BlueData EPIC Installation Guide

VERSION 2.4

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1 - Preface

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Please see the *About EPIC Guide* for detailed information about EPIC, including:

- Key features and benefits
- Hadoop, Spark, and other application support
- Definitions
- Architecture
- Storage
- Users
- System requirements

Note: Please see the EPIC Lite Installation Guide for instructions on installing EPIC Lite, as that procedure is different than the full install described here.

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1.1 - About This Manual

This section describes the formatting conventions and information contained in this manual.

1.1.1 - Organization

This manual contains the following chapters:

- **1 - Getting Started:** Describes how this manual is formatted and organized.
- **2 - Installing EPIC:** Guides you through installing EPIC on the Controller and Worker hosts.

This manual also contains the following appendices:

- **A - Troubleshooting:** Helps you resolve issues that may arise while installing EPIC. Please see the *User/Administrator Guide* for information on troubleshooting while running EPIC.
- **B - Support:** Describes the BlueData Software, Inc. technical support policy for EPIC and includes contact information for obtaining support.

1.1.2 - Formatting Conventions

This manual uses several formatting conventions to present information of special importance.

Lists of items, points to consider, or procedures that do not need to be performed in a specific order appear in bullet format:

- Item 1
- Item 2

Procedures that must be followed in a specific order appear in numbered steps:

1. Perform this step first.
2. Perform this step second.

Specific keyboard keys are depicted in square brackets and are capitalized, for example: [ESC]. If more than one key should be pressed simultaneously, the notation will appear as [KEY1]+[KEY 2], for example [ALT]+[F4].

Interface elements such as document titles, fields, windows, tabs, buttons, commands, options, and icons appear in **bold** text.

Specific commands appear in standard `Courier` font. Sequences of commands appear in the order in which you should execute them and include horizontal or vertical spaces between commands.

Plain-text responses from the system appear in bold **`Courier`** font.

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This manual also contains important safety information and instructions in specially formatted callouts with accompanying graphic symbols. These callouts and their symbols appear as follows throughout the manual:

CAUTION: CAUTIONS ALERT YOU TO THE POSSIBILITY OF A SERIOUS ERROR, DATA LOSS, OR OTHER ADVERSE CONDITION.

Note: Notes provide helpful information.

The **Note** and **Caution** icons are blue in the main chapter, and gray in the appendices.

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1.2 - Additional Information

This section lists related documentation and provides information on contacting BlueData, Inc.

1.2.1 - Related Documentation

Please refer to the following documents for additional information:

- **About EPIC Guide:** This guide explains the EPIC architecture, features, and benefits. It also contains the End User License Agreement.
- **EPIC Lite Installation Guide:** This guide helps you install EPIC Lite, the free demonstration version of EPIC, on a single host.
- **User/Administrator Guide:** This guide describes the EPIC interface for Site Administrator, Tenant Administrator, and Member users.
- **Running Applications in EPIC:** This guide provides a brief overview of how to input data, run jobs, and access job output within EPIC.
- **Deployment Guide:** Certain platforms have additional requirements and/or procedures for installing and running EPIC.
- **App Store Image Authoring Guide:** Describes how Site Administrators can author new images and make them available in their local instance of the EPIC **App Store**.

1.2.2 - Contact Information

You may contact BlueData Software, Inc. at the following addresses:

BlueData Software, Inc.
3979 Freedom Circle, Suite 850
Santa Clara, California 95054
Email: info@bluedata.com
Website: www.bluedata.com

1.2.3 - End User License Agreement

Please review the EPIC End User License Agreement (EULA), which is included in the *About EPIC Guide*.

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2 - Installing EPIC

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This manual describes how to install the full version of EPIC on the Controller and Worker hosts. For instructions on how to install the EPIC Lite demonstration version on a single host (including VirtualBox and Amazon EC2), please see the *EPIC Lite Installation Guide*.

Installing EPIC on your Controller and Worker hosts consists of the following three phases:

- **Phase One - Command Line Installation:** The first phase of the EPIC installation process occurs at the command line. This is where EPIC installs onto the Controller host.
- **Phase Two - Completing the Installation:** After the command line installation completes, the next step is to access the Controller host via a Web browser to complete the installation by specifying the Controller IP address, the primary and (if used) secondary network interface(s) to use for the EPIC platform, and the disk to use for High Availability (HA).
- **Phase Three - Adding Worker Hosts:** The final phase of EPIC installation occurs once EPIC has been fully installed on the Controller host. In this phase, you log into EPIC and add one or more Worker host(s).

Note: Before installing EPIC, see "Bundle and OS Support" on page B-2 and "Bundle Extraction Options" on page B-2 for information about EPIC bundles, OS support, and extraction/verification options.

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2.1 - Downloading the EPIC Software

The following EPIC installer types are available:

- **CentOS full-release:** This installer is designed for offline installation. It does not support yum updates before or after installing EPIC.
- **CentOS minimal-release:** This installer is designed for online installation. It will support yum updates before and after installing EPIC.
- **RHEL minimalplus:** This installer is designed for online installation. It will support 'yum updates' before and after installing EPIC.

If you did not receive the EPIC software on a USB drive, then you may download the EPIC software using the following procedure:

1. Ensure that the host to which you will be downloading the EPIC software meets the following requirements:
   - Internet access.
   - At least 50GB of free storage space.
   - The `wget`, `gpg`, and `md5sum` programs must already be installed.
   - Linux operating system (CentOS, RHEL, or Ubuntu).
2. You will receive a copy of the EPIC downloader script. Make this script executable using the following command:

   ```
   chmod a+x bluedata-epic-<type>-<os>-
   <flavor>-release-<version>-
   <build>.bin.downloader
   ```

   Where:

   - `<type>` can be either `entdoc` (for EPIC) or `onedoc` (for EPIC Lite)
   - `<os>` is the operating system supported by this .bin file. This can be either `centos` (for CentOS) or `rhel` (for Red Hat Enterprise Linux).
   - `<flavor>` is the EPIC package type, or *flavor*. This will be either `eval` (EPIC Lite), `full` (CentOS with all **App Store** images and OS packages included), or `minimalplus` (RHEL with all **App Store** images included).
   - `<version>` is the EPIC version being downloaded.
   - `<build>` is the specific EPIC build number being downloaded.
3. Run the EPIC downloader.
4. The downloader will download the EPIC software from the specified URL. The software is broken into 1GB chunks to minimize disruption. If the download is interrupted, running the downloader script again will resume the download from the last intact chunk that was received.

