PIKE II 3108 Series

PIKE II 3108-8i
PIKE II 3108-4i4e

E13674
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Contents

About this guide

This user guide contains the information you need when installing and configuring the server management board.

How this guide is organized

This guide contains the following parts:

- **Chapter 1: Product Introduction**

  This chapter offers the PIKE II 3108 SAS RAID card features and the new technologies it supports.

- **Chapter 2: RAID Configuration**

  This chapter provides instructions on setting up, creating, and configuring RAID sets using the available utilities.

- **Chapter 3: Driver Installation**

  This chapter provides instructions for installing the RAID drivers on different operating systems.

Where to find more information

Refer to the following sources for additional information and for product and software updates.

1. **ASUS websites**

   The ASUS website provides updated information on ASUS hardware and software products. Refer to the ASUS contact information.

2. **Optional documentation**

   Your product package may include optional documentation, such as warranty flyers, that may have been added by your dealer. These documents are not part of the standard package.

Conventions used in this guide

To make sure that you perform certain tasks properly, take note of the following symbols used throughout this manual.

DANGER/WARNING: Information to prevent injury to yourself when trying to complete a task.

CAUTION: Information to prevent damage to the components when trying to complete a task.

IMPORTANT: Instructions that you MUST follow to complete a task.

NOTE: Tips and additional information to help you complete a task.

Typography

Bold text	Indicates a menu or an item to select.
Italics	Used to emphasize a word or a phrase.
<Key>	Keys enclosed in the less-than and greater-than sign means that you must press the enclosed key.
	Example: <Enter> means that you must press the Enter or Return key.
<Key1+Key2+Key3>	If you must press two or more keys simultaneously, the key names are linked with a plus sign (+).
	Example: <Ctrl+Alt+Del>
Command	Means that you must type the command exactly as shown, then supply the required item or value enclosed in brackets.
	Example: At the DOS prompt, type the command line: `format a:`

PIKE II 3108 Series specifications summary

	PIKE II 3108-8i/16PD	PIKE II 3108-8i/240PD	PIKE II 3108-4i4e/240PD
Controller	LSI SAS 3108		
Interface	PCI-E Gen 3		
Ports	8 SAS 12Gb/s Ports (2 Mini-SAS HD SFF-8643)		8 SAS 12Gb/s Ports (1 Mini-SAS HD SFF-8643 + 1 Mini-SAS HD SFF-8644)
Support Device	SAS / SAS II /SAS 12Gb/s devices SATA II / SATA III devices		
Data transfer rate	SAS 12Gb/s		
RAID Support	RAID 0/1/10/5/50/6/60		
Max. PHD	Max. physical Disk qty for RAID: 16	Max. physical Disk qty for RAID: 240	
Cache	1GB on board SDRAM		
Battery Backup Support	Header reserved for LSI CacheVault (acquired from LSI existing distribution channel)		
Form factor	Standard low profile		

Only supports ASUS Z10,Z9,P9 motherboards/systems.

* The exact OS support would base on the OS support list of the motherboard.

** Specifications are subject to change without notice.

Product Introduction

1

This chapter offers the PIKE II 3108 SAS RAID
card features and the new technologies it supports.

1.1   Welcome!

Thank you for buying an ASUS® PIKE II 3108 Series SAS RAID card!

The ASUS PIKE II 3108 Series SAS RAID card supports 12 Gb/s SAS Technology and allows you to create RAID 0, RAID 1, RAID 10, RAID 5, RAID 50, RAID 6, and RAID 60 sets from SATA II/SATA III/SAS/SAS II/SAS III hard disk drives connected to the SAS connectors on the card.

Before you start installing the RAID card, check the items in your package with the list below.

1.2   Package contents

Check your package for the following items:

•   ASUS PIKE II 3108 Series SAS RAID card

•   Support DVD

If any of the above items is damaged or missing, contact your retailer.

1.3   Card layout

The illustration below shows the major components of the RAID card.

PIKE II 3108-8i
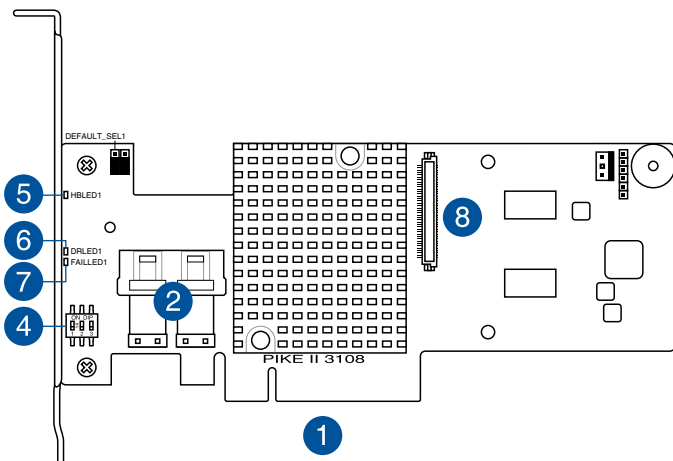
PIKE II 3108-4i4e

1.   PCI-E x8 interface

2.   Internal mini-SAS HD connectors

3.   External mini-SAS HD connector

4.   Switch* (for more than one card)

5.   HBLED1 (HEARTBEAT LED): The LED shows the firmware heartbeat information (blinking)
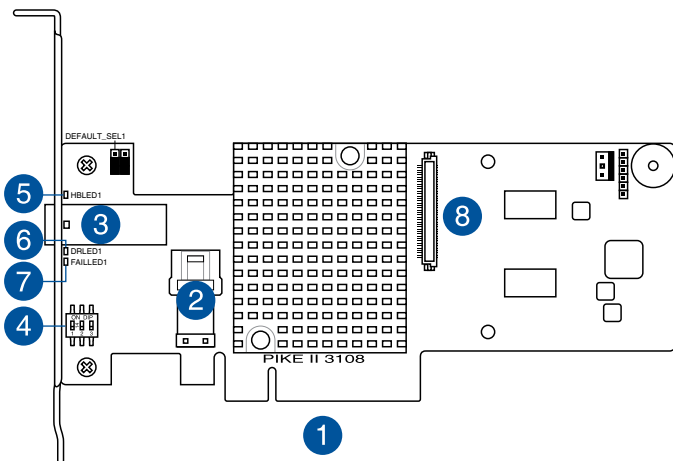
6.   DRLED1 (Dirty cache LED): Write Pending (light)

7.   FAILLED1 (Global Drive Fault LED): Drive fault detected (light)

8.   CacheVault connector

1.3.1 Switch settings

When using more than one PIKE II card on your system, ensure to manually set the pin settings on the Switch on each of the PIKE II cards to ensure that the system detects all the cards installed. You can refer to the following table for the pin settings.
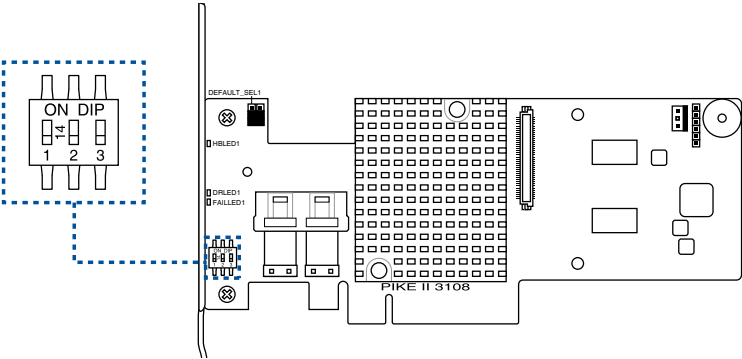
PIKE II card Switch pin settings and recommended configuration:

PIKE 3108	Switch	Pin name	Pin value
1	SW1	[1:2:3]	111
2	SW1	[1:2:3]	110
3	SW1	[1:2:3]	101
4	SW1	[1:2:3]	100
5	SW1	[1:2:3]	011
6	SW1	[1:2:3]	010
7	SW1	[1:2:3]	001
8	SW1	[1:2:3]	000

1.4   System requirements

Before you install the PIKE II 3108 Series RAID card, check if the system meets the following requirements:

- **ASUS Server motherboard**
- **PCI-E Gen3 slot**
- **SAS or SATA hard disk drives**
- **Mini-SAS HD cable**
- **Supported operating system:**

    - Windows® and Linux operating systems (refer to website for details)

- **Other requirements:**

    - Appropriate thermal solution

    - Certified power supply module

> Ensure to update your BIOS to the latest version before using PIKE II 3108 series on ASUS Z9 or P9 series platform.

1.5   Card installation

To install the RAID card on your motherboard:

1.   Locate the PCIE Gen3 slot on the
      motherboard.

2.   Align the golden fingers of the PIKE card
      with the PCIE Gen3 card slot.

3.   Insert the RAID card into the PCIE
      Gen3 card slot. Ensure the card is
      completely seated in place.

PIKE RAID card

PCI-E slot
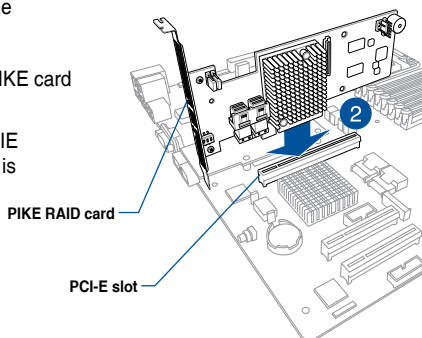
4.   For PIKE II 3108-8i, connect the hard
      disk drives to the internal Mini-SAS HD
      connectors.

      For PIKE II 3108-4i4e, connect the hard
      disk drives to the internal and external
      Mini-SAS HD connectors.
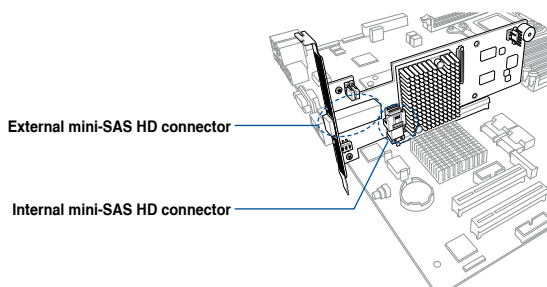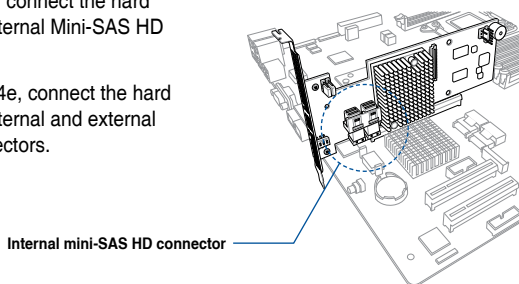
Internal mini-SAS HD connector

External mini-SAS HD connector

Internal mini-SAS HD connector

RAID Configuration

This chapter provides instructions on setting up, creating, and configuring RAID sets using the available utilities.

