secure the six screws. Please refer to the *Intel® Server System Service Guide* for detailed instructions.
14. Connect the Intel® Local Control Panel cable, the front USB cable and the front panel cable to the server board (see letter **L**).



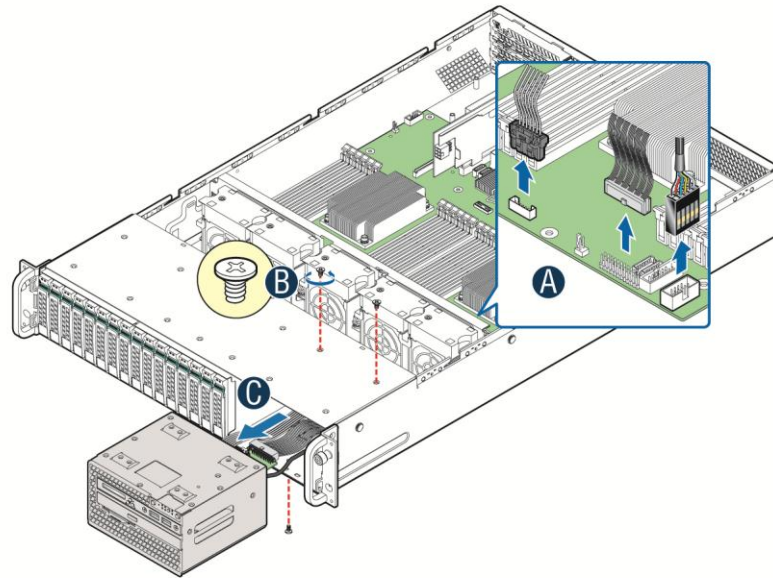
AF005793

**Figure 32: Installing the cage in a 2U server system**

15. For 2U system with 2.5" hard drive configuration, install the stiffener. Please refer to the *Intel® Server System Service Guide* for detailed instructions.

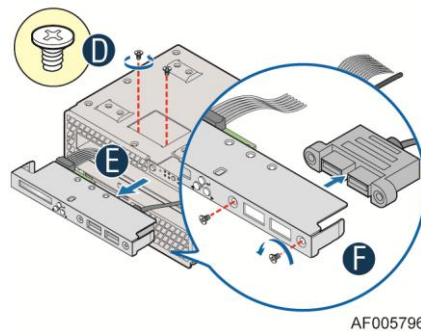
#### 4.4 Removing the Intel® A1U2ULCP Local Control Panel in a 2U server system

1. Remove the system top cover.
2. For 2U system with 2.5" hard drive configuration, remove the stiffener first. Please refer to the *Intel® Server System Service Guide* for detailed instructions.
3. Disconnect the Intel® Local Control Panel cable, the front USB cable and the front panel cable from the server board (see letter **A**).
4. For 2U system with 2.5" hard drive configuration, remove the three screws to release the hard drive cage (see letter **B**). For 2U system with 3.5" hard drive configuration, remove the six screws to release the hard drive cage. Please refer to the *Intel® Server System Service Guide* for detailed instructions.
5. Slide out the cage from server chassis together with cables (see letter **C**).



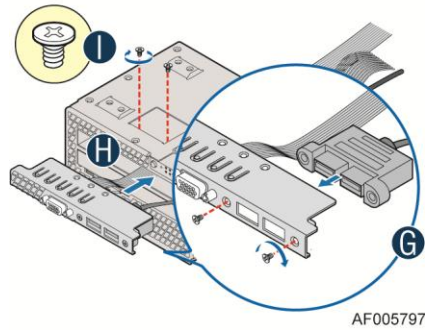
**Figure 33: Removing the cage in a 2U server system**

6. Remove the two screws (see letter **D**).
7. Slide out the Intel® Local Control Panel from server chassis together with cables (see letter **E**).
8. Remove the two screws and slide out the front USB connector from the bracket (see letter **F**).