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5. Copy the binary file to the machine that you will use as the Controller host. This file has the name `bluedata-epic-<type>-<os>-<release>-<version>-<build>.bin`. Please see Step 2 for a description of the filename options.
6. If you are upgrading to EPIC 2.4 from a previous version of EPIC and created any static network routes, then remove those routes before proceeding with the upgrade.

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2.2 - Phase One: Command Line Installation

This section guides you through the first phase of installing EPIC on the Controller host via the command line. Before beginning the installation, verify that all requirements described in the *About EPIC Guide* have been met for each of the following categories:

- General
- Hosts
- Operating system
- Network
- High Availability (if you are configuring this option)

CAUTION: INSTALLING EPIC ON ANY HOST THAT DOES NOT MEET ALL APPLICABLE REQUIREMENTS MAY LEAD TO UNPREDICTABLE BEHAVIOR AND/OR DATA LOSS.

If you are upgrading from a previous version of EPIC, then run the following commands from the Controller node (and Shadow Controller node, if HA is enabled). This will help roll back the upgrade if installation fails.

```
yum install -y yum-utils

repomanage -k1 -o -s /opt/bluedata/
repositories/bluedata/ | xargs rm -f

createrepo --update /opt/bluedata/repositories/
bluedata/
```

To install EPIC from the command line:

1. Install Red Hat Enterprise Linux 6.7/6.8 or CentOS 6.7/6.8 on the hosts that you will use for the Controller and Worker hosts.
2. Log into the host that you will be using as the Controller host using either the root account and password or your assigned username and password (see the *About EPIC Guide*).
3. Download the EPIC Enterprise binary (.bin) from BlueData Software, Inc. to the host that you will use as the Controller host. The size of the download will depend on the distribution(s) included and the flavor of the .bin file.
4. Make the .bin file executable by executing the command

   ```
   chmod a+x bluedata-epic-<type>-<os>-
   <flavor>-release-<version>-<build>.bin
   ```

   Where:

   - `<type>` can be either `entdoc` (for EPIC) or `onedoc` (for EPIC Lite)
   - `<os>` is the operating system supported by this .bin file. This can be either `centos` (for CentOS) or `rhel` (for Red Hat Enterprise Linux).
   - `<flavor>` is the EPIC flavor. This will be either `eval` (EPIC Lite), `full` (CentOS with all **App Store** images and OS packages included), or `minimalplus` (RHEL with all **App Store** images included).

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- `<version>` is the EPIC version being downloaded.
- `<build>` is the specific EPIC build number being downloaded.

5. Run the executable binary from the Linux console as the root user by typing `./<epic>.bin --int-gateway-ip <address> --floating-ip-start <address> --floating-ip-end <address> floating-ip-mask <mask> --floating-ip-extif <eth> --floating-ip-nexthop <address> --ssl-cert <path> --ssl-priv-key <path>`, where:
   - `<epic>` is the full name of the .bin file (see Step 4, above).
   - `<address>` is a specific IP address.
   - `<mask>` is the subnet mask to use, such as `24`. This creates a range of addresses that allows network access from outside the EPIC platform to the virtual nodes that EPIC will create as part of future clusters.
   - `--int-gateway-ip` is the IP address of the internal gateway.
   - `--floating-ip-start <address>` is the starting IP address of the floating IP range.
   - `--floating-ip-end <address>` is the ending IP address of the floating IP range.
   - `--floating-ip-mask <mask>` is the floating IP subnet mask to use.
   - `--floating-ip-extif <eth>` is the external Ethernet interface to use, such as `eth0`.
   - `--floating-ip-nexthop <address>` is the IP address of the external gateway, which is typically the "`x.x.x.1`" address on that network.

Note: You can modify these network settings during Phase Two of the installation. See "Phase Two: Completing the Installation" on page 14.

   - `--ssl-cert <path>` is the absolute path to the SSL certificate to use. This parameter is only required if you plan to access EPIC via HTTPS and not HTTP.
   - `--ssl-priv-key <path>` is the absolute path to the SSL private key to use. This parameter is only required if you plan to access EPIC via HTTPS and not HTTP.

CAUTION: DO NOT PLACE THE SSL CERTIFICATE OR PRIVATE KEY UNDER THE ROOT DIRECTORY.

   The installer checks the integrity of the EPIC bundle and then extracts the bundle contents and performs pre-installation checks. See "Pre-Installation Checks" on page 13.

6. The End User License Agreement (EULA) appears. Read through the EULA, pressing [SPACE] to page through the content. Once you have viewed the entire EULA, press `y` to accept it and continue installing EPIC.

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7. EPIC installs on the Controller host. A series of messages appear during the installation. The following message appears once the installation is complete:

```
Successfully installed BlueData software.
Please visit http://10.32.1.50/ to configure the server.
[root@yav-103 ~]#
```

Figure 2.1: Installation complete

This concludes the first phase of the EPIC installation. Note the URL provided, as you will use this to continue configuring EPIC. Please proceed to *"Phase Two: Completing the Installation" on page 14*.

Note: Please see "Troubleshooting" on page A-1 if you experience any errors during the installation.

2.2.1 - Pre-Installation Checks

All EPIC software bundles include pre-install checks that execute before the actual installer to verify that the EPIC platform meets all requirements for installing EPIC software. Each test displays results and may also display some additional text that explains the issue and how to resolve it, as follows:

- **PASSED:** The EPIC platform passed the particular test.
- **WARNING:** A problem was found but installation can continue.
- **FAILED:** The EPIC platform does not meet the requirement and installation cannot continue. A failure will include text indicating the cause and potential resolution(s). Resolve all **FAILED** tests before installing EPIC.

