




Dell MD1280 Storage Enclosure Deployment Guide



Notes, cautions, and warnings

-  **NOTE:** A NOTE indicates important information that helps you make better use of your computer.
-  **CAUTION:** A CAUTION indicates either potential damage to hardware or loss of data and tells you how to avoid the problem.
-  **WARNING:** A WARNING indicates a potential for property damage, personal injury, or death.

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Introduction

 **CAUTION:** See the **Safety, Environmental, and Regulatory Information** document for important safety information before following any procedures listed in this document.

An enclosure containing physical disk drives accessed through Enclosure Management Modules (EMMs) is called a storage enclosure. A storage enclosure includes various hardware components such as physical disk drives, EMMs, fans, and power supply units (PSUs). One or more host servers attached to the storage enclosure can access the data on the storage enclosure. You can also establish multiple physical network paths between the hosts and the storage enclosure so that loss of any single path (for example, through failure of a host server port) does not result in loss of access to data on the storage enclosure.


The storage enclosure is managed by the Storage Enclosure Management software running on a host server. On the host server system, the management software and the storage enclosure communicate management requests and event information by using in-band SAS connections.

Terminology

- **Storage Enclosure:** When the MD1280 is attached to a server directly or other MD1280 enclosures, it is referred to as a Storage Enclosure. This document applies to the deployment and configuration of the MD1280 as a Storage Enclosure.

The deployment process includes:

- Hardware installation
- Initial system configuration
- Storage Enclosure Management Software installation

 **NOTE:** For more information about product documentation, see Related Documentation available at Dell.com/support.


The Storage Enclosure Management Software tools enable an administrator to monitor and update the storage enclosure for optimum usability. The Storage Enclosure Management Software is supported on various Microsoft Windows and Linux operating systems (OSs). For more information about specific supported OSs, refer to the *MD1280 Support Matrix* at Dell.com/support/home.

System requirements

Before installing and configuring the Dell Storage MD1280 series hardware and software, ensure that the supported OS is installed and minimum system requirements are fulfilled. For more information, see the *Dell MD1280 Support Matrix* at Dell.com/support/home.

 **NOTE:** Dell supports Microsoft Windows and Linux host OSs with the Dell Storage MD1280 series enclosure. For more information about the specific OSs supported by storage enclosure, refer to the *Dell MD1280 Support Matrix* available at Dell.com/support/home.

Documentation matrix

 **NOTE:** For all Dell Storage documentation, go to Dell.com/support/home and enter the system Service Tag to get your system documentation.

Your product documentation includes:

- *Dell Storage MD1280 Owner's Manual* : Provides information about system hardware features and describes how to troubleshoot the system and install or replace system components. This document is available at Dell.com/support/home.
- *Dell Storage MD1280 Support Matrix*: Provides information about the software and hardware compatibility for the MD1280 storage enclosure. This document is available at Dell.com/support/home.
- *Setting Up Your Dell Storage Enclosure*: Provides an overview of system features, setting up your system, and technical specifications. This document is also shipped with your system. This document is available at Dell.com/support/home.
- *Enclosure Administrators Guide* : Provides information about how to configure, manage, and update your Storage Enclosure. This document is available at Dell.com/support/home.
- The Rack Installation instructions: Provides information about installing your system in the rack your system. This document is shipped with your system.

Hardware installation

Before using this guide, ensure that you review the instructions in the following documents:

- *Setting Up Your Dell Storage Enclosure* — Provides an overview of system features, setting up your system, and technical specifications. This document is also shipped with your system.
- *Enclosure Administrators Guide* — Provides information about how to configure, manage, and update your Storage Enclosure. This document is available at Dell.com/support/home.
- The Rack Installation instructions — Provides information about installing your system in the rack your system. This document is shipped with your system.