2

2.1 Setting up RAID

The RAID card supports RAID 0, 1, 10, 5, 50, 6, and 60.

2.1.1 RAID definitions

RAID 0 (Data striping) optimizes two identical hard disk drives to read and write data in parallel, interleaved stacks. Two hard disks perform the same work as a single drive but at a sustained data transfer rate, double that of a single disk alone, thus improving data access and storage. Use of at least two new identical hard disk drives is required for this setup.

RAID 1 (Data mirroring) copies and maintains an identical image of data from one drive to a second drive. If one drive fails, the disk array management software directs all applications to the surviving drive as it contains a complete copy of the data in the other drive. This RAID configuration provides data protection and increases fault tolerance to the entire system. Use two new drives or use an existing drive and a new drive for this setup. The new drive must be of the same size or larger than the existing drive.

RAID 10 is a striped configuration with RAID 1 segments whose segments are RAID 1 arrays. This configuration has the same fault tolerance as RAID 1, and has the same overhead for fault-tolerance as mirroring alone. RAID 10 achieves high input/output rates by striping RAID 1 segments. In some instances, a RAID 10 configuration can sustain multiple simultaneous drive failure. A minimum of four hard disk drives is required for this setup.

RAID 5 stripes both data and parity information across three or more hard disk drives. Among the advantages of RAID 5 configuration include better HDD performance, fault tolerance, and higher storage capacity. The RAID 5 configuration is best suited for transaction processing, relational database applications, enterprise resource planning, and other business systems. Use a minimum of three identical hard disk drives for this setup.

RAID 50 is a combination of RAID 0 and RAID 5. It uses distributed parity and disk striping and works best with data that requires high reliability, high request rates, high data transfers, and medium-to-large capacity.

RAID 6 uses distributed parity, with two independent parity blocks per stripe, and disk striping. A RAID 6 virtual drive can survive the loss of two drives without losing data. A RAID 6 drive group, which requires a minimum of three drives, is similar to a RAID 5 drive group. Blocks of data and parity information are written across all drives. The parity information is used to recover the data if one or two drives fail in the drive group.

RAID 60, a combination of RAID 0 and RAID 6, uses distributed parity, with two independent parity blocks per stripe in each RAID set, and disk striping. A RAID 60 virtual drive can survive the loss of two drives in each of the RAID 6 sets without losing data. It works best with data that requires high reliability, high request rates, high data transfers, and medium-to-large capacity.

- **Having RAID 0 and RAID 5 virtual disks in the same physical array is not recommended.** If a drive in the physical array has to be rebuilt, the RAID 0 virtual disk will cause a failure during the rebuild.

- If you want to boot the system from a hard disk drive included in a created RAID set, copy first the RAID driver from the support CD to a floppy disk before you install an operating system to the selected hard disk drive.

2.1.2   Installing hard disk drives

The RAID card supports SAS for RAID set configuration. For optimal performance, install identical drives of the same model and capacity when creating a disk array.

To install SAS hard disks for RAID configuration:

1.   Install the SAS hard disks into the drive bays following the instructions in the system user guide.

2.   Connect a SAS signal cable to the signal connector at the back of each drive and to the SAS connector on the motherboard.

3.   Connect a power cable to the power connector on each drive.

2.2   MegaRAID Configuration Utility

The AVAGO MegaRAID SAS-MFI BIOS Utility is an integrated RAID solution that allows you to create RAID 0, 1, 10, 5, 50, 6, and 60 sets from SATA II/SATA III/SAS/SAS II/SAS III hard disk drives supported by the LSI SAS 3108 12Gb/s SAS controller.

- Create drive groups and virtual drives for storage configurations
- Delete virtual drives
- Migrate a storage configuration to a different RAID level
- Detect configuration mismatches
- Import a foreign configuration
- Display controller, virtual drive, physical drive, and change parameters.
- Scan devices connected to the controller
- Initialize virtual drives
- Check configurations for data consistency
- Create a CacheCade™ configuration

- You may use disks of different sizes; however, the size of the smallest disk determines the "logical" size of each member disk.

- DO NOT combine Serial ATA and SAS disk drives in one volume.

- The RAID setup screens shown in this section are for reference only and may not exactly match the items on your screen due to the controller version difference.

2.2.1 Starting the MegaRAID Configuration Utility

Follow these steps to start the MegaRAID Configuration Utility and access the main screen.

1. Turn on the system after installing all SAS hard disk drives.

2. During POST, press <Ctrl+R> when the following screen appears

```
AVAGO MegaRAID SAS-MFI BIOS
Version 6.25.01.0 (Build February 20, 2015)
Copyright(c) 2015 AVAGO Technologies
F/W Initializing Devices 100%
HA -0 (Bus 2 Dev 0) Asustek PIKE 3108-8i
Battery Status: Missing
PCI Slot Number: 6

ID LUN VENDOR   PRODUCT                      REVISION         CAPACITY
-- --- ------   -------                      --------         --------
       AVAGO    Asustek PIKE 3108-8i         4.290.00-4168    1024MB
0  0   SEAGATE  ST3300657SS                  0008             286102MB
1  0   SEAGATE  ST3300657SS                  0006             286102MB
2  0   SEAGATE  ST3300657SS                  0006             286102MB
3  0   SEAGATE  ST3300657SS                  0008             286102MB

0 Virtual Drive(s) found on the host adapter.
0 Virtual Drive(s) handled by BIOS

Press <Ctrl><R> to Run MegaRAID Configuration Utility
```

3. If the system has multiple SAS controllers, a controller selection dialog appears. Select a controller and press <Enter>.

2.2.2   MegaRAID Configuration Utility

The integrated RAID solution allows you to create the following RAID sets from SAS hard disk drives supported by the LSI SAS 3108 12Gb/s SAS controller: RAID 0, 1, 10, 5, 50, 6, and 60.

> • You may use disks of different sizes in one volume; however, the size of the smallest disk determines the "logical" size of each member disk.
>
> • DO NOT combine Serial ATA and SAS disk drives in one volume.

> • The RAID setup screens shown in this section are for reference only and may not exactly match the items on your screen due to the controller version difference.
>
> • The adapter name shown on the setup screens differs according to the installed SAS RAID card.

MPTFW and MPTBIOS version of the SAS RAID card

Take note of the BIOS and FW version of your SAS RAID card. You will need it if you request support from the ASUS Technical Support team.

You can get the BIOS and FW version of your SAS RAID card, navigate to the **Properties** screen.

FW version   BIOS version

```
           Asustek PIKE 3108-8i BIOS Configuration Utility 5.10-0200
 VD Mgmt  PD Mgmt  Ctrl Mgmt   Properties
 ──────────────────────────── Properties ─────────────────────────────
 Product Name       : Asustek PIKE 3108-8i
 Controller Status  : Optimal
 Serial No          :
 ROC Temperature    : 50 Celsius
 Package            : 24.9.0-0005
 FW Version         : 4.290.00-4168
 BIOS Version       : 6.25.01.0_4.17.00.00_0x060E0200
 Boot Block Version : 3.07.00.00-0002
 Battery status     : Missing
 Security Capable   : No
 Controller ID      : 0
 PCI Bus            : 0x02
 PCI Device         : 0x00
 PCI Function       : 0x00
 PCI Slot ID        : 0x06
 Metadata Size      : 512 MB
 Data Protection Support : Yes
 Data Protection Enabled : Yes
 Emergency Spare          : Unconfigured Good & Global Hot Spare

                          [ Page:01 ]                      < Next >
 F1-Help F5-Refresh Ctrl-N-Next Page Ctrl-P-Prev Page F12-Ctlr
```

Utility Keystrokes

Keystroke	Action
F1	Displays help for the particular screen that you are in.
F2	Displays a list of commands that can be performed for the selected device. This key stroke is available only in the VD Mgmt, the PD Mgmt, and the Foreign View menus. The commands that are enabled are highlighted in white and the disabled commands are highlighted in black. **NOTE:** Based on the configurations that you make, commands are enabled or disabled.
F5	Refreshes the screen that you currently are in.
F11	Switches between controllers.
F12	Displays a list of all the available controllers. You can also scroll to the next controller.
<Ctrl>+<N>	Displays the next menu screen.
<Ctrl>+<P>	Displays the previous menu screen
<Ctrl>+<S>	shortcut key for the Apply button in the Controller Settings screens.
<Tab>	Moves the cursor to the next control.
<Enter>	Lets you to select a menu item, a button, a check box and values in a list box.
<Esc>	Closes a screen or a window. Press Esc twice to exit from the Ctrl-R Utility.
Up Arrow	Moves the cursor to the next menu selection.
Down Arrow	Moves the cursor to the lower menu items or to a lower level menu.
Right Arrow	Opens a submenu, moves from a menu heading to the first submenu, or moves to the first item in a submenu. The right arrow also closes a menu list in a popup window.
Left Arrow	Closes a submenu, moves from a menu item to the menu heading or moves from a sub menu to a higher level menu.
Spacebar	Lets you select a menu item, a button and a check box.

2.2.3   VD Mgmt Menu

This screen shows information on the configuration of controllers, drive groups, and virtual drives.

```
         Asustek PIKE 3108-8i BIOS Configuration Utility 5.10-0200
VD Mgmt  PD Mgmt  Ctrl Mgmt    Properties
                        Virtual Drive Management
[-] Asustek PIKE 3108-8i(Bus 0x02, Dev 0x00)
  ├── No Configuration Present !              Controller:
  └[-] Unconfigured Drives                    Drive Groups: 0
    ├── --:--:04: Ready: 278.875 GB           Virtual Drives: 0
    ├── --:--:05: Ready: 278.875 GB           Drives: 4
    ├── --:--:06: Ready: 278.875 GB
    └── --:--:07: Ready: 278.875 GB




 F1-Help F2-Operations F5-Refresh Ctrl-N-Next Page Ctrl-P-Prev Page F12-Ctlr
```

In the **Virtual Drive Management** screen, you can perform tasks, such as creating and initializing virtual drives; performing a consistency check; deleting, expanding, and erasing virtual drives; importing or clearing foreign configurations; and creating CacheCade virtual drives. The right panel of the screen shows attributes of the selected device.