For example, the installer checks to see which network interface card(s) (NIC) have Internet connectivity.

- If multiple NICs can connect to the Internet, then a prompt appears asking you to select the NIC to use.
- If only one NIC can connect to the Internet, then the installer bypasses this step.
- If no NICs can connect to the Internet, the installer asks for the IP address of the proxy server being used for your network.

If prompted, enter either the number corresponding to the NIC to use to connect to the Internet or the IP address of the proxy server, and then press [ENTER].

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2.3 - Phase Two: Completing the Installation

The next step of the EPIC installation process is to configure EPIC using a Web browser to access the application. To do this:

1. Open a Web browser and navigate to the URL provided at the end of the command line installation process.

   The **EPIC Enterprise - Setup** screen appears.

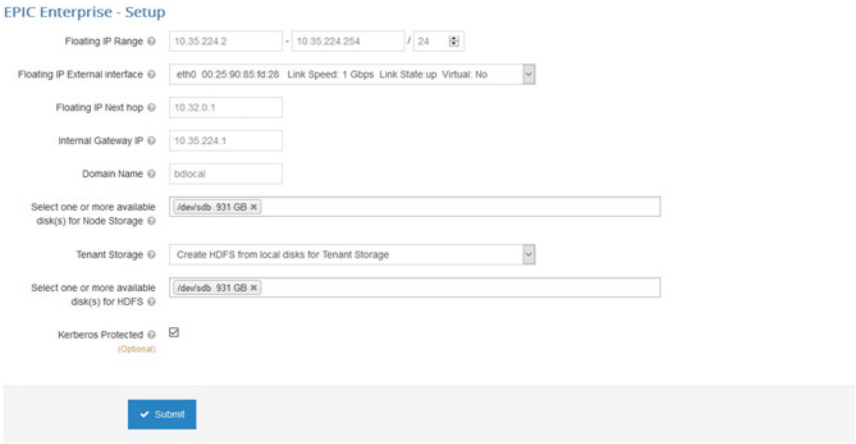

Figure 2.2: EPIC Enterprise - Setup screen

2. The floating IP address and range that you entered in Step 5 of the command line installation appears in the **Floating IP Range** and **CIDR** fields. This range of addresses allows network access from outside the EPIC platform to the virtual nodes that EPIC will create as part of future clusters. You may modify these values if needed.
3. The **Floating IP External Interface** pull-down menu displays the NIC that you selected for Internet access during the command line installation. Each host in the EPIC platform must use the same NIC to access the Internet. For example, if you selected the **eth0** NIC on the Controller host, then the **eth0** NIC on each Worker host must also be able to reach the Internet. You may select a different interface, if available and desired.
4. The **Floating IP Next hop** field is the IP address of the external gateway.
5. The **Internal Gateway IP** field is the IP address of the internal gateway.
6. The **Domain Name** field defines the DNS domain name that will be used for virtual nodes. For example, the domain name `bdlocal` will contain virtual nodes named `bluedata-1.bdlocal`, `bluedata-2.bdlocal`, etc. You may either accept the offered default or specify some other syntactically-valid domain name.

Note: Multiple EPIC platforms operating on the same network should each be configured with a unique domain name.

7. Use the **Node Storage** field to select one or more disk(s) to use for node storage. Clicking this field opens a pull-down menu that lists the available drive(s). If you make a mistake, click the **Remove** icon (X) for the disk(s) you want to remove.

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8. Use the **Tenant Storage** pull-down menu to select the type of system storage to use for EPIC tenants. The available options are:
   - If the hosts each have a second or third hard drive as described in the *About EPIC Guide* and you want to create local tenant storage using HDFS with Kerberos protections, then select **Create HDFS from local disks for Tenant Storage**.
   - To use an existing external HDFS file system as tenant storage, select **Use existing HDFS for Tenant Storage** and then enter the parameters described in *"HDFS" on page 22*.
   - To use an existing external NFS file system as system storage, select **Use existing NFS for System Storage** and then enter the parameters described in *"NFS" on page 22*.
9. If you are creating local HDFS system storage, then select one or more hard drive(s) to use for this storage in the **Select one or more available disk(s) for HDFS** field. Clicking this field opens a pull-down menu that lists the available drive(s). If you make a mistake, click the **Remove** icon (X) for the disk(s) you want to remove.
10. If you are creating local HDFS system storage, then checking the **Kerberos Protected** checkbox enables Kerberos protection for that storage.
11. Click **Submit** to finish installing EPIC on the Controller host.

EPIC displays a popup indicating that the installation process has started successfully.

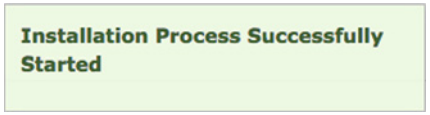

Figure 2.3: Installation Started popup

This popup is soon replaced by a status summary as the installation completes. If you like, you may click the green **Details** button to open a popup that displays additional information about the installation. Please allow about 20 minutes for this process to complete (actual time will vary depending on various factors).

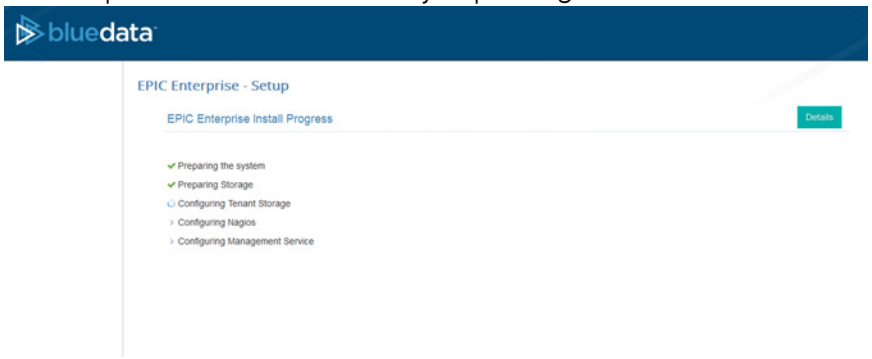

Figure 2.4: Completing the EPIC installation

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12. The **Bluedata software setup completed successfully** popup appears when the installation process is completed. Click the **Close** button to exit to the EPIC **Login** screen,

Figure 2.5: Installation completed

Please proceed to the next section to begin adding the Worker host(s).

