IBM TotalStorage FAStT EXP100 Storage Expansion Unit Release Notes

Designed for data archival, data reference, and near-line storage applications, the IBM® TotalStorage® FAStT EXP100 Storage Expansion Unit enables the attachment of Serial Advanced Technology Attachment (SATA) disk drives for FAStT600, FAStT900, and FAStT100 storage servers. The FAStT EXP100 is designed to satisfy the needs of fixed-content data reference applications that require large amounts of storage capacity, but do not require high utilization and access rates. The FAStT EXP100 uses the latest SATA disk drive technology and is designed with redundant 2 Gbps fibre-channel connections to the FAStT storage server, offering reliability and performance.

The new release (R2) of the FAStT EXP100 enables full failover capability in case of loss of connectivity due to bad components in the drive paths, or due to ESM failure. The R2 release of the FAStT EXP100 also enables background controller and ESM microcode updates concurrent with I/O operations. The R1 release of the FAStT EXP100 does not have this capability, however, so the upgrade from R1 to R2 must be made without I/O activity, including background firmware operations, to the storage server at the time of the upgrade. These capabilities, as well as the process for upgrading an existing FAStT storage server with FAStT EXP100 R1 firmware to EXP100 R2 firmware, are described in this document and in the *IBM TotalStorage FAStT EXP100 Expansion Unit Installation and User's Guide*.

The previous release (R1) of the FAStT EXP100 has limited failover support and is susceptible to a loss of access to drives in the FAStT EXP100 in the event of an ESM failure. For these reasons, IBM strongly recommends that you upgrade both the FAStT storage server controller firmware and the FAStT EXP100 ESM firmware to EXP100 R2 to enable full failover capability. Follow the upgrade instructions provided in Appendix C of the *IBM TotalStorage FAStT EXP100 Expansion Unit Installation and User's Guide*.

Important: Do not perform other storage management tasks, such as creating or deleting logical drives, reconstructing arrays, and so on, while downloading the R2 FAStT storage server controller firmware and FAStT EXP100 ESM firmware. It is recommended that you close all storage management sessions (other than the session that you use to upgrade the firmware) to the FAStT storage server that you plan to update.

Because two different versions (R1 and R2) of the EXP100 ESM customer-replaceable unit (CRU) are currently available, you must verify ESM firmware compatibility when replacing ESM CRUs or when adding EXP100s to a configured FAStT configuration with an EXP100 drive loop. Review the following sections:
- "ESM firmware compatibility" on page 2 describes how to verify ESM firmware versions of ESMs and provides procedures for verifying that a replacement ESM CRU or new EXP100 expansion unit is compatible with existing ESM CRUs or EXP100 expansion units.
- "Replacing a failed hot-swap ESM CRU" on page 5 describes how to resolve ESM firmware mismatches that might occur when you replace EXP100 ESM CRUs.
- "Adding an EXP100 to an existing drive loop" on page 7 describes how to resolve ESM firmware mismatches that might occur when you add additional FAStT EXP100s to a configured FAStT storage server configuration.

In addition, review the following important additional considerations:
- "FAStT EXP100 support code upgrades" on page 10

- "Product updates" on page 13
- "FAStT storage server model support" on page 13
- "Operating system support" on page 13
- "ESM failover support considerations" on page 14
- "Remote boot or FCboot" on page 14
- "Migration of expansion units and HDDs" on page 14
- "Premium copy services" on page 14

ESM firmware compatibility

There currently are two versions of FAStT EXP100 ESMs: R1 and R2.
- **R1** refers to those EXP100 ESMs that are compatible with ESM firmware version 953x and earlier.
- **R2** refers to those EXP100 ESMs that are compatible with ESM firmware version 955x and later.

Table 1 lists EXP100 ESM CRU part numbers and the ESM firmware versions with which they are compatible.

Table 1. Compatible ESM firmware version by CRU part number

Type	CRU part number	Compatible ESM firmware version
EXP100 R1 ESM	24P8814	953x or earlier
EXP100 R2 ESM	25R0156	955x or later

You must verify ESM firmware compatibility in the event that you need to replace an ESM CRU or add a new EXP100 to an existing EXP100 drive loop. Because two different versions (R1 and R2) of the EXP100 ESM CRU are currently available, you might receive an EXP100 ESM replacement CRU that is incompatible with the firmware of the existing ESM module in the FAStT EXP100 enclosure. Similarly, if you plan to add a new EXP100 expansion unit to an existing EXP100 drive loop, you might receive a FAStT EXP100 expansion unit that has an ESM firmware version that is incompatible with the EXP100s already in the drive loop.

Before you order a replacement ESM CRU or a new EXP100 expansion unit to add to an existing configured EXP100 drive loop, verify the firmware level (R1 or R2) of the existing ESM or ESMs using the procedure described in "Determining ESM firmware versions" on page 3. *Do not* rely solely on the CRU part number of an already installed ESM to determine the existing ESM firmware version, because the existing ESM firmware might have been previously updated.

When you order a replacement ESM CRU, use the part number that matches the firmware version of the existing ESM CRU, as shown in Table 1.

When you order a new EXP100 expansion unit to add to an existing configured EXP100 drive loop, you should receive an EXP100 with R2 ESM and controller firmware. If your EXP100 drive loop is currently configured with R1 ESMs, you must upgrade your ESM and controller firmware to the R2 level before adding the new R2 EXP100 to the drive loop.

"When you receive a new ESM CRU" on page 3 describes the steps you must follow when you receive a replacement ESM CRU for the EXP100.

"When you receive a new EXP100 expansion unit" on page 4 describes the steps you must follow when you receive a new EXP100 to be added to an existing configured EXP100 drive loop.

Determining ESM firmware versions

Choose one of the following methods to determine the firmware version of an existing EXP100 ESM. Each method uses the FAStT Storage Manager client that manages the FAStT storage subsystem with the attached FAStT EXP100 enclosure.

- **Procedure One:**

  Go to the Subsystem Management window and select **View → Storage Subsystem Profile**. When the Storage Subsystem Profile window opens, select the All tab and scroll through the Profile For Storage Subsystem to locate the ESM card firmware version information.

  Note: The Profile for Storage Subsystem contains all the profile information for the entire subsystem. Therefore, it might be necessary to scroll through a large amount of information to locate the ESM firmware version information.

- **Procedure Two:**

  Complete the following steps to obtain the ESM firmware versions.

  1. In the Physical View pane of the Subsystem Management window, click the Drive Enclosure Component icon (which is the icon furthest to the right.) The Drive Enclosure Component Information window opens.

  2. Click the ESM icon in the left pane. The ESM information displays in the right pane of the Drive Enclosure Component Information window.

  3. Locate the firmware version of each ESM in the drive enclosure.

When you receive a new ESM CRU

In the event that you need to replace a failed hot-swap ESM CRU in an EXP100, you must first verify that the replacement ESM CRU firmware is compatible with the firmware of the existing ESM module in the FAStT EXP100 enclosure. A loss of data access and, in some cases, a loss of data will result if ESM CRUs with incompatible firmware are installed in the same FAStT EXP100 enclosure. *Do not* insert a replacement ESM CRU into the FAStT EXP100 enclosure until ESM firmware compatibility is confirmed.

Perform the following steps before you replace an ESM CRU in an EXP100.

1. Determine the ESM firmware version of the existing ESM CRU in the EXP100 enclosure. Use the procedure described in "Determining ESM firmware versions."

   Note: *Do not* rely on the CRU part number of an already installed ESM to determine the ESM firmware version, because the existing ESM firmware might have been previously updated