Connecting the storage enclosure

The storage enclosure is connected to hosts by using one or both of the two EMMs (Enclosure Management Modules). The EMMs are identified as EMM 0 and EMM 1. The ports on the EMMs and their functions are listed here:

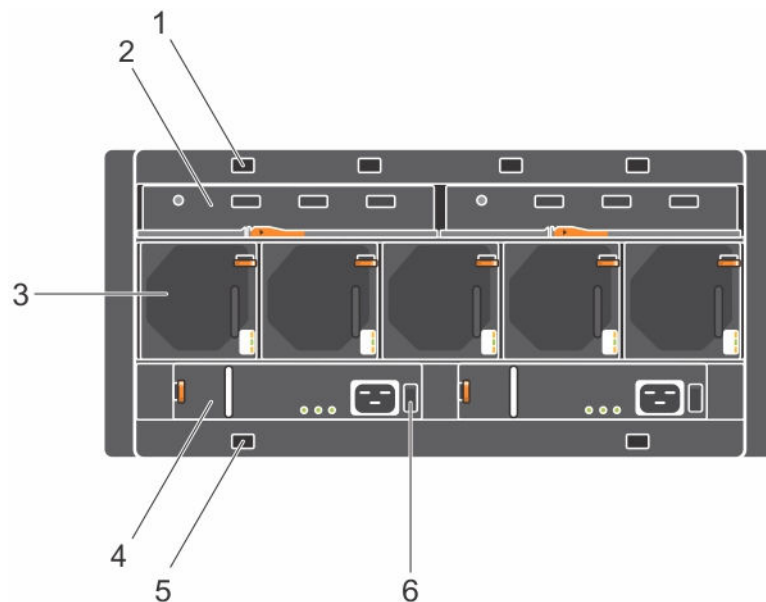





Figure 1. Ports on the MD1280 storage enclosure

- | | |
|---------------------------------------|--------------------------------------|
| 1. Optional cable retention positions | 2. Expansion Enclosure Modules (EMM) |
| 3. Cooling fans | 4. Power supply units |
| 5. Optional cable retention positions | 6. Power switch |

Cabling the storage enclosure

There are a number of methods to cable the Dell Storage MD1280 series storage enclosure to host servers and to additional Dell Storage MD1280 series storage enclosures. The particular configuration selected depends on storage capacity, level of resiliency of both the server and storage enclosure, and the OS being used.

-  **NOTE:** The maximum supported SAS cable length is 4 m.
-  **NOTE:** Only two systems can be daisy chained behind one HBA or RAID card.
-  **NOTE:** All connections from host server to storage enclosure and from storage enclosure to storage enclosure are made by using SAS cables with SFF-8088 mini-SAS connectors.

Windows

There are three types of configurations supported for Windows host servers:

- Single Path configuration: This uses a simplified cabling scheme, but does not provide redundancy or fault-tolerance. Use this when the OS or a higher-level application is being used for data resiliency.
- Symmetric Multipath configuration: This uses a cascading configuration that provides path redundancy, but does not provide against enclosure loss.
- Asymmetric Multipath configuration: This uses a high availability configuration that allows the host server to reach any enclosure if a path or single enclosure is lost.

For multipath configurations, Microsoft Multipath I/O (MPIO) must be configured. Dell recommends the usage of Fail Over Only policy.

Single Server configurations

This section provides information related to the single server configurations:

- Single server dual I/O card symmetric configuration
- Single server dual I/O card asymmetric configuration
- Single server single I/O card symmetric configuration
- Single server single I/O card asymmetric configuration