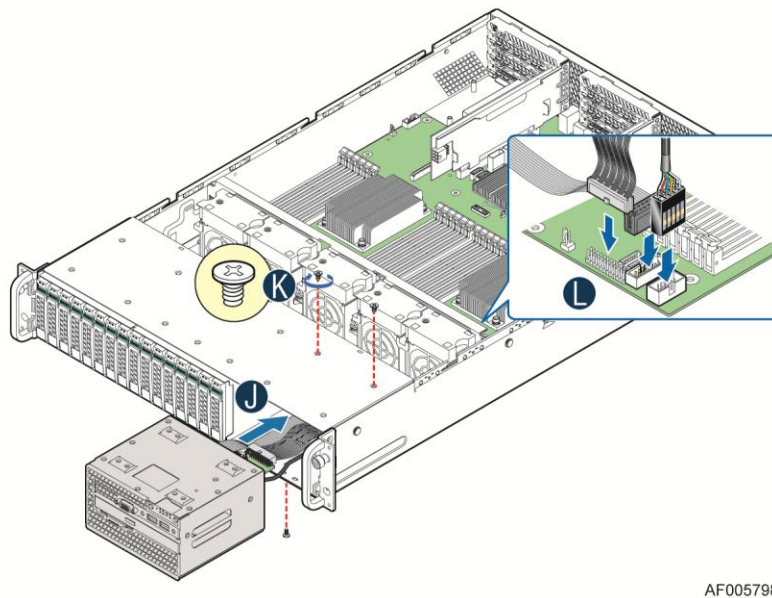
**Figure 34: Removing the Intel® A1U2ULCP Local Control Panel in a 2U server system**

9. Install the front USB connector to the bracket and secure the two screws (see letter **G**).
10. Install the bracket together with cables (see letter **H**).
11. Secure the two screws (see letter **I**).



**Figure 35: Installing the bracket in a 2U server system**

12. Install the cage into server chassis (see letter J).
13. For 2U system with 2.5" hard drive configuration, secure the three screws (see letter K). For 2U system with 3.5" hard drive configuration, secure the six screws. Please refer to the Service Guide of your Intel® Server System for detailed instructions.
14. Connect the front video cable, the front USB cable and the front panel cable to the server board (see letter L).