> Based on the controller settings, some options will be enabled or disabled.

2.2.4 PD Mgmt Menu

The **PD Mgmt** menu shows information about all the physical drives connected to the selected controller. This menu also shows information about enclosures, the number of physical drives in an enclosure, and all of the direct-attached drives under a backplane node.
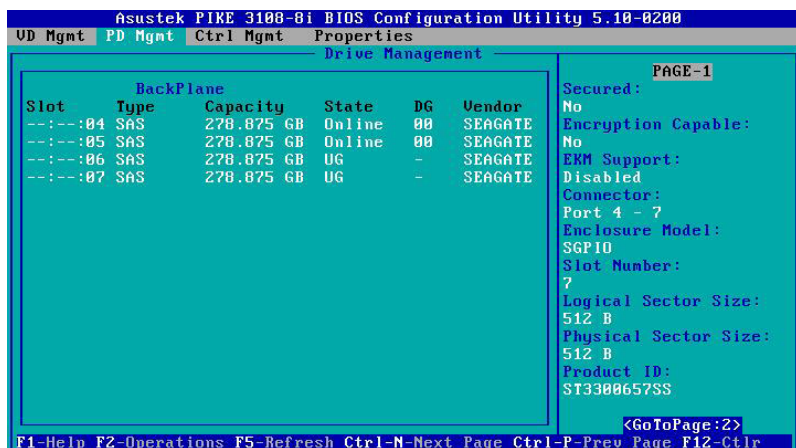
```
          Asustek PIKE 3108-8i BIOS Configuration Utility 5.10-0200
 VD Mgmt  PD Mgmt  Ctrl Mgmt   Properties
                            Drive Management
                                                           PAGE-1
         BackPlane                              Secured:
 Slot     Type     Capacity    State    DG   Vendor   No
 --:--:04 SAS      278.875 GB   Online   00   SEAGATE  Encryption Capable:
 --:--:05 SAS      278.875 GB   Online   00   SEAGATE  No
 --:--:06 SAS      278.875 GB   UG       -    SEAGATE  EKM Support:
 --:--:07 SAS      278.875 GB   UG       -    SEAGATE  Disabled
                                                       Connector:
                                                       Port 4 - 7
                                                       Enclosure Model:
                                                       SGPIO
                                                       Slot Number:
                                                       7
                                                       Logical Sector Size:
                                                       512 B
                                                       Physical Sector Size:
                                                       512 B
                                                       Product ID:
                                                       ST3300657SS

                                                         <GoToPage:2>
 F1-Help F2-Operations F5-Refresh Ctrl-N-Next Page Ctrl-P-Prev Page F12-Ctlr
```

In the **Drive Management** screen, you can perform tasks, such as rebuilding a failed drive, making a drive offline, or making it a global hot spare drive. The right panel of the screen shows additional attributes of the selected device.

2.2.5   Ctrl Mgmt Menu

The **Ctrl Mgmt** menu lets you change the settings of the selected controller. The Ctrl Mgmt menu consists of two screens.

```
         Asustek PIKE 3108-8i BIOS Configuration Utility 5.10-0200
 VD Mgmt  PD Mgmt  Ctrl Mgmt   Properties
                            Controller Settings
  ┌ Alarm Control ┐   Coercion Mode:   BIOS Mode:    Boot device:
  │ ┌─────────┐ ┌─────────┐ │ ┌──────────┐ ┌──────────┐ ┌──────────────────┐
  │ │ Enable  │ │ Silence │ │ │   None   │ │Safe Mode │ │       NONE        │
  │ └─────────┘ └─────────┘ │ └──────────┘ └──────────┘ └──────────────────┘
  └───────────────────────┘

 Rebuild Rate: 30     Patrol Rate      : 30      [X] Maintain PD Fail History

 BGI Rate    : 30     Cache flush Interval: 4     [X] Enable controller BIOS

 CC  Rate    : 30     Spinup delay     : 12      [ ] Enable Stop CC on Error

 Recon. Rate : 30     Spinup drive     : 2       [X] Auto Enhanced Import

                      Device Exposure  : 0       [ ] Enable JBOD


    ┌────────────────────┐    ┌──────────┐    ┌──────────┐
    │ Set Factory Defaults│    │  APPLY   │    │  CANCEL  │     < Next >
    └────────────────────┘    └──────────┘    └──────────┘

 F1-Help F5-Refresh Ctrl-N-Next Page Ctrl-P-Prev Page F12-Ctlr Ctrl-S-Save
```
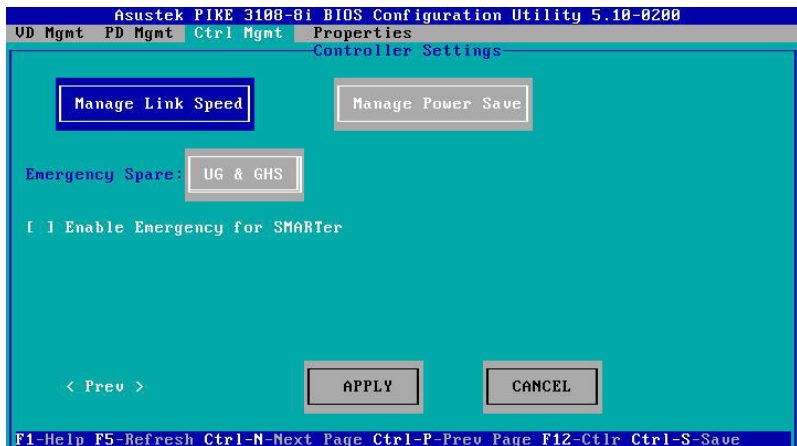
In the first screen, you can change controller options, such as **Enable Controller BIOS, Maintain PD Fail History, Enable JBOD, Auto Enhanced Import,** and **Enable Stop CC on Error**. You also can perform tasks, such as enabling or silencing an alarm, entering values for Rebuild Rate and Patrol Rate, and enabling or disabling the JBOD mode. If you enable the JBOD mode, the drive comes up as JBOD; otherwise, the drive comes up as Unconfigured Good.

```
         Asustek PIKE 3108-8i BIOS Configuration Utility 5.10-0200
 VD Mgmt  PD Mgmt  Ctrl Mgmt   Properties
                            Controller Settings

    ┌──────────────────────┐        ┌──────────────────────┐
    │  Manage Link Speed   │        │  Manage Power Save   │
    └──────────────────────┘        └──────────────────────┘

 Emergency Spare:  ┌──────────┐
                   │ UG & GHS │
                   └──────────┘

 [ ] Enable Emergency for SMARTer




      < Prev >              ┌──────────┐    ┌──────────┐
                            │  APPLY   │    │  CANCEL  │
                            └──────────┘    └──────────┘

 F1-Help F5-Refresh Ctrl-N-Next Page Ctrl-P-Prev Page F12-Ctlr Ctrl-S-Save
```

In the second screen, you can perform tasks, such as changing the link speed, the power save, and the battery settings of the controller.

2.2.6   Properties Menu

The **Properties** menu shows all of the properties of the active controller. The **Properties** menu consists of two screens. The information shown in these screens is read only.

```
               Asustek PIKE 3108-8i BIOS Configuration Utility 5.10-0200
 VD Mgmt  PD Mgmt  Ctrl Mgmt   Properties
                                   ─────── Properties ───────
  Product Name        : Asustek PIKE 3108-8i
  Controller Status   : Optimal
  Serial No           :
  ROC Temperature     : 50 Celsius
  Package             : 24.9.0-0005
  FW Version          : 4.290.00-4168
  BIOS Version        : 6.25.01.0_4.17.08.00_0x060E0200
  Boot Block Version  : 3.07.00.00-0002
  Battery status      : Missing
  Security Capable    : No
  Controller ID       : 0
  PCI Bus             : 0x02
  PCI Device          : 0x00
  PCI Function        : 0x00
  PCI Slot ID         : 0x06
  Metadata Size       : 512 MB
  Data Protection Support : Yes
  Data Protection Enabled : Yes
  Emergency Spare         : Unconfigured Good & Global Hot Spare

                               [ Page:01 ]                         < Next >
 F1-Help F5-Refresh Ctrl-N-Next Page Ctrl-P-Prev Page F12-Ctlr
```

In the first screen, you can view properties, such as controller status, firmware version, BIOS version, and metadata size. To view additional properties, you can navigate to **Next** and press <Enter>.

```
               Asustek PIKE 3108-8i BIOS Configuration Utility 5.10-0200
 VD Mgmt  PD Mgmt  Ctrl Mgmt   Properties
                                   ─────── Properties ───────
  Emergency  For SMARTer : Disabled
  Power Saving on Unconfigured Drives : Enabled
  Power Saving on Hot Spare : Enabled
  Drive Standby Time : 30 min
  Copyback SSD on Smart Error: Yes
  Memory Size   : 1024 MB




        < Prev >                     [ Page:02 ]
 F1-Help F5-Refresh Ctrl-N-Next Page Ctrl-P-Prev Page F12-Ctlr
```

The second **Properties** screen shows information, such as maximum cache size, drive standby time, and power saving properties. To go back to the previous **Properties** screen, navigate to **Prev**, and press <Enter>.