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2.4 - Phase Three: Adding Worker Hosts

Once you have finished installing EPIC on the Controller host, the final step is to add the Worker host(s) to the EPIC platform. Each host must conform to the system requirements listed in the *About EPIC Guide* and any applicable *Deployment Guide*.

Note: This section provides a high-level overview intended to help you get up and running with EPIC as quickly as possible. Please see the User/Admin Guide for information about this screen and any applicable Deployment Guide for further directions.

To add one or more Worker host(s):

1. Access the EPIC **Login** screen by opening a Web browser and navigating to the Controller IP address.

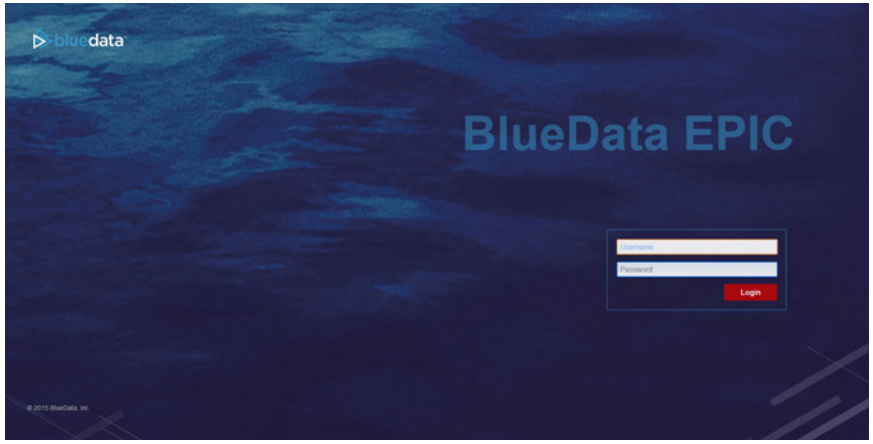

Figure 2.6: EPIC Login screen

2. Enter your username and password in the appropriate fields and then click the red **Login** button.
3. In the main menu, select **Installation**.

   The **Cluster Installation** screen appears.

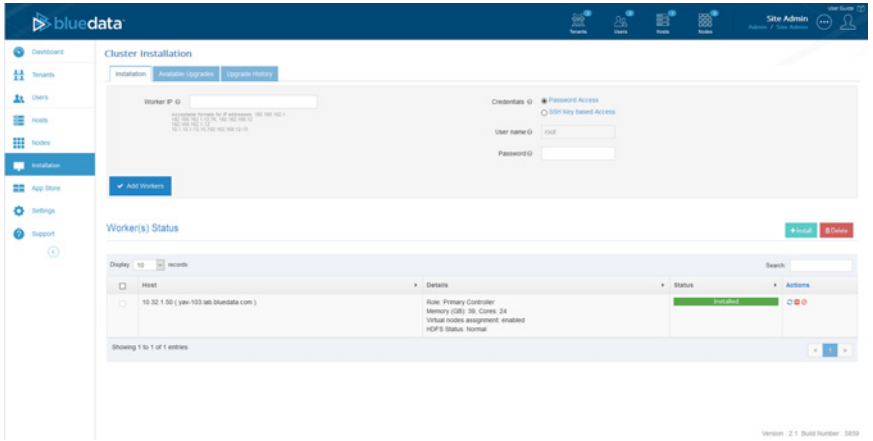

Figure 2.7: Cluster Installation screen

4. Enter the IP address(es) of the Worker host(s) that you wish to add to the EPIC platform in the **Worker IP** field. You may enter IP addresses as follows, being sure not to add any spaces:
   - **Single IP address:** Enter a properly formatted IP address, such as `10.10.1.1`.
   - **Multiple IP addresses:** Enter the first three octets of the IP addresses, and then separate each digit of the fourth octet

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with a commas, such as `10.10.1.1,2,5,8`. In this example, EPIC will install four Worker hosts with IP addresses of 10.10.1.1, 10.10.1.2, 10.10.1.5, and 10.10.1.8.

- **Multiple IP addresses:** Enter multiple IP addresses separated by commas, such as 10.10.1.1,10.10.1.2,10.10.1.5,10.10.1.8. In this example, EPIC will install four Worker hosts with the same IP addresses as the previous example.
- **IP address range:** Enter an IP address range, such as `10.10.1.1-8`. In this example, EPIC will install eight Worker hosts with IP addresses from 10.10.1.1 to 10.10.1.8.
- **Combination:** Use a combination of the above methods, such as `10.10.1.1,10.10.1.2,5,8,10.10.1.9-12`.

5. Select how to access the Worker host(s). Your available options are:
   - **Password access:** Check the **Password Access** radio button. The **User name** field will display the name of the user who installed EPIC. Enter the password for this user in the **Password** field. The selected user must already exist on each Worker node being added..

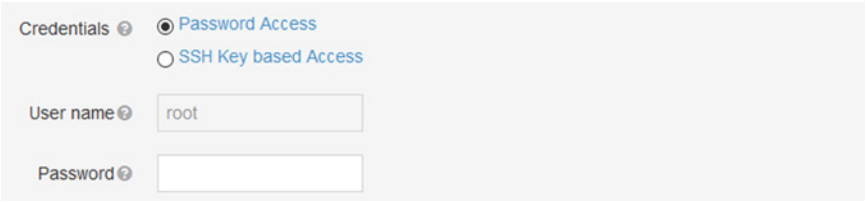

Figure 2.8: Password Access information

   - **SSH Key:** If the Worker host(s) have a public key installed to allow password-free access, then you may check the **SSH Key based Access radio** button. Upload the private key by clicking the **Private Key** field to open a standard **File Upload** dialog that allows you to browse for and select the key file. If the key requires a pass phrase, enter that phrase in the **Passphrase** field. The uploaded private key will only be used for initial access to the Worker host(s) and will not be permanently stored.