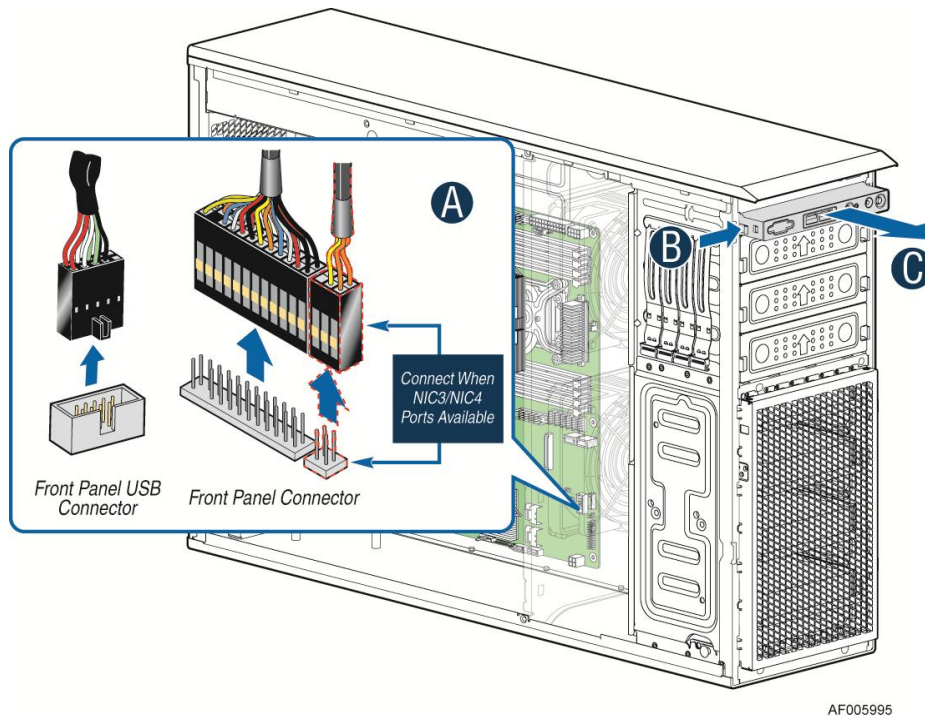


**Figure 36: Installing the cage in a 2U server system**

15. Install the stiffener. Please refer to the *Intel® Server System Service Guide* for detailed instructions.

## 4.5 Installing the Intel® A4ULCP Local Control Panel in a Pedestal server system

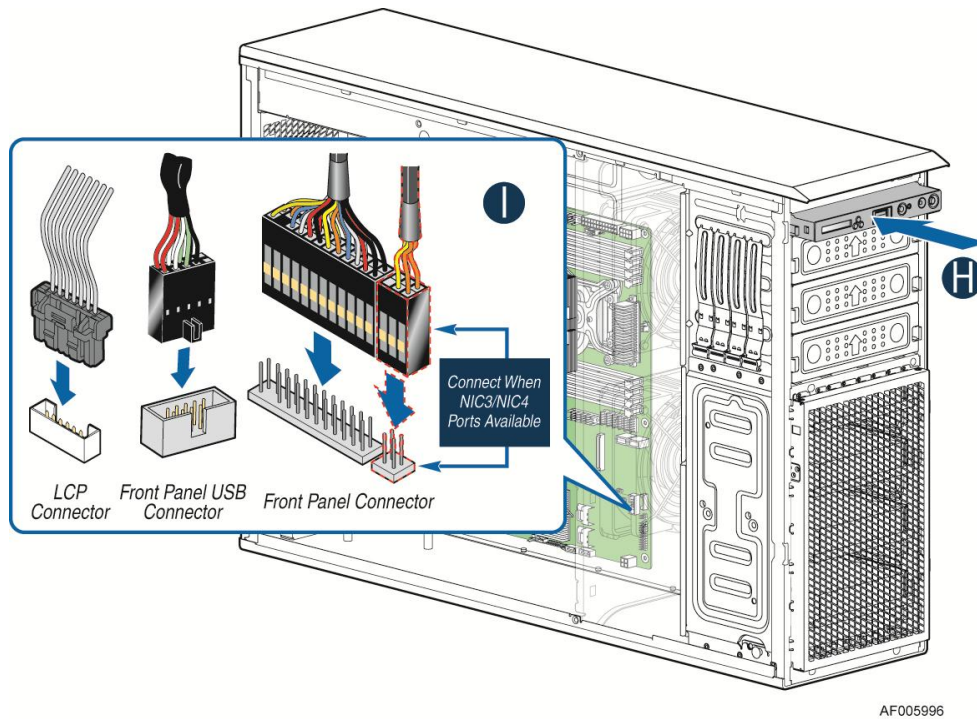
1. Remove the front panel cable and USB cable from motherboard (see letter **A**).
2. Slide the front panel tray out from the chassis (see letter **B** and **C**).
3. Refer to Replacing the Front Panel Board to remove front panel board from the front panel tray, and then install into the LCP.



**Figure 37: Removing the Front Panel Tray from the Pedestal server system**

4. Insert the LCP into the chassis (see letter **H**).
5. Connect all cables on related connectors on the motherboard (see letter **I**).