2.2.7   Foreign View Menu

The **Foreign View** menu is shown only when the controller detects a foreign configuration. If no foreign configurations exists, the **Foreign View** menu is not shown.
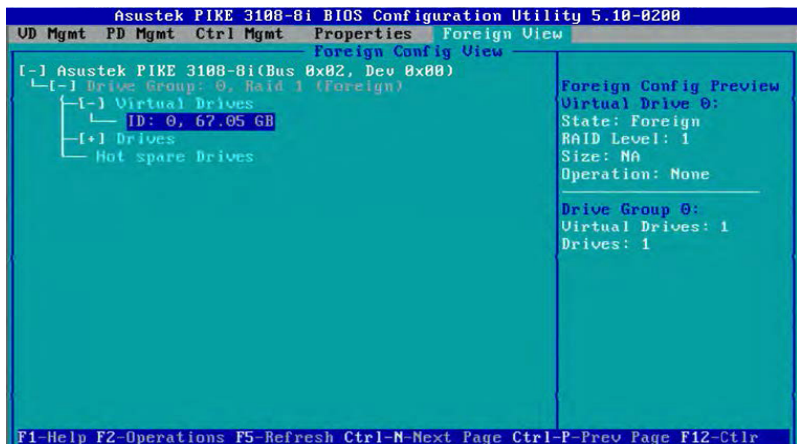
If one or more physical drives in a configuration are removed and reinserted, the controller considers the drives as foreign configurations.
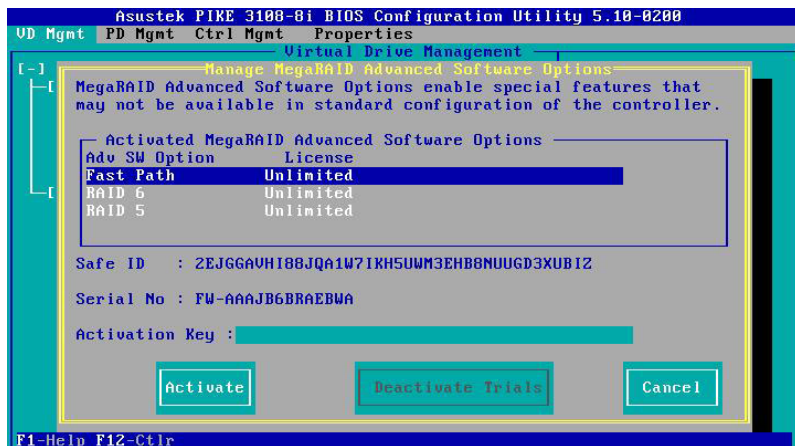
You can use the **Foreign Config View** screen to view information about the foreign configuration, such as drive groups, virtual drives, physical drives, and hot spares. The **Foreign View** menu lets you import foreign configurations to the RAID controller or clear the foreign configurations.

2.2.8   Managing Software Licensing

The MegaRAID advanced software offers the software license key feature to enable the advanced options. The license key is also known as the activation key.

To configure the Advanced Software options by using the activation key:

1.   In the **VD Mgmt** screen, navigate to the controller and press the <F2> key.

2.   Navigate to **Advanced Software Options**, and press <Enter>.

3.   Enter a valid activation key in the Activation Key field.

```
            Asustek PIKE 3108-8i BIOS Configuration Utility 5.10-0200
VD Mgmt  PD Mgmt  Ctrl Mgmt   Properties
┌─────────────────── Virtual Drive Management ──────────┐
[-]  ┌───────────Manage MegaRAID Advanced Software Options─────────┐
  ├─[  │ MegaRAID Advanced Software Options enable special features that │
     │ may not be available in standard configuration of the controller. │
     │                                                            │
     │  ┌ Activated MegaRAID Advanced Software Options ──────────┐ │
     │  │ Adv SW Option      License                             │ │
     │  │ Fast Path          Unlimited                           │ │
  └─[  │ RAID 6             Unlimited                           │ │
     │  │ RAID 5             Unlimited                           │ │
     │  └────────────────────────────────────────────────────────┘ │
     │                                                            │
     │  Safe ID   : 2EJGGAVHI88JQA1W7IKH5UWM3EHB8NUUGD3XUBIZ      │
     │                                                            │
     │  Serial No : FW-AAAJB6BRAEBWA                              │
     │                                                            │
     │  Activation Key :                                          │
     │                                                            │
     │     ┌────────┐     ┌──────────────────┐    ┌────────┐      │
     │     │Activate│     │ Deactivate Trials │    │ Cancel │      │
     │     └────────┘     └──────────────────┘    └────────┘      │
     └────────────────────────────────────────────────────────────┘
F1-Help F12-Ctlr
```

The **Activated MegaRAID Advanced Software Options** box contains the **Adv SW Option** and **License** columns.

•   The **Adv SW Option** column shows the list of advanced software features available in the controller.

•   The **License** column shows the license details for the list of advanced software options present in the **Av SW Option** column. The license details validates if the software is under trial period, or whether it can be used without any trial period (Unlimited).

2.2.9   Creating a Storage Configuration

You can configure RAID drive groups and virtual drives to create storage configurations on systems with LSI SAS controllers.

To create a storage configuration:

1.   In the **VD Mgmt** screen, navigate to the controller and press the <F2> key.

2.   Press <Enter>. The **Create New VD** screen appears.

> You can use the **Create New VD** dialog to create virtual drives for Unconfigured Good drives. To create virtual drives for existing drive groups, navigate to a drive group and press the <F2> key to view the **Add VD in Drive Group** dialog. The fields in the **Add VD in Drive Group** dialog are the same as in the **Create New VD** dialog.

```
              Asustek PIKE 3108-8i BIOS Configuration Utility 5.10-0200
 VD Mgmt  PD Mgmt  Ctrl Mgmt   Properties
                                     ┌───── Create New VD ─────
   RAID      ┌ RAID-0 ┐  Data       ┌ Disable ┐
   Level:    └────────┘  Protection:└─────────┘

    PD per Span : N/A
    ┌ Drives ─────────────────────────────────────────
     ID         Type       Size         #    Capable
    [ ]--:--:04 SAS     278.875 GB      --   --
    [ ]--:--:05 SAS     278.875 GB      --   --
    [ ]--:--:06 SAS     278.875 GB      --   --
    [ ]--:--:07 SAS     278.875 GB      --   --


    ┌ Basic Settings ──────
     Size:    [            ]
                                ┌ Advanced ┐  ┌   OK   ┐  ┌ CANCEL ┐
     Name:    [            ]    └──────────┘  └────────┘  └────────┘

 F1-Help F12-Ctlr
```

3.   Select a RAID level for the drive group from the **RAID Level** field.

4.   All the available unconfigured good drives appear in the **Drives** box. Select the physical drives that you prefer.

5.   You can enter a size less than the maximum size of the drive group, if you want to create other virtual drives on the same drive group. The maximum size of the drive group appears in the **Size** field. Before entering a size, ensure that you have deleted the previous default value by using the <Backspace> key.

6.   Enter a name for the virtual drive in the **Name** field. The name given to the virtual drive cannot exceed 15 characters.

7.   Press **OK.**

> Press **Advanced** to set additional properties. For more information, see the **Selecting Additional Virtual Drive Properties** section.

To initialize the virtual drive:

1.   Navigate to the Virtual Drive you just created.

2.   Press <Enter> and then choose one of the **Initialization** options.
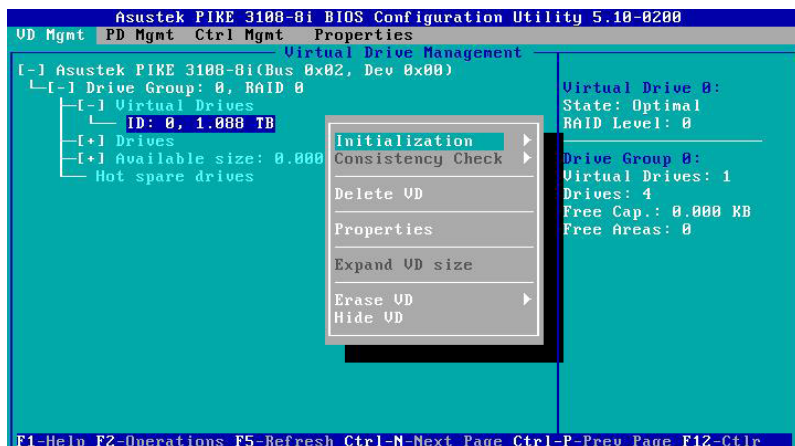
2.2.10   Selecting Additional Virtual Drive Properties

This section describes the following additional virtual drive properties that you can select while you create virtual drives. Change these parameters only if you have a specific reason for doing so. It is usually best to keep them at their default settings.
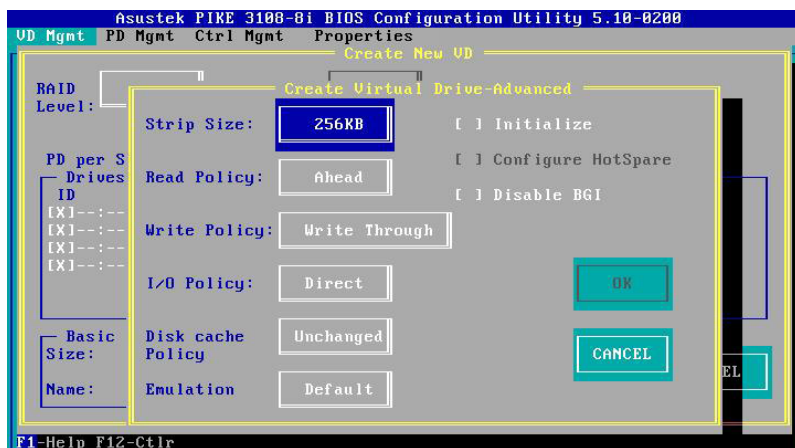
Strip Size – The strip size is the portion of the stripe that resides on a single virtual drive in the drive group. Strip sizes of 64 KB, 128 KB, 256 KB, 512 KB, or 1 MB are supported.

Read Policy – Specify one of the following options to specify the read policy for this virtual drive:

> **Normal** – Read ahead capability lets the controller read sequentially ahead of requested data and to store the additional data in cache memory, thereby anticipating that the data will be needed soon. This process speeds up reads for sequential data, but there is little improvement when the computer accesses random data.
>
> **Ahead** – Disables the read ahead capability.

Write Policy – Select one of the following options to specify the write policy for this virtual drive:

> **Write Thru** – In this mode, the controller sends a data transfer completion signal to the host when the drive subsystem has received all the data in a transaction. This option eliminates the risk of losing cached data in case of a power failure.
>
> **Write Back** – In this mode, the controller sends a data transfer completion signal to the host when the controller cache has received all the data in a transaction.
>
> **Write Back with BBU** – In this mode the controller has no BBU or the BBU is bad. If you do not choose this option, the controller firmware automatically switches to the Write Thru mode if it detects a bad or missing BBU.

> The write policy depends on the status of the BBU. If the BBU is not present, is low, is failed, or is being charged, the virtual drive is still in the Write Back mode and there is a chance of data loss.

I/O Policy – The I/O policy applies to reads on a specific virtual drive. It does not affect the read ahead cache.

> **Cached** – In this mode, all reads are buffered in cache memory. **Cached I/O** provides faster processing.
>
> **Direct** – In this mode, reads are not buffered in cache memory. Data is transferred to the cache and the host concurrently. If the same data block is read again, it comes from cache memory. **Direct I/O** makes sure that the cache and the host contain the same data.

Disk cache policy – Select a cache setting for this virtual drive:

> **Enable** – Enable the drive cache.
>
> **Disable** – Disable the drive cache.
>
> **Unchanged** – Updating the drive cache policy to **Unchanged** may enable / disable the drive cache based on the WCE (Write Cache Policy) bit of the save mode page of the drive.