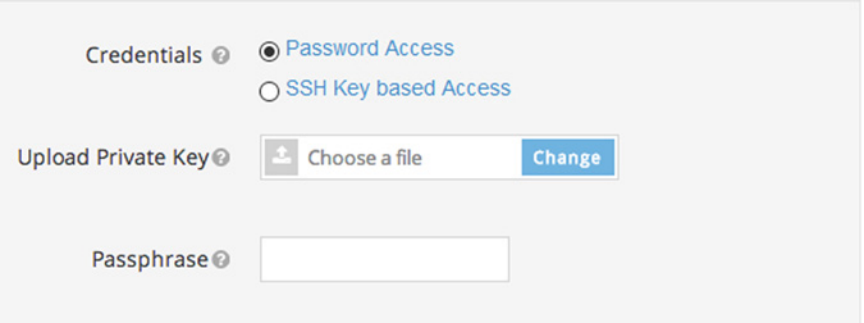

Figure 2.9: SSH Key information

6. Click the blue **Add Workers** button to install the selected Worker host(s).

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EPIC will prepare the selected Worker host(s). A series of colored indicator bars in the **Worker(s) Status** table will display the installation progress for each Worker host, as follows:

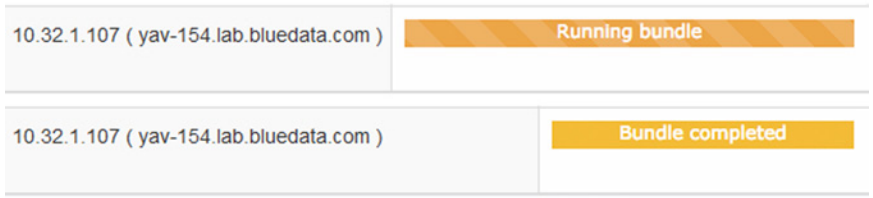

Figure 2.10: Worker host installation progress

- **Connecting:** EPIC is attempting to connect to the listed Worker host(s) using the public network interface that you selected earlier.
- **Running bundle:** EPIC has successfully connected to the listed Worker host(s) and is preparing those host(s).
- **Bundle completed:** EPIC has completed installing on the listed Worker host(s), which are ready to be added to the EPIC platform. If you added a host by mistake, you may remove them by clicking the red **Delete** icon (trash can). You may also delete multiple hosts by selecting them and then clicking the red **Delete** button above the table.

See the *About EPIC Guide* and the *User/Administrator Guide* for more information about High Availability functionality and how to enable High Availability protection within EPIC.

CAUTION: YOU WILL NOT BE ABLE TO REMOVE A MISTAKENLY-ADDED WORKER HOST OR HOSTS FROM THE EPIC PLATFORM ONCE YOU PROCEED TO THE NEXT STEP.

7. If you do not need to select one or more hard drive(s) to add to local HDFS system storage, then skip to Step 8. Otherwise, click the blue **Edit** icon next to a **Worker** host to open the **Advanced Worker settings** popup for that host.

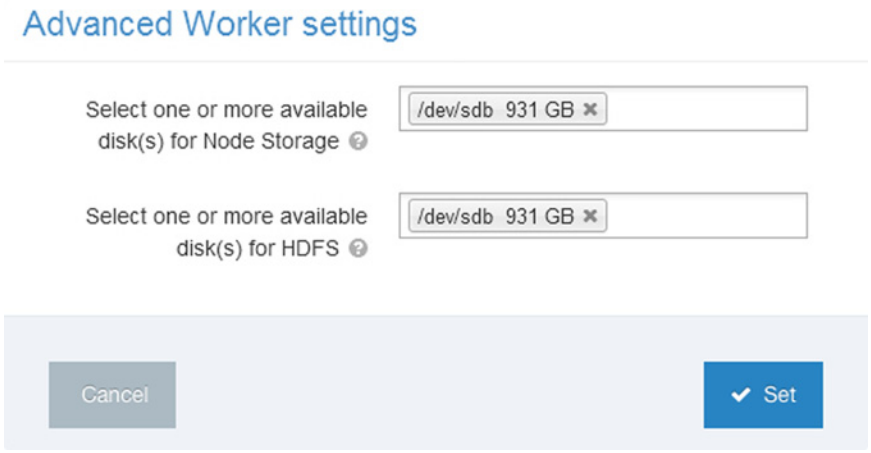

Figure 2.11: Advanced Worker settings popup

8. Select the drive(s) to use for node and HDFS storage, and then click the **Set** button. Repeat Steps 6 and 7 for any remaining Worker host(s).

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9. Place EPIC into Lockdown mode by opening the **Quick Access** menu and then selecting **Enter site lockdown.**

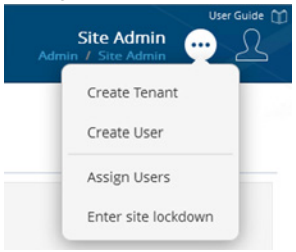

Figure 2.12: Entering Lockdown mode

The **Lockdown the system** popup appears.

10. Enter a descriptive reason for the lockdown in the **Enter Reason** field (such as `Adding new worker hosts`), and then click the **Submit** button.

11. Finish adding the Worker host(s) to the EPIC platform by checking the checkbox(es) corresponding to the host(s) you want to add and then clicking the blue **Install** button above the **Worker(s) Status** table.

12. The blue **Install Scheduled** and then the green **Installing** bar appear in the **Worker(s) Status** table for the selected Worker host(s) while EPIC finishes adding the host(s) to the EPIC platform. This status then changes to **Rebooting** while EPIC reboots the Worker host to complete the addition.