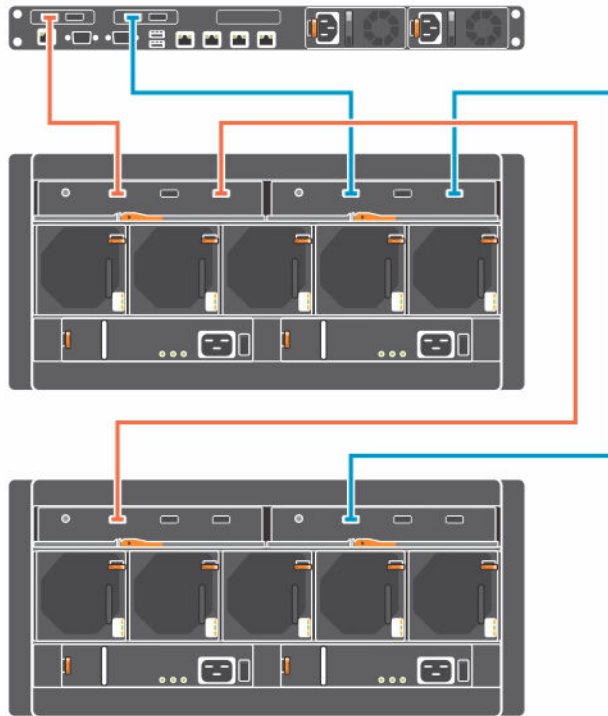


Figure 2. Single server dual I/O card symmetric configuration

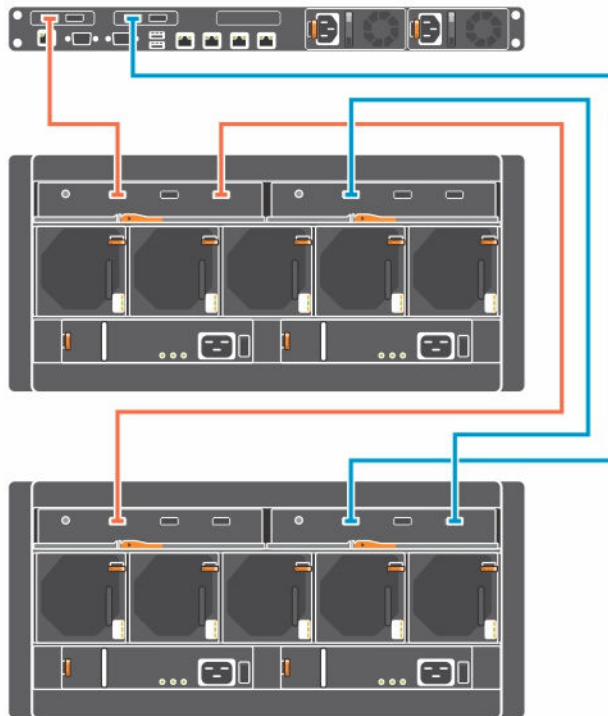


Figure 3. Single server dual I/O card asymmetric configuration

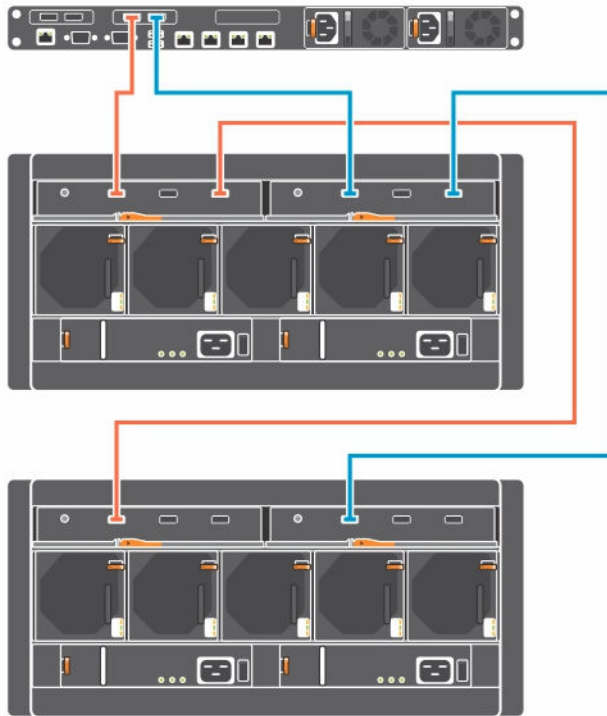


Figure 4. Single server single I/O card symmetric configuration

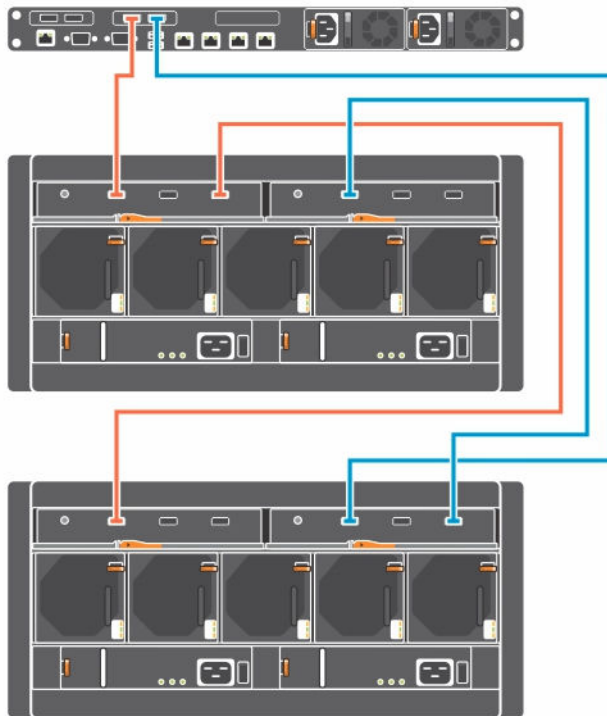


Figure 5. Single server single I/O card asymmetric configuration


Linux

There are three types of configurations supported for Linux host servers:

- Single Path configuration: This uses a simplified cabling scheme, but does not provide redundancy or fault-tolerance. Use this when the OS or a higher-level application is being used for data resiliency.
- Symmetric Multipath configuration: This uses a cascading configuration that provides path redundancy, but does not provide against enclosure loss.
- Asymmetric Multipath configuration: This uses a high availability configuration that allows the host server to reach any enclosure if a path or single enclosure is lost

For multipath configurations, Linux Device Mapper Multipath (DMMP) must be configured. Dell recommends Failover policy. To ensure proper functionality, verify the following values are set in **/etc/multipath.conf**:

- `path_grouping_policy failover`
- `failback manual`

 **NOTE:** For more information about supported Linux OSs, see the *Dell Storage Enclosure Support Matrix* available at Dell.com/support.

Linux Single Path configuration

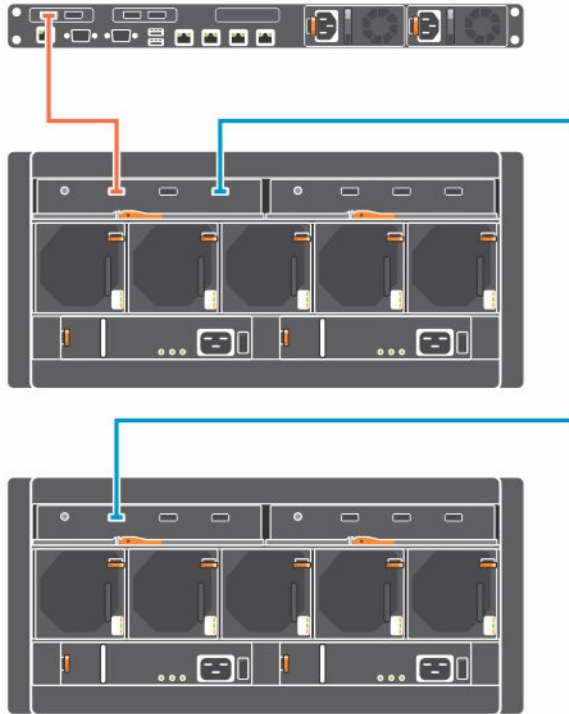


Figure 6. Linux Single Path configuration

Linux Symmetric Multipath configuration

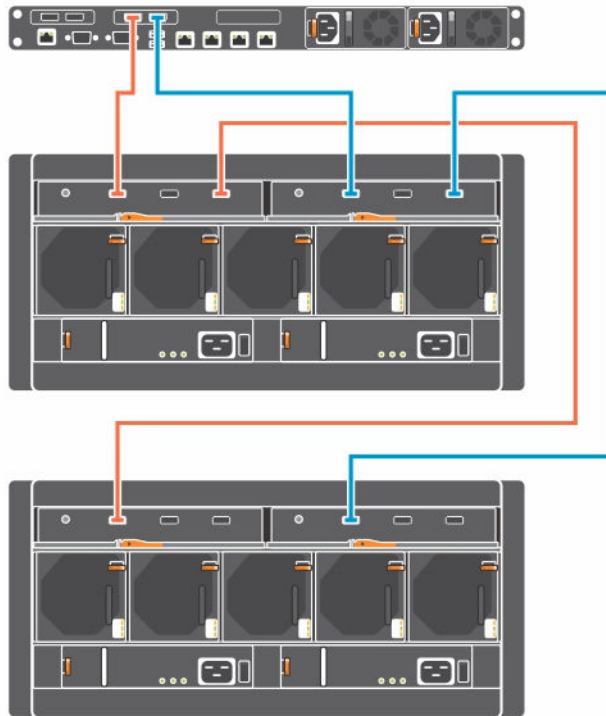


Figure 7. Linux Symmetric Multipath configuration

Linux Asymmetric Multipath configuration

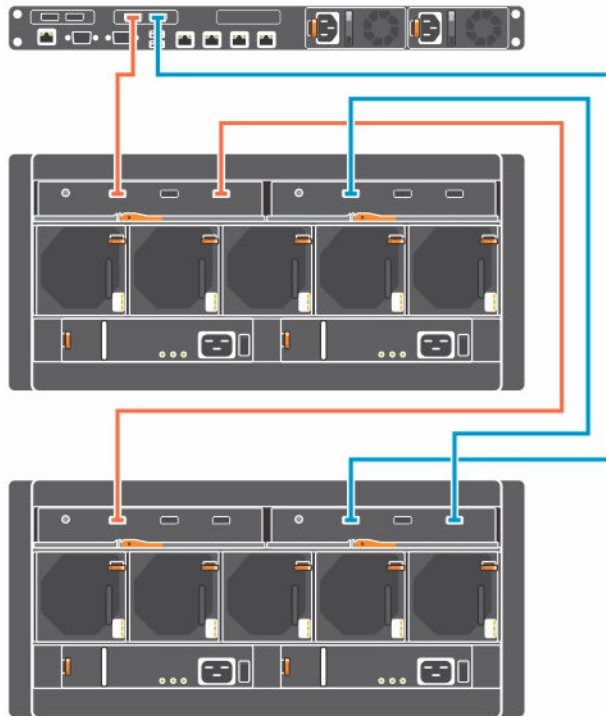


Figure 8. Linux Asymmetric Multipath configuration

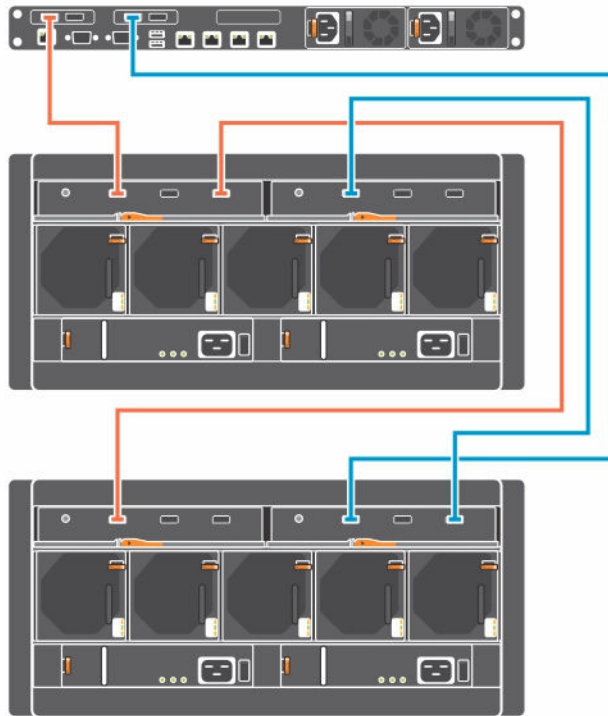



Figure 9. Linux Asymmetric Multipath configuration

Installing Storage Enclosure Management Software

This section provides the information related to installing Storage Enclosure Management Software.

Installing HBAs and drivers