Emulation – Lets you to set the emulation type on a virtual drive to default or none. The force option forces the emulation to be set on a controller even when MFC settings do not support it. The possible options are **Default, Disabled,** or **Forced.**

Initialize – Select to initialize the virtual drive. Initialization prepares the storage medium for use. Fast initialization will be performed on the virtual drive.

Configure Hot Spare – Select to configure physical drives as hot spares for the newly created virtual drive.

This option is enabled only if there are additional drives and if they are eligible to be configured as hot spares. This option is not applicable for RAID 0. If you select this option and after the Virtual drive is created, a dialog appears. The dialog asks you to choose the physical drives that you want to configure as hot spares.

Provide shared access – Select this option if you want the virtual drive to be shared between the servers in a cluster. This option appears only if the controller supports High Availability DAS.

2.2.11   Modifying Controller Properties

The Utility shows information for one LSI SAS controller at a time. If your system has multiple LSI SAS controllers, you can view information for a different controller by pressing the <F12> key and selecting a controller from the list. Navigate to the Properties menu to view the properties of the active controller.

To change the controller properties:

1.   Navigate to the **Ctrl Mgmt** menu to view the first **Controller Settings** screen.
2.   You may change the values of the properties for the editable fields. To change additional properties, such as link speed, and power settings, press **Next** to go to the second **Controller Settings** screen.
3.   Press **Apply**. The following table describes all entries and options listed on both the Controller Settings screen. Leave these options at their default settings to achieve the best performance, unless you have a specific reason for changing them.

Options	Descriptions
Alarm Control	Select this option to enable, disable, or silence the onboard alarm tone generator on the controller.
Coercion Mode	Use this option to force drives of varying capacities to the same size so they can be used in a drive group. The coercion mode options are None, 128MB-way, and 1GB-way. The number you choose depends on how much the drives from various vendors vary in their actual size.
BIOS Mode	Specifies the following options to set the BIOS boot mode: • **Stop on Error:** shows the errors encountered during boot up and waits for your input. The firmware does not proceed with the boot process till you take some action. • **Ignore Error:** Ignores errors and the firmware proceeds with boot. • **Pause on Error:** the firmware may halt due to hardware faults. If the firmware encounters no hardware faults, then the boot up continues. • **SafeMode Error:** Boots the controller to run on safe mode.
Boot Device	Use this option to select the boot device from the list of virtual drives and JBODs.
Rebuild Rate	Use this option to select the rebuild rate for drives connected to the selected controller. The rebuild rate is the percentage of system resources dedicated to rebuilding a failed drive. The higher the number, the more system resources that are devoted to a rebuild. The range of rebuild rate is between 0 and 100 percent.

Options	Descriptions
BGI Rate	Use this option to select the amount of system resources dedicated to background initialization of virtual drives connected to the selected controller. The range of background initialization (BGI) rate is between 0 and 100 percent.
CC Rate	Use this option to select the amount of system resources dedicated to consistency checks of virtual drives connected to the selected controller. The range of Consistency Check (CC) rate is between 0 and 100 percent.
Recon. Rate	Use this option to select the amount of system resources dedicated to reconstruction of drives connected to the selected controller. The range of Recon rate is between 0 and100 percent.
Patrol Rate	Use this option to select the rate for patrol reads for drives connected to the selected controller. The patrol read rate is the percentage of system resources dedicated to running a patrol read. The range of patrol read is between 0 to 100 percent.
Cache Flush Interval	Use this option to control the interval at which the contents of the onboard data cache are flushed. The range of Cache Flush Interval is between 0 to100 seconds.
Spinup Delay	Use this option to control the interval (in seconds) between spinup of drives connected to this controller. The delay prevents a drain on the system's power supply that would occur if all drives spun up at the same time. The range of Spinup Delay is between 0 to 255 seconds.
Spinup Drive	Use this option to control the interval at which the contents of the onboard data cache are flushed. The range of Spinup Drive is between 0 to 255 seconds.
Maintain PD Fail History	Use this option to maintain the history of all drive failures.
Enable Controller BIOS	Use this option to enable or disable the BIOS for the selected controller. If the boot device is on the selected controller, the BIOS must be enabled. Otherwise, the BIOS should be disabled, or you might be unable to use a boot device elsewhere.
Enable Stop CC on Error	Use this option to stop a consistency check when the controller BIOS encounters an error.
Auto Enhanced Import	Use this option to import automatically at boot time.

Options	Descriptions
Set Factory Defaults	Set Factory Defaults
Manage Link Speed	Use this option to change the link speed between the controller and the expander, or between a controller and a drive that is directly connected to the controller
Manage Power Save	Use this option to reduce the power consumption of drives that are not in use, by spinning down the unconfigured good drives, hot spares and configured drives.
Manage Battery	Use this option to view information about the BBU, if the selected controller has a BBU.
Emergency Spare	Use this option to commission unconfigured good drives or global hotspares as emergency spare drives. You can select from the options **None, UG** (Unconfigured Good), **GHS** (Global Hotspare), or **UG** and **GHS** (Unconfigured Good and Global Hotspare).
Enable Emergency for SMARTer	Use this option to commission emergency hot spare drives for predictive failure analysis events.

2.2.12   Viewing and Changing Virtual Drive Properties

The Utility shows the properties, policies, and the operations for virtual drives.

To view these items for the currently selected virtual drive and to change some of these settings:

1.   In the **VD Mgmt** screen, navigate to a virtual drive, and press the <F2> key.

2.   Press <Enter>.

```
         Asustek PIKE 3108-8i BIOS Configuration Utility 5.10-0200
VD Mgmt  PD Mgmt  Ctrl Mgmt    Properties
                        - Virtual Drive Management -
                        Virtual Drive 0 - Properties
  ─ General ─
  RAID Level: RAID-0

  Name:

  Size:       1.088 TB

  Strip Size: 256 KB

  VD State  : Optimal
  ─ Operations ─
  Operation : Init.

  Progress  : 8%

  Time Left : 00:02:25        Advanced      OK      CANCEL


F1-Help F12-Ctlr
```
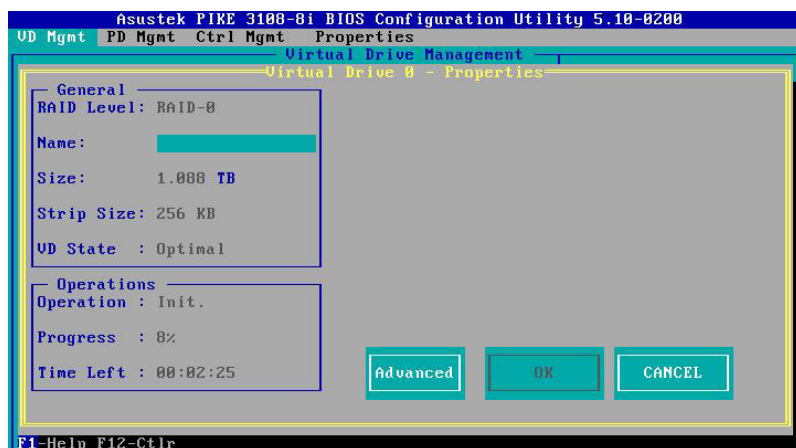
2.2.13   Deleting a Virtual Drive

You can delete any virtual drive on the controller if you want to reuse that space for a new virtual drive. The Utility lists configurable drive groups where there is space to configure. If multiple virtual drives are defined on a single drive group, you can delete a virtual drive without deleting the entire drive group.

> Back up any data that you want to keep before you delete a virtual drive.

To delete a virtual drive:

1.   In the **VD Mgmt** screen, navigate to a virtual drive, and press the <F2> key.

2.   Navigate to **Delete VD,** and press <Enter>.

3.   Press **OK** to delete the virtual drive.

2.2.14   Deleting a Virtual Drive Group

You can delete a virtual drive group. On deleting a drive group, all the virtual drives in that drive group also are deleted.

Back up any data that you want to keep before you delete a virtual drive group.

To delete a virtual drive group:

1.   In the **VD Mgmt** screen, navigate to a virtual drive group, and press the <F2> key.
2.   Navigate to **Delete Drive Group,** and press <Enter>.
3.   Press **OK** to delete the virtual drive group.

2.2.15   Initializing a Virtual Drive

When you create a new virtual drive, the Utility asks whether you would like to initialize the virtual drive. If you do not want to initialize the virtual drive at that stage, you can initialize the drive later.

To initialize a virtual drive:

1.   In the **VD Mgmt** screen, navigate to a virtual drive, and press the <F2> key.
2.   Navigate to **Initialization,** and press <Enter>.
3.   Select one of the options, and press <Enter>.
4.   Press **Yes** to begin initialization.

Initialization erases all data on the virtual drive. Make sure to back up any data you want to keep before you initialize a virtual drive. Make sure the operating system is not installed on the virtual drive you are initializing.

2.2.16   Running a Consistency Check

You should periodically run a consistency check on fault-tolerant virtual drives (RAID 1, 5, 6, 10, 50, or 60 configurations; RAID 0 does not provide data redundancy). A consistency check scans the virtual drive to determine whether the data has become corrupted and needs to be restored.

Make sure to back up the data before you run a consistency check, if you think the data might be corrupted.

To run a consistency check:

1.   In the **VD Mgmt** screen, navigate to a virtual drive, and press the <F2> key.
2.   Navigate to **Consistency Check,** and press <Enter>.
3.   Navigate to **Start,** and press <Enter>.
4.   Press **Yes** to run the consistency check.

2.3 MegaRAID Storage Manager

MegaRAID Storage Manager software enables you to configure, monitor, and maintain storage configurations on LSI SAS controllers. The MegaRAID Storage Manager graphical user interface (GUI) makes it easy for you to create and manage storage configurations.

2.3.1 Hardware and Software Requirements

The hardware requirements for MegaRAID Storage Manager software are as follows:

- PC-compatible computer with an IA-32 (32-bit) Intel Architecture processor or an EM64T (64-bit) processor and at least 128 Mb of system memory (256 Mb recommended)
- Disk drive with at least 50 Mb available free space

Refer to your server documentation and to the operating system documentation for more information on hardware and operating system requirements.

2.3.2 Installing MegaRAID Storage Manager Software on Microsoft Windows OS

Follow these steps if you need to install MegaRAID Storage Manager software on a system running Microsoft Windows OS:

1. Insert the ASUS PIKE 3108 Support CD in the optical disc drive. The CD automatically displays the **Utilities** menu if Autorun is enabled in your computer.