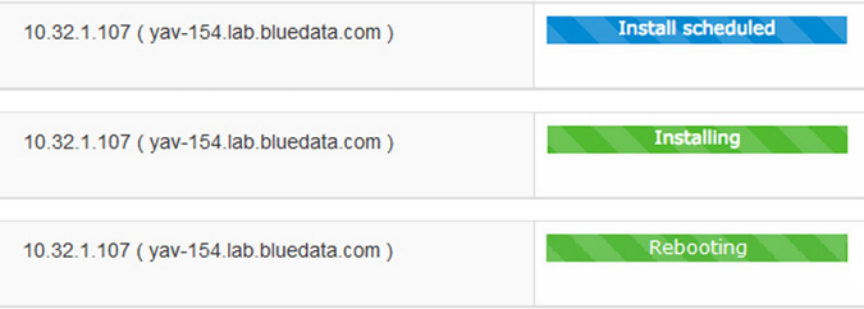

Figure 2.13: Finishing the Worker installation

13. Once this process is completed, the added host(s) will appear as **Installed** in the **Worker(s) Status** table.

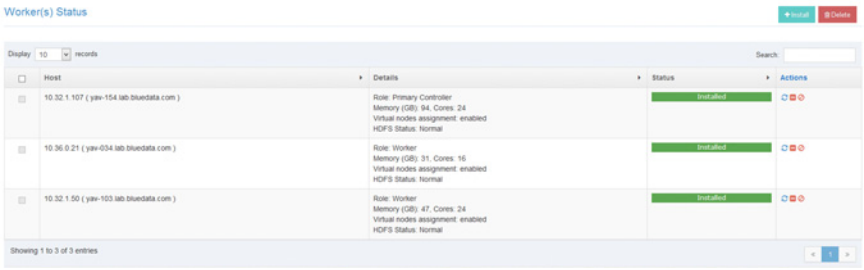

Figure 2.14: Worker hosts successfully added

14. Exit Lockdown mode by opening the **Quick Access** menu and then selecting **Exit site lockdown**.

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Once you have finished adding Worker host(s), you may view the status of each host by clicking **Dashboard** in the main menu to open the **Dashboard** screen, and then selecting the **Services** tab, which presents detailed status information for each Worker host.

Note: You may only perform one set of Worker host installations to one or more host(s) at once. To save time, consider adding all of the Worker hosts at once by entering multiple IP addresses as described above.

*Note: Verify that the Worker host(s) have finished rebooting before attempting to create a virtual cluster. Check the **Service Status** tab of the **Dashboard** screen to ensure that all services are green before proceeding.*

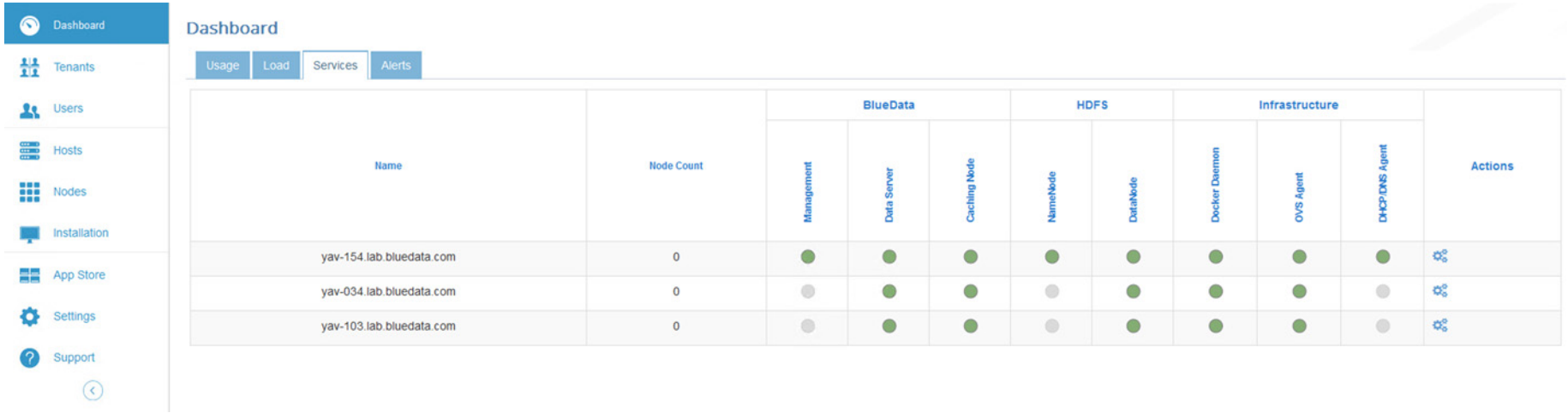

Figure 2.15: Site Admin Dashboard screen - Service Status tab

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2.5 - External Storage Parameters

This section describes the parameters used by EPIC when selecting external (existing) storage using the **EPIC Enterprise - Setup** screen.

2.5.1 - HDFS

If you selected **Use existing HDFS for System Storage**, then enter the following parameters:

- **Host:** Enter either the hostname or IP address of the HDFS namenode in the **Host** field.
- **Standby namenode:** Enter the hostname or IP address of the HDFS standby namenode, if any, in this field.
- **Port:** Enter the namenode port number in the **Port** field. Leave blank to use the default HDFS namenode port
- **Path:** Enter the HDFS directory to use for system storage in the **Path** field. Leave blank to use the HDFS file system root.

2.5.2 - NFS

If you selected **Use existing NFS for System Storage**, then enter the following parameters:

- **Host:** Enter either the hostname or IP address of the file system host in the **Host** field.
- **Share:** Enter the name of the share in the **Share** field.
- **Path:** Enter the directory under the share to use for system storage in the **Path** field. Leave blank to use the root of the specified share.

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3 - Upgrade Information

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3.1 - Upgrading EPIC

EPIC uses lightweight (LW) upgrade bundles that are tailored for upgrading to a specific release and not designed for full product installation. Full product installation requires one of the full installation bundles. EPIC no longer supports upgrades using full installation bundles; you must upgrade EPIC using the appropriate upgrade bundle.

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3.2 - App Store Upgrades

LW bundles do not include App Store upgrades. If your EPIC installation can access S3, then you can visit the App Store screen as a Site Administrator and upgrade individual apps as needed. An offline workflow is also supported for EPIC installations that do not have access to S3 or where a manual app upgrade is preferred.