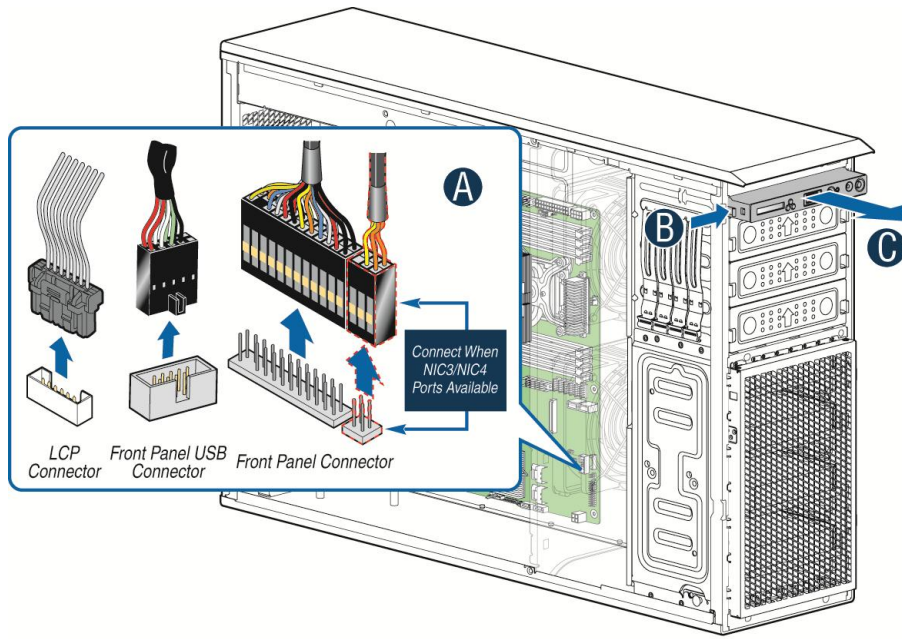


AF005996

**Figure 38: Installing the Intel® A4ULCP Local Control Panel in a Pedestal server system**

## 4.6 Removing the Intel® A4ULCP Local Control Panel in a Pedestal server system

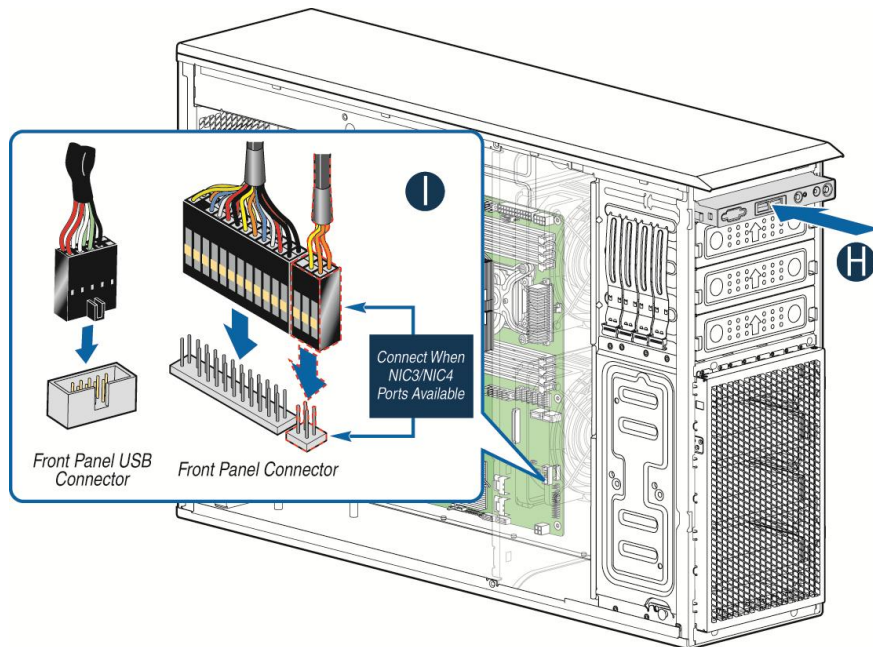
1. Disconnect all cables from the motherboard (see letter **A**).
2. Slide the LCP out from the chassis (see letter **B** and **C**).
3. Refer to Replacing the Front Panel Board to remove the front panel board from the LCD module, and then install into the front panel tray.



AF005997

**Figure 39: Removing the Intel® A4ULCP Local Control Panel from a Pedestal server system**

4. Insert the front panel tray into the chassis (see letter **H**).
5. Connect all cables of the related connectors on the motherboard (see letter **I**).

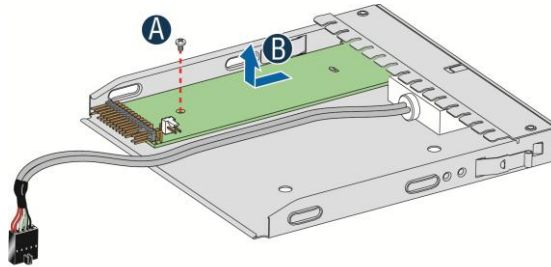


AF005998

**Figure 40: Installing the Front Panel Tray in the Pedestal server system**

## 4.7 Replacing the Front Panel Board

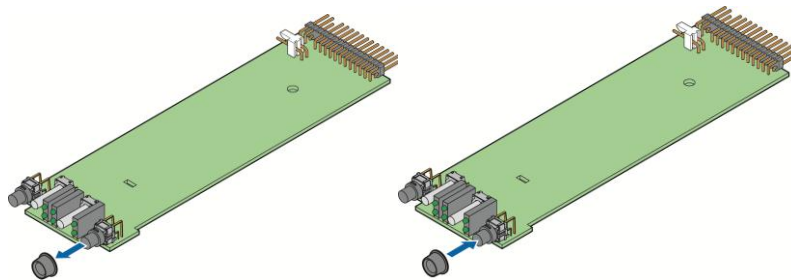
1. Observe the safety and Electro Static Discharge (ESD) precautions at the beginning of this document.
2. Remove the screw (see Letter **A**) securing the front panel board and remove the front panel board (see Letter **B**).