> If Autorun is NOT enabled in your computer, browse the contents of the Support CD to locate **Setup.exe**. Double-click Setup.exe to run the Support CD.

2. Click **LSI MegaRAID Storage Manager**.
3. When the Welcome screen appears, click **Next**.

   If MegaRAID Storage Manager software is already installed on this system, the Program Maintenance screen appears. Read the screen text and select **Modify**, **Repair**, or **Remove**.
4. When the next screen appears, read and accept the user license, and click **Next**.
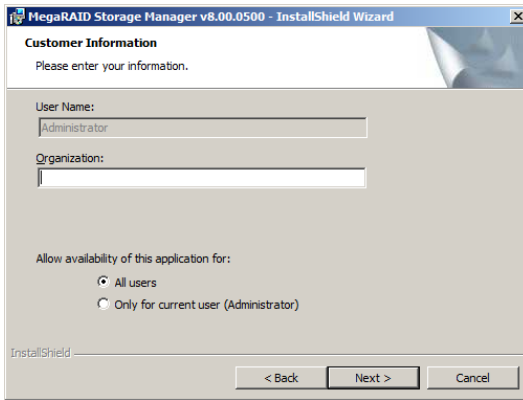
5. Enter your user name and organization name. In the bottom part of the screen, select an installation option:

    –   If you select **All users**, any user with administrative privileges can use this version of MegaRAID Storage Manager software to view or change storage configurations.

    –   If you select **Only for current user**, the MegaRAID Storage Manager shortcuts and associated icons will be available only to the user with this user name.

6. Click **Next** to continue.

7. On the next screen, accept the default Destination Folder, or click **Change** to select a different destination folder. Click **Next** to continue.

    The Setup Type screen appears, as shown in the following figure.
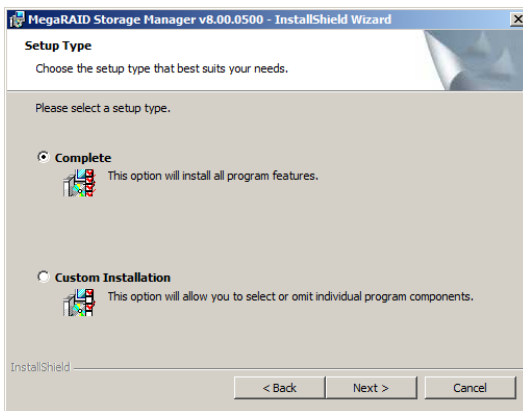
8. Select one of the Setup options. The options are fully explained in the screen text.

   – Normally, you would select **Complete** if you are installing MegaRAID Storage Manager software on a server.

   – Select **Custom Installation** if you want to select individual program components.

9. Click **Next** to continue.

   If you selected **Custom Installation** as your setup option, the second Setup Type screen appears, as shown in the following figure.

   If you select **Complete** as your setup option, the Installation Wizard is ready to install MSM. To begin installation, click on Install on the next screen that appears.
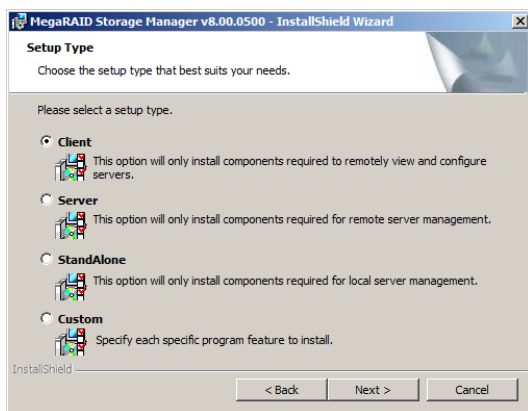
10. Select one of the custom setup options. The options are fully explained in the screen text.

    – Select **Client** if you are installing MegaRAID Storage Manager software on a PC that will be used to view and configure servers over a network. To begin installation, click on **Install** on the next screen that appears.

    – Select **Server** to install only those components required for remote server management. To begin installation, click on **Install** on the next screen that appears.

    – Select **StandAlone** if you will use MegaRAID Storage Manager software to create and manage storage configurations on a standalone workstation. To begin installation, click on **Install** on the next screen that appears.

    – Select **Custom** if you want to specify individual program features to install.

If you select **Custom**, a window listing the installation features appears, as shown in the following figure. Select the features you want on this screen.
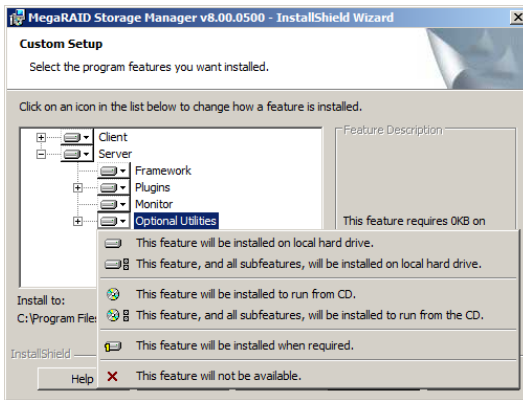
11. Click **Next** to proceed.

12. Click **Install** to install the program.

13. When the final Configuration Wizard screen appears, click **Finish**.

If you select **Client** installation for a PC used to monitor servers, and if there are no available servers with a registered framework on the local subnet (that is, servers with a complete installation of MegaRAID Storage Manager software), the server screen appears, as shown in the following figure. The server screen will not list any servers. You can use this screen to manage systems remotely.
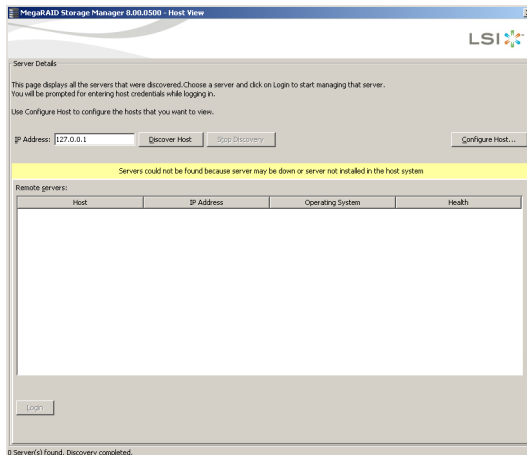
2.3.3 Installing MegaRAID Storage Manager Software for Linux

Follow these steps if you need to install MegaRAID Storage Manager software on a system running Red Hat Linux or SUSE Linux:

1. Copy the **MSM_linux_installer...tar.gz** file to a temporary folder.
2. Untar the **MSM_linux_installer...tar.gz** file using the following command:

   tar -zxvf MSM_linux_installer...tar.gz

   A new **disk** directory is created.
3. Go to the new **disk** directory.
4. In the **disk** directory, find and read the **readme.txt** file.
5. To start the installation, enter the following command:

   csh install.sh -a

If you select **Client** installation for a PC used to monitor servers, and if there are no available servers with a registered framework on the local subnet (that is, servers with a complete installation of MegaRAID Storage Manager software), the server screen appears. The server screen does not list any servers. You can use this screen to manage systems remotely.

2.3.4   Linux Error Messages

The following messages may appear while you are installing MegaRAID Storage Manager software on a Linux system:

* **More than one copy of MegaRAID Storage Manager software has been installed.**

    This message indicates that the user has installed more than one copy of MegaRAID Storage Manager software. (This can be done by using the rpm-force command to install the rpm file directly, which is not recommended, instead of using the install.sh file.) In such cases, the user must uninstall all the rpm files manually before installing MegaRAID Storage Manager software with the procedure listed previously.

* **The version is already installed.**

    This message indicates that the version of MegaRAID Storage Manager software you are trying to install is already installed on the system.

* **The installed version is newer.**

    This message indicates that a version of MegaRAID Storage Manager software is already installed on the system, and it is a newer version than the version you are trying to install.

* **Exiting installation.**

    This is the message that appears when the installation is complete.

* **RPM installation failed.**

    This message indicates that the installation failed for some reason. Additional message text explains the cause of the failure.

2.3.5   Starting the MegaRAID Storage Manager Software

Follow these steps to start the MegaRAID Storage Manager software and view the main window:

1.   Start the program using the method required for your operating system environment:

    –   To start MegaRAID Storage Manager software on a Microsoft Windows system, select **Start > All Programs > MegaRAID Storage Manager > StartupUI**, or double-click the MegaRAID Storage Manager shortcut on the desktop.

    If a warning appears stating that Windows Firewall has blocked some features of the program, click **Unblock** to allow the MegaRAID Storage Manager software to start. (The Windows Firewall sometimes blocks the operation of programs that use Java.)

    –   To start MegaRAID Storage Manager software on a Red Hat Linux system, select **Applications > System Tools > MegaRAID Storage Manager StartupUI**.

    –   To start MegaRAID Storage Manager software on a SUSE SLES system, select **Start > System > More Programs > MegaRAID Storage Manager**.

2.   When the program starts, the select server window appears, as shown in the following figure.
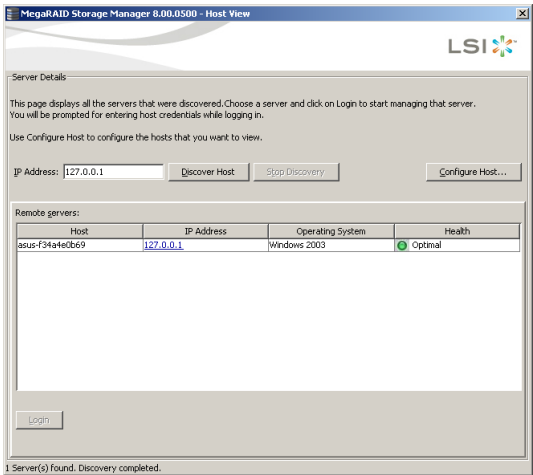
If the circle in Health column of the corresponding server is orange instead of green, it means that the server is running in a degraded state—for example, because a drive used in a virtual drive has failed. If the circle is red, the storage configuration in the server has failed.

You can click **Configure Host** if you want to select the display preferences for the server. You can choose to display only the local server, systems from a list, or display all of the systems in the network of the local server.

3.   Double-click the icon of the server that you want to access. The server login window appears, as shown in the following figure.

4.   Select an access mode from the drop-down menu.

–   Select **Full Access** if you need to both view the current configuration and change the configuration.

–   Select **View Only** if you need to only view and monitor the configuration.