3.2.1 - Manually Updating an App Store Image

To manually upgrade an App Store image:

1. Download all the required catalog bundles and place them in the `/srv/bluedata/` directory on the Controller Node.

Note: If HA is configured, then follow these instructions on the current Primary Controller node.

2. Download the `appstore` refresh script and place it in the `/tmp` directory on the Controller node. You must do this as the same user who installed BlueData EPIC. If the script was downloaded on a Windows machine, please use the `dos2unix` utility to remove any windows line terminations.
3. Log in to the current Primary Controller node and execute each of the catalog bundles that you downloaded in Step 1.
4. Execute `chmod +x /tmp/appstore_refresh.sh; /tmp/appstore_refresh.sh`.
5. Log in to the EPIC web UI as the Site Administrator and then go to the App Store screen.
6. Follow the installation/upgrade instructions for all of the App Store entries that you installed in Step 3. You may then delete the bundles that you downloaded in Step 1.

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A - Troubleshooting

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A.1 - Pre-Installation Errors

This section contains instructions that may help you if you run into problems while installing EPIC. See the *User/Administrator Guide* for information on troubleshooting post-installation problems with hardware or software.

A.1.1 - Large File Support

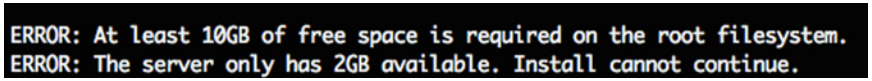
Bundle files can only be executed from file systems that support large files and allow execution. The following image displays an error that may occur when attempting to install EPIC on a file system without large file support.

Resolution: Move the bundle to a file system that supports large files and allows execution. Please refer to your file system documentation for instructions.

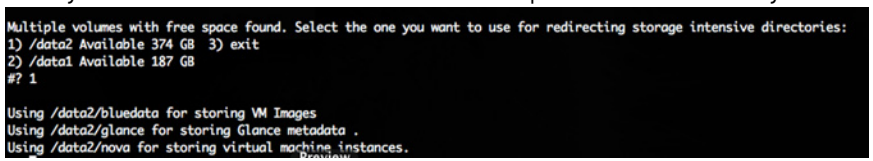
A.1.2 - Not Enough Space on Root File System

You may receive one of the following errors

- Singe file system does not have enough free space (EPIC Lite only):

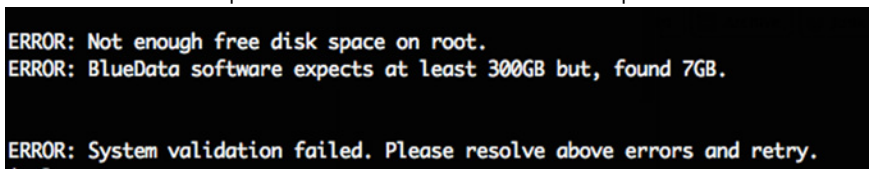


- Multiple file systems have free space available, but the root file system does not have sufficient free space (EPIC Lite only):



- The file system chosen (either automatically or by the user) does not have enough free space (EPIC Lite only):

- Stricter free space enforcement for the Enterprise SKU:



Resolution:

- If more space is available at some other mount point and you use logical volumes, then reallocate the space from one of the other logical volumes to the root file system.
- If you don't use logical volumes, you will have to either:

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- Find another means of expanding the partition on which the root file system exists, or
- Reinstall the OS with appropriately-sized root file system.

```
$> lvs
  LV      VG       Attr       LSize   Pool Origin Data%  Move Log Cpy%Sync Convert
  lv_home VolGroup -wi-ao---- 865.29g
  lv_root VolGroup -wi-ao----  50.00g
  lv_swap VolGroup -wi-ao----  15.73g
$> umount /home
$> vi /etc/fstab
$> lvremove /dev/VolGroup/lv_home
Do you really want to remove active logical volume lv_home? [y/n]: y
  Logical volume "lv_home" successfully removed
$> lvextend -l +100%FREE /dev/VolGroup/lv_root
  Extending logical volume lv_root to 915.29 GiB
  Logical volume lv_root successfully resized
$> resize2fs /dev/VolGroup/lv_root
resize2fs 1.41.12 (17-May-2010)
Filesystem at /dev/VolGroup/lv_root is mounted on /; on-line resizing required
old desc_blocks = 4, new_desc_blocks = 58
Performing an on-line resize of /dev/VolGroup/lv_root to 239938560 (4k) blocks.
```

A.1.3 - Host Name Does Not Resolve

The host name does not resolve to the IP address of the Public/ Management interface.

```
Using eth1:192.168.1.11 as primary interface
Skipping internet connectivity check for bundle flavor 'offline'.
WARNING: eth1 with 192.168.1.11 was chosen as the primary interface. Hostname (yav-028.lab.bluedata.com) resolves to a differ
ent ipadddress 10.36.0.25. This will be ok as long as the hostname of the system does not change.
Do you want to continue despite the warning?
1) continue
2) exit
#?
```

Resolution: You can install EPIC with this configuration; however, the host name of the server must never change once the software is successfully installed.

A.1.4 - Enabling SELinux

If SELinux is disabled, then the bundle script will display the warning message **SElinux is disabled**. This does not affect EPIC's functionality. However, if EPIC is installed with SELinux disabled, you must leave SELinux disabled in order for EPIC to continue to function.

A.1.5 - Not Enough Physical Disks

EPIC requires at least two physical disks on the server.

```
ERROR: Setup requires at least one extra disk to continue.


ERROR: System validation failed. Please resolve above errors and retry.
```

Resolution: You must add another physical disk to continue. At the moment, we do not support Logical Volumes and software raids. You may configure your physical server's RAID controller to create another volume or disk for the operating system.