AF003978

**Figure 41: Removing the Front Panel Board**

3. Remove the cap on the front panel board power button and install the new cap on the new front panel board power button.

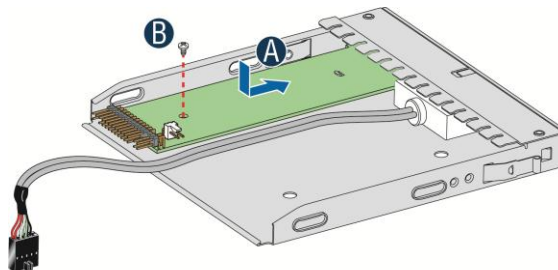


AF003979

AF003980

**Figure 42: Removing and Installing the Cap on Front Panel Board**

4. Attach the new front panel board in the front panel tray or LCP (see letter **A**) and secure the new front panel board with the screw (see letter **B**).



AF003981

**Figure 43: Installing the New Front Panel Board**



## **Appendix A: Installation/Assembly Safety Instructions**

Observe the following safety guidelines:

- Do not operate your computer system with any cover(s) (such as computer covers, bezels, filler brackets, and front-panel inserts) removed.
- To help avoid damaging your computer, be sure the voltage selection switch on the power supply is set to match the alternating current (AC) power available at your location.
- To help avoid possible damage to the server board, wait five seconds after turning off the system before removing a component from the server board or disconnecting a peripheral device from the computer.
- To help prevent electric shock, plug the computer and peripheral power cables into properly grounded power sources. These cables are equipped with three-prong plugs to ensure proper grounding. Do not use adapter plugs or remove the grounding prong from a cable. If you must use an extension cable, use a three-wire cable with properly grounded plugs.
- To help protect your computer system from sudden, transient increases and decreases in electrical power, use a surge suppressor, line conditioner, or uninterruptible power supply.
- Be sure nothing rests on your computer system's cables and that the cables are not located where they can be stepped on or tripped over.
- Do not spill food or liquids on your computer. If the computer gets wet, refer the documentation that came with it.
- Do not push any objects into the openings of your computer. Doing so can cause fire or electric shock by shorting out interior components.
- Keep your computer away from radiators and heat sources. Also, do not block cooling vents. Avoid placing loose papers underneath your computer; do not place your computer in a closed-in wall unit or on a rug.

When working on the inside of your computer:

- Do not attempt to service the computer system yourself, except as explained in this guide and elsewhere in Intel® documentation. Always follow installation and service instructions closely.
- Turn off your computer and any peripherals.
- Disconnect your computer and peripherals from their power sources. Also disconnect any telephone or telecommunications lines from the computer.

Doing so reduces the potential for personal injury or shock.

**Additional safety guidelines:**

- When you disconnect a cable, pull the connector or the strain-relief loop, not the cable itself. Some cables have a connector with locking tabs; if you are disconnecting this type of cable, press in on the locking tabs before disconnecting the cable. As you pull connectors apart, keep them evenly aligned to avoid bending any connector pins. Also, before you connect a cable, make sure both connectors are correctly oriented and aligned.
- Handle components and cards with care. Do not touch the components or contacts on a card. Hold a card by its edges or by its metal mounting bracket. Hold a component such as a microprocessor chip by its edges, not by its pins.

**Protecting against Electro Static Discharge (ESD):**

- Static electricity can harm delicate components inside your computer. To prevent static damage, discharge static electricity from your body before you touch any of your computer's electronic components, such as the microprocessor. You can do so by touching an unpainted metal surface, such as the metal around the card-slot openings at the back of the computer.
- As you continue to work inside the computer, periodically touch an unpainted metal surface to remove any static charge your body may have accumulated. In addition to the preceding precautions, you can also take the following steps to prevent damage from Electro Static Discharge (ESD).
- When unpacking a static-sensitive component from its shipping carton, do not remove the component from the antistatic packing material until you are ready to install the component in your computer. Just before unwrapping the antistatic packaging, be sure to discharge static electricity from your body.
- When transporting a sensitive component, first place it in an antistatic container or packaging.
- Handle all sensitive components in a static-safe area. If possible, use antistatic floor pads and workbench pads.