5.   Enter your user name and password, and click **Login**.

> If the computer is networked, this is the login to the computer itself, not the network login.

You must enter the root/administrator user name and password to use Full Access mode. If your user name and password are correct for the Login mode you have chosen, the main MegaRAID Storage Manager window appears.

2.3.6   MegaRAID Storage Manager Window

After you log in, the dashboard view provides an overview of the system and covers the properties of the virtual drives and the physical drives, total capacity, configured capacity, unconfigured capacity, background operations in progress, MegaRAID Storage Manager features and their status (enabled or disabled), and actions you can perform, such as creating a virtual drive and updating the firmware, as shown in the following figure.
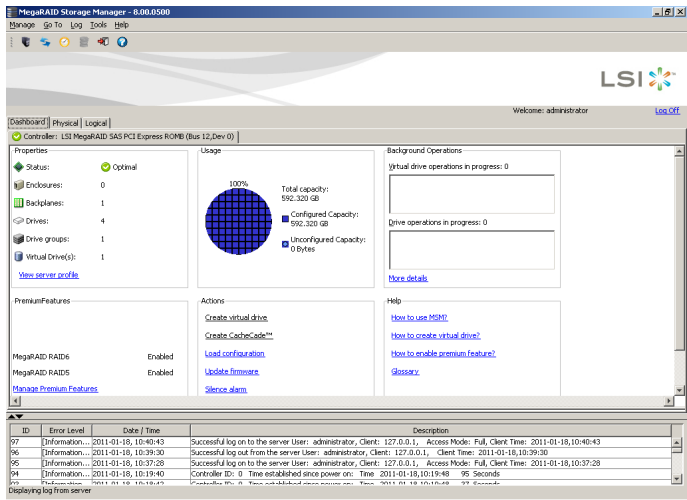
You can click the Physical tab to view the drives connected to the controller or Logical tab to view the virtual drives connected to the controller.
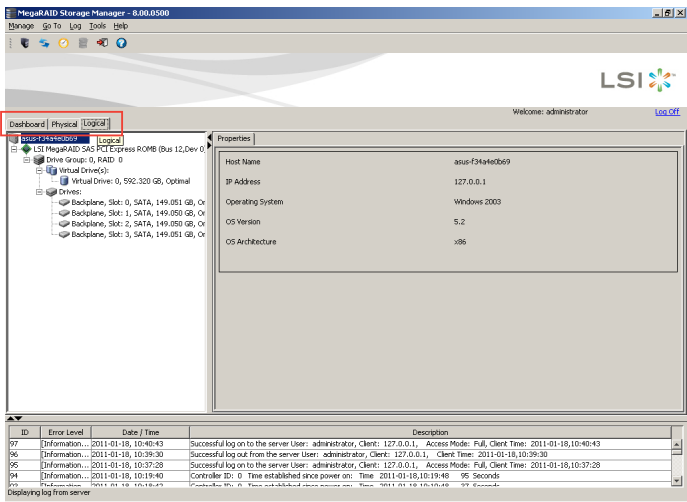
The following icons in the left panel represent the controllers, drives, and other devices:

- System
- Controller
- Slot for a drive
- Drive group
- Virtual drive

A red circle to the right of an icon indicates that the device has failed. For example, this icon indicates that a drive has failed: .

A yellow circle to the right of an icon indicates that a device is running in a degraded state. For example, this icon indicates that a virtual drive is running in a degraded state because a drive has failed: .

Properties View Panel

The right panel of the MegaRAID Storage Manager window has the **Properties** tab that displays information about the selected device. For example, if a controller icon is selected in the left panel, the Properties tab lists information such as the controller name, NVRAM size, and device port count.

Event Log Panel

The lower part of the MegaRAID Storage Manager window displays the system event log entries. New event log entries appear during the session. Each entry has an ID, a timestamp and date, an error level indicating the severity of the event, and a brief description of the event.

Menu Bar

Here are brief descriptions of the main selections on the MegaRAID Storage Manager menu bar.

Manage Menu
The **Manage** menu has an **Exit** option for exiting from the MegaRAID Storage Manager software. It also has a **Refresh** option for updating the display in the MegaRAID Storage Manager window. (Refresh is seldom required; the display normally updates automatically.)
The **Manage** menu options also include **Check Consistency**, **Initialize**, and **Show Progress**.

Go To Menu
The **Go To** menu is available when a controller, physical drive, or virtual disk is selected in the MegaRAID Storage Manager window. The **Go To** menu options vary depending on what type of device is selected in the left panel of the MegaRAID Storage Manager window. For example, the **Scan Foreign Configuration** option is available only when a controller is selected. The options also vary depending on the current state of the selected device. For example, if you select an offline physical drive, the **Make Drive Online** option will be available in the **Go To** menu.

Log Menu
The Log menu includes options for saving and clearing the message log.

Tools Menu
On the Tools menu you can select **Configure Alerts** to access the Event Configuration Notification screen, which you can use to set the alert delivery rules, event severity levels, exceptions, and email settings.

Help Menu

On the Help menu you can select **Help > Contents** to view the MegaRAID Storage Manager online help file. You can select **Help > About MegaRAID Storage Manager** to view version information for the MegaRAID Storage Manager software.

- When you use the MegaRAID Storage Manager online help, you may see a warning message that Internet Explorer has restricted the file from showing active content. If this warning appears, click on the active content warning bar and enable the active content.

- If you are using the Linux operating system, you must install Firefox® or Mozilla® for the MegaRAID Storage Manager online help to display.

Driver Installation

3

This chapter provides instructions for installing the RAID card driver on different operating systems.

3.1 RAID driver installation

After creating the RAID sets for your server system, you are now ready to install an operating system to the independent hard disk drive or bootable array. This part provides instructions on how to install or update the RAID card drivers.

> The RAID card driver might be included in the Linux OS installation CD, and could be loaded automatically during OS installation. However, we recommend using the RAID driver packaged in the RAID card support CD for better reliability.

3.1.1 Windows® Server 2012 R2 OS

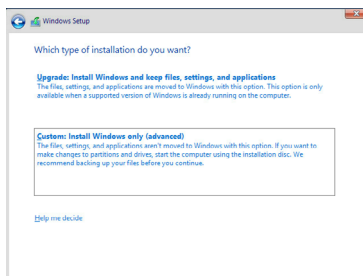**During Windows® Server 2012 R2 OS installation**

To install the RAID card driver when installing Windows® Server 2012 R2 OS:

1. Boot the computer using the Windows® Server 2012 R2 OS installation CD to start the **Windows® Setup** process.

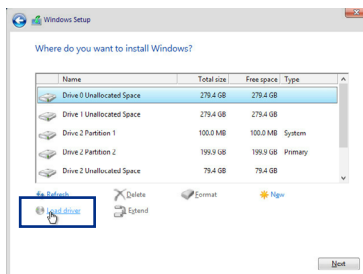2. Follow onscreen installation.

> Ensure to choose **Windows 2012 R2 Data center** (Server with a GUI) when asked to select the type of operating system you want to install.

3. From the Windows Setup window, click **Custom: Install Windows only (Advanced)**.

4. Select and click **Load Driver**.

5. Remove the installation DVD on the disc drive and replace it with the bundled support DVD that contains the RAID driver.

6. Click **Browse** and locate the driver on the support DVD.

7. Select the driver from the list then click **Next**.

8. Wait for the driver installation to finish.

9. When done, remove the support DVD and replace it with the installation DVD

10. Continue installing the operating system and follow onscreen instructions to complete the installation.

11. (**optional**) Restart the computer.
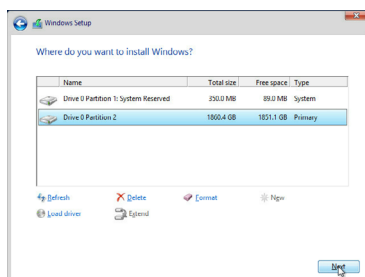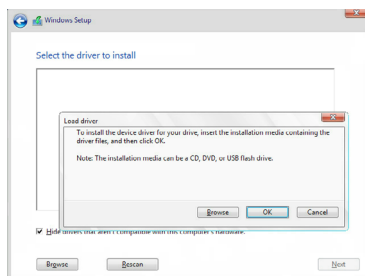
After Windows® Server 2012 R2 OS installation

To update the RAID card driver after installing Windows® Server 2012 R2 OS:

1. Insert the support DVD that is bundled with your PIKE 3108 Series card into the disc drive.

2. Right-click on the Start button then click **Device Manager**.

3. Go to **Storage Controllers** then select **LSI Adapter, SAS 3108 Fury-StorPort**.

4. Double-click **LSI Adapter, SAS3 3108 Fury-StorPort**.

> The controller name differs according to the installed SAS RAID card.

5. Go to the **Driver** tab then click on **Update Driver**.

6. Click **Browse my computer for driver software**.

7. Click **Browse,** locate the installer on the support DVD, click **OK** when done, and then click **Next**.

8. Wait for the driver installation to finish.

9. When done, click **Close**.

10. Restart the system.
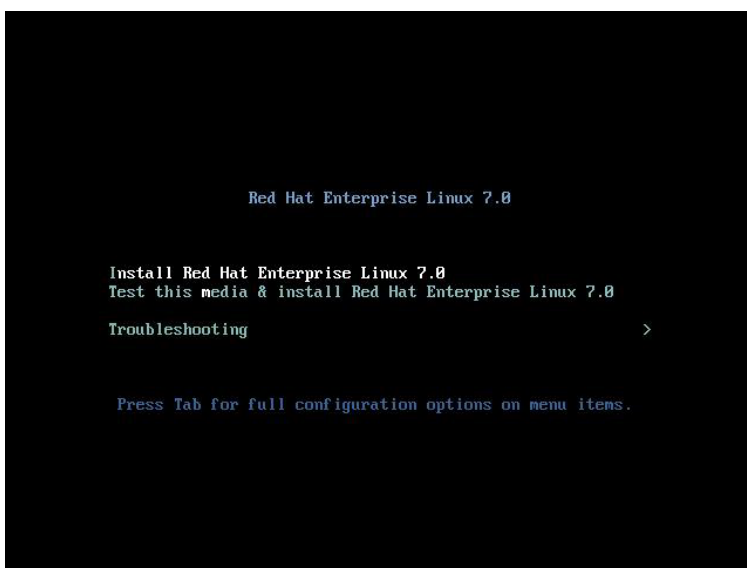
3.1.2 Red Hat® Enterprise Linux OS 7.0

To install the RAID card driver when installing Red Hat® Enterprise OS:

1.   Copy or unzip the **dd.iso** file to a USB storage device then connect the USB storage device to your system.

> To get the **dd.iso** from the support CD, go to **Drivers > PIKE_II_3108-8i_16PD_PIKE_II_3108-8i_240PD_PIKE_II_3108-4i4e_240PD > Driver > Linux > rhel7_oel7_centos7 > disks-1.**To download **dd.iso** from the ASUS website, visit www.asus.com.