A.1.6 - Normal Console Message

The following console message is expected during bundle installations:

```
Complete!
/opt/bluedata/bundles/bluedata-epic-ent-offline-release-1.1-2001/iucomponents/common.sh: line 102: 18393 Terminated
    $BUNDLE_DIR/$COMPONENTS_DIR/yum-poller.sh "$YUM_ACTION"
```

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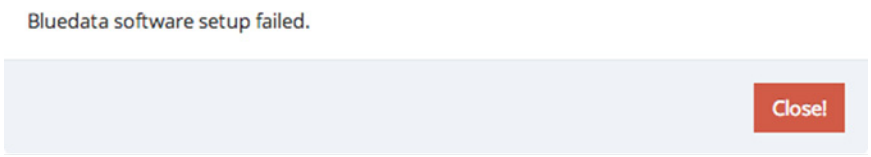
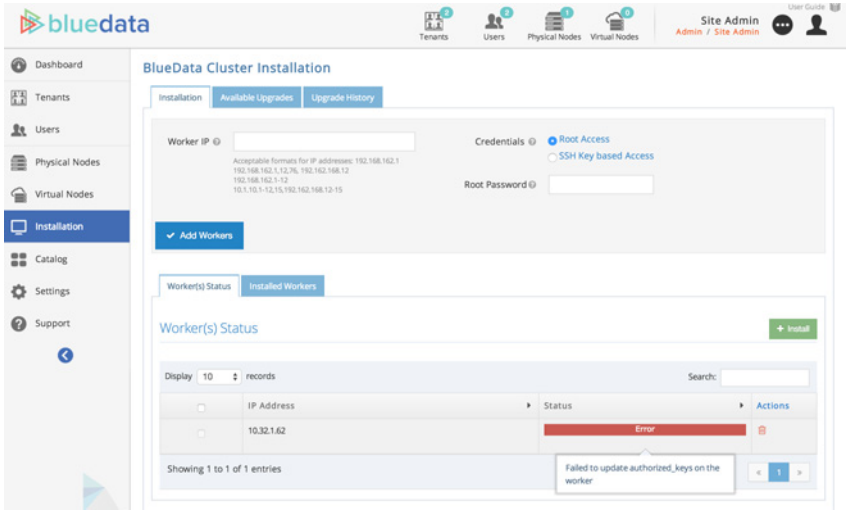
A.2 - Installation Errors

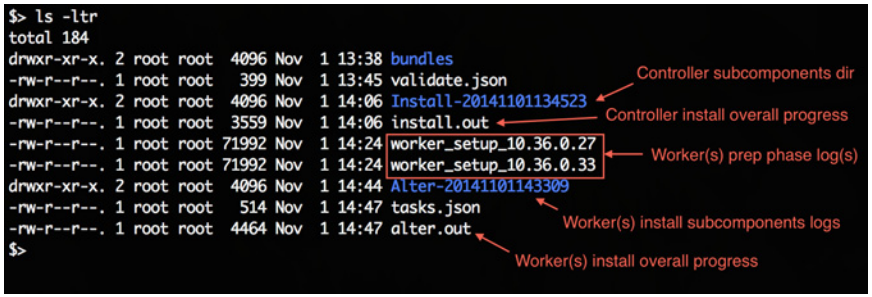
Installation failures start with the following error message:



Alternatively, Worker host installation may fail with the following error:



All installation logs are written to the **/srv/bluedata** directory on the Controller host for both Controller and Worker host installation using the web-based interface.



Sub-component log directories will have log files for each sub-component's execution, which will provide more information.

A.2.1 - YUM MultiLib Version Errors

There are many reasons why YUM may throw a multilib version error. Please refer to the Red Hat documentation at *https://access.redhat.com/solutions/57783* for help resolving these problems. Use the **yum-config-manager** to set the required options (and work around the issues displayed in the previous image).

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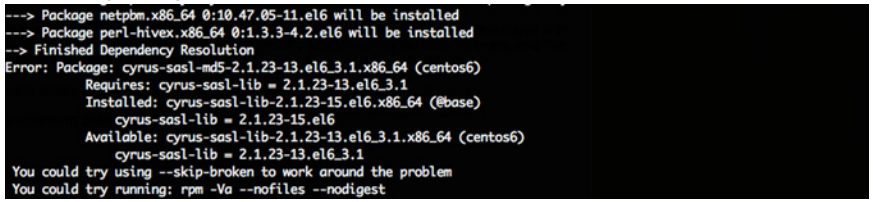
A.2.2 - RPM Version Error 1

You may receive an error saying that a newer version of an RPM or a dependency is already installed. This error may look similar to the following image:



Resolution:

- One way to recover is to erase the newer (already installed) version and try again. When erasing through YUM, it may end up treating almost all the packages on the system as dependencies and trying to erase everything. This often happens when the RPM that you are trying to delete installs some shared libraries. Avoid using the `-y` options when you are in this situation.
- If the above problem prevents you from performing a YUM erase, you can try to use `rpm -e` directly. First, find the version of the RPM required in the error log and copy it to a known location. Execute `rpm -e` on the existing installed version of the rpm and immediately install the required version using `rpm -ivh`.

The preceding solutions may fail with some of the core RPMs, leaving the system in an unusable state. Attempts to execute any binary will return an error saying that some library is missing. The only recourse in this case is to reinstall the OS fresh.

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B - Support

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B.1 - Support

If you experience any problems with EPIC, please email support@bluedata.com. We will respond as soon as possible.

BlueData never receives your actual data when you send logs or SOS reports to us.

B.1.1 - Bundle and OS Support

EPIC is available in the following bundles:

- **Minimal:** This bundle type includes the following:
  - **RHEL 6.7/6.8 Support:** Yes
  - **CentOS 6.7/6.8 Support:** Yes
  - **OS RPM repository access required:** Yes
  - **Bundle size:** Approximately 300MB
- **Full:** This bundle type supports the following:
  - **RHEL 6.7/6.8 Support:** No
  - **CentOS 6.7/6.8 Support:** Yes
  - **OS RPM repository access required:** No
  - **Bundle size:** Approximately 7GB

B.1.2 - Bundle Extraction Options

EPIC installation bundles offer the following extraction/verification options:

- `-x/--extract`: Extract the bundle and exit.
- `--verify-only`: Verify bundle integrity and exit.
- `-n/--no-verify`: Skip bundle checksum verification.

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