1. Install the Host Bus Adapters (HBAs).
2. Connect the cables.
3. Install the HBA drivers and the OS HBA patches or hotfixes.

 **NOTE:** The HBA or RAID card drivers are available at <http://www.avagotech.com/support/download-search> and the complete the LSI instructions.

4. Ensure that the recommended HBA settings are applied.

Storage Enclosure Management installation for Windows

Graphical installation


1. Download the **Storage Enclosure Management Software** installation package from **Dell.com/support**.
2. Navigate to the download directory of the installer.
3. Double-click the installation program: **StorageEnclosureManagement-x.x.x.x-windows-installer.exe** or **StorageEnclosureManagement-x.x.x.x-Ubuntu14-installer.tar.gz**.
4. Complete the on-screen instructions and accept **End User License Agreement**.

 **NOTE:** Installation of the SNMP monitoring service is optional.

After successful installation, open an elevated command prompt and you will be able to run shmcli commands from the command prompt.

Silent installation

1. Download the Storage Enclosure Management Software installation package from **Dell.com/support**.
2. Run the command prompt as an administrator.

 **NOTE:** The command prompt must be an administrator prompt for proper use of the CLI.

3. Navigate to the download directory of the extracted installer.

4. Run the installation program by running the command:
`StorageEnclosureManagement-x.x.x.x-windows-installer.exe --mode unattended`
or modify `options.installer` and run with switch `--options C:\path\to\installer.options` for a non-default install.