2.   Boot the system from the Red Hat® OS installation CD.

3.   From the initial installation page, use the arrow keys to select the installation method then press <Esc> to enter the boot option.

```
                          Red Hat Enterprise Linux 7.0


          Install Red Hat Enterprise Linux 7.0
          Test this media & install Red Hat Enterprise Linux 7.0

          Troubleshooting                                              >



           Press Tab for full configuration options on menu items.
```

4.   After the boot option, key in:
     linux dd
     then press <Enter>.

```
boot: linux dd
```

5. From the Driver disk device selection list, key in <5>, then press <Enter>.

```
boot: linux dd
[    8.995488] sd 0:0:0:0: [sdb] No Caching mode page found
[    8.995510] sd 0:0:0:0: [sdb] Assuming drive cache: write through
[    8.996890] sd 0:0:0:0: [sdb] No Caching mode page found
[    8.996912] sd 0:0:0:0: [sdb] Assuming drive cache: write through
[    9.000656] sd 0:0:0:0: [sdb] No Caching mode page found
[    9.000677] sd 0:0:0:0: [sdb] Assuming drive cache: write through
DD: Checking devices

Page 1 of 1
Driver disk device selection
      DEVICE      TYPE               LABEL            UUID
  1)  sda2        swap                                3ad22d43-64ca-40f4-944b-6bfacdc5a6c0
  2)  sda3        btrfs                               6cbb7e50-2202-4913-b3cf-09782a19042c
  3)  sda4        xfs                                 04d8c813-1023-4026-9d31-e48a4d507109
  4)  sdb1        vfat               RHEL-7_0 SE      2EC4-AA51
  5)  sdc1        vfat               PIKE II SER      E88A-BE43

# to select, 'r'-refresh, 'n'-next page, 'p'-previous page or 'c'-continue: 5_
```

6. From the Choose driver disk ISO file list, key in <2>, then press <Enter>.

```
boot: linux dd
[    8.995488] sd 0:0:0:0: [sdb] No Caching mode page found
[    8.995510] sd 0:0:0:0: [sdb] Assuming drive cache: write through
[    8.996890] sd 0:0:0:0: [sdb] No Caching mode page found
[    8.996912] sd 0:0:0:0: [sdb] Assuming drive cache: write through
[    9.000656] sd 0:0:0:0: [sdb] No Caching mode page found
[    9.000677] sd 0:0:0:0: [sdb] Assuming drive cache: write through
DD: Checking devices

Page 1 of 1
Driver disk device selection
      DEVICE      TYPE               LABEL            UUID
  1)  sda2        swap                                3ad22d43-64ca-40f4-944b-6bfacdc5a6c0
  2)  sda3        btrfs                               6cbb7e50-2202-4913-b3cf-09782a19042c
  3)  sda4        xfs                                 04d8c813-1023-4026-9d31-e48a4d507109
  4)  sdb1        vfat               RHEL-7_0 SE      2EC4-AA51
  5)  sdc1        vfat               PIKE II SER      E88A-BE43

# to select, 'r'-refresh, 'n'-next page, 'p'-previous page or 'c'-continue: 5[  222.387107] scsi 12:0:0:
[  222.479308] scsi 13:0:0:1: alua: not attached
[  222.575467] scsi 14:0:0:1: alua: not attached


Page 1 of 1
Choose driver disk ISO file
  1)  Drivers/PIKE_II_3008-4i4e_PIKE_II_3008-8i/Driver/Linux/mpt3sas-release/citrix6/disks-1/mpt3sas-5.0
  2)  Drivers/PIKE_II_3108-8i_16PD_PIKE_II_3108-8i_240PD_PIKE_II_3108-4i4e_240PD/Driver/Linux/citrix6/di

# to select, 'n'-next page, 'p'-previous page or 'c'-continue: 2_
```

7. Key in <C>, then press <Enter> to continue.

```
Page 1 of 1
Choose driver disk ISO file
  1)  Drivers/PIKE_II_3008-4i4e_PIKE_II_3008-8i/Driver/Linux/mpt3sas-release/citrix6/disks-1/mpt3sas-5.0
  2)  Drivers/PIKE_II_3108-8i_16PD_PIKE_II_3108-8i_240PD_PIKE_II_3108-4i4e_240PD/Driver/Linux/citrix6/di

# to select, 'n'-next page, 'p'-previous page or 'c'-continue: 2
DD: Checking device /media/DD-search/Drivers/PIKE_II_3108-8i_16PD_PIKE_II_3108-8i_240PD_PIKE_II_3108-4i4
.08.00_CitrixXen6.2-1.iso

Page 1 of 1
Driver disk device selection
      DEVICE      TYPE               LABEL            UUID
  1)  sda2        swap                                3ad22d43-64ca-40f4-944b-6bfacdc5a6c0
  2)  sda3        btrfs                               6cbb7e50-2202-4913-b3cf-09782a19042c
  3)  sda4        xfs                                 04d8c813-1023-4026-9d31-e48a4d507109
  4)  sdb1        vfat               RHEL-7_0 SE      2EC4-AA51
  5)  sdc1        vfat               PIKE II SER      E88A-BE43

# to select, 'r'-refresh, 'n'-next page, 'p'-previous page or 'c'-continue: c
```

3.1.3   SUSE Linux OS 12

1.   Copy or unzip the **dd.iso** file to a USB storage device then connect the USB storage device to your system.

> To get the **dd.iso** from the support CD, go to **Drivers > PIKE_II_3108-8i_16PD_PIKE_ II_3108-8i_240PD_PIKE_II_3108-4i4e_240PD > Driver > Linux > sles12 > disks-1.**To download **dd.iso** from the ASUS website, visit www.asus.com.

2.   Boot the system from the SUSE OS installation CD.

3.   From the initial installation page, press <F6> and select **Yes** to load the driver.
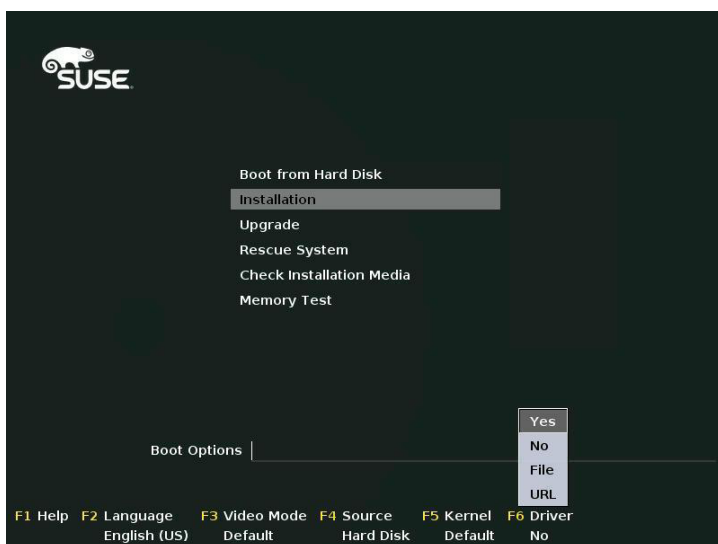
4. Follow on-screen instructions to continue with the installation.

```
Loading basic drivers... ok
Starting hardware detection... ok
(If a driver is not working for you, try booting with brokenmodules=driver_name.)

Intel Wellsburg sSATA Controller [AHCI mode]
  drivers: ahci*
Intel Wellsburg 6-Port SATA Controller [AHCI mode]
  drivers: ahci*
Activating usb devices... ok
A USB Flash Drive
  drivers: usb_storage*
JetFlash Transcend 64GB
  drivers: usb_storage*
AMI Virtual Floppy0
  drivers: usb_storage*
AMI Virtual HDisk0
  drivers: usb_storage*
AMI Virtual CDROM0
  drivers: usb_storage*
Intel Ethernet Controller 10-Gigabit X540-AT2
  drivers: ixgbe*
Intel Ethernet Controller 10-Gigabit X540-AT2
  drivers: ixgbe*
Intel I350 Gigabit Network Connection
  drivers: igb*
Intel I350 Gigabit Network Connection
  drivers: igb*
```

Simplified EU Declaration of Conformity

English ASUSTeK Computer Inc. hereby declares that this device is in compliance with the essential requirements and other relevant provisions of related Directives. Full text of EU declaration of conformity is available at: www.asus.com/support

Français AsusTek Computer Inc. déclare par la présente que cet appareil est conforme aux critères essentiels et autres clauses pertinentes des directives concernées. La déclaration de conformité de l'UE peut être téléchargée à partir du site Internet suivant : www.asus.com/support.

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Italiano ASUSTeK Computer Inc. con la presente dichiara che questo dispositivo è conforme ai requisiti essenziali e alle altre disposizioni pertinenti con le direttive correlate. Il testo completo della dichiarazione di conformità UE è disponibile all'indirizzo: www.asus.com/support

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Română ASUSTeK Computer Inc. declară că acest dispozitiv se conformează cerințelor esențiale și altor prevederi relevante ale directivelor conexe. Textul complet al declarației de conformitate a Uniunii Europene se găsește la: www.asus.com/support

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Online Support   https://www.asus.com/support/Product/ContactUs/Services/
                     questionform/?lang=nl-nl

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                     questionform/?lang=pl-pl

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                     questionform/?lang=ru-ru

DECLARATION OF CONFORMITY

Per FCC Part 2 Section 2. 1077(a)

Responsible Party Name: **Asus Computer International**

Address: **800 Corporate Way, Fremont, CA 94539.**

Phone/Fax No: **(510)739-3777/(510)608-4555**

hereby declares that the product

Product Name : PIKE Card

Model Number : PIKE II 3108-8i/16PD, PIKE II 3108-8i/240PD, PIKE II 3108-4i4e/16PD, PIKE II 3108-4i4e/240PD

Conforms to the following specifications:

☒ FCC Part 15, Subpart B, Unintentional Radiators

Supplementary Information:

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

Representative Person's Name : **Steve Chang / President**

Signature :

Date : **Apr. 07, 2015**

Ver. 140331