This command installs the Storage Enclosure Management Software with all the default settings. The default installation directory is **C:\Program Files\Dell\ StorageEnclosureManagement**.


5. Accept all **End User License Agreements**.

 **NOTE:** There is no Windows console mode installation.


Storage Enclosure Management installation for Linux

Graphical installation

1. Download the Storage Enclosure Management Software installation package from **Dell.com/support**.
2. Navigate to the download directory of the installer.
3. Double-click the installation program: **StorageEnclosureManagement-x.x.x.x-<OS>-installer**.
4. Complete the on-screen instructions and accept **End User License Agreement**.

 **NOTE:** You can choose to start the SNMP monitoring service after installation is complete.

Silent installation

 **NOTE:** Linux installation requires full 'root' user rights. Console installation is no longer available. Instead, run the installer with switch `--mode unattended` for the default installation. A default installation requires no arguments.

1. Download the Storage Enclosure Management Software installation package from **Dell.com/support**.
2. Navigate to the directory containing the extracted installer.
3. Run the command:
`StorageEnclosureManagement-x.x.x.x-<OS>-installer --mode unattended`

This command installs the Storage Enclosure Management with all the default settings.

4. Accept all **End User License Agreements**. The default installation directory is **/opt/Dell/StorageEnclosureManagement**.
5. To change the installation directory, uncomment and edit the following line in the `installer.options` file:
`;prefix=/opt/dell/StorageEnclosureManagement`
6. To start the SNMP daemon after installation, set the value `SNMP` to 1.
`SNMP=1`
7. Run the command:


```
StorageEnclosureManagement-x.x.x.x-<OS>-installer --mode unattended --options /path/to/installer.options
```


After successful installation, you can run the `seclishmcli` commands from the terminal.

Uninstalling Storage Enclosure Management software

This section provides information related to uninstalling Storage Enclosure Management Software for Windows and Linux.

Windows

 **NOTE:** If you installed the program silently, the uninstallation is silent.

 **NOTE:** The shmcli log file remains after the uninstallation is complete.

1. To uninstall a software application, on the taskbar, click **Start** → **Control Panel** → **Programs** → **Features**.
2. Click **StorageEnclosureManagement**, and then select **Uninstall**.
3. Complete the on-screen instructions to complete the uninstallation.

Command prompt

1. Run the command prompt as an administrator.
2. Navigate to the installation directory.


The default directory is: `C:\Program Files\Dell\StorageEnclosureManagement`.


3. Run the uninstallation program:

```
StorageEnclosureManagement_uninstall.exe.
```

For silent uninstallation: `StorageEnclosureManagement_uninstall.exe --mode unattended`

Linux

 **NOTE:** Linux uninstallation requires full root user permissions.

 **NOTE:** If you installed the program silently, the uninstallation is silent.

 **NOTE:** The shmcli log file is not deleted from the system after uninstallation.

1. Navigate to the installation directory.

The default directory is: `/opt/Dell/StorageEnclosureManagement`

2. Run the program:

```
StorageEnclosureManagement_uninstall.
```

For silent uninstallation: `StorageEnclosureManagement_uninstall --mode unattended`

3. Complete the on-screen instructions to complete the uninstallation.

Getting help

Contacting Dell

Dell provides several online and telephone-based support and service options. If you do not have an active internet connection, you can find contact information on your purchase invoice, packing slip, bill, or Dell product catalog. Availability varies by country and product, and some services may not be available in your area. To contact Dell for sales, technical assistance, or customer-service issues:

1. Go to **Dell.com/support**.
2. Select your country from the drop-down menu on the bottom right corner of the page.
3. For customized support:
 - a. Enter your system Service Tag in the **Enter your Service Tag** field.
 - b. Click **Submit**.
4. For general support:
 - a. Select your product category.
 - b. Select your product segment.
 - c. Select your product.

The support page that lists the various support categories is displayed.

The support page that lists the various support categories is displayed.

Locating Service Tag of your system

Your system is identified by a unique Express Service Code and Service Tag number. The Express Service Code and Service Tag are found on the chassis label. Alternatively, the information may be on a sticker on the chassis of the system. This information is used by Dell to route support calls to the appropriate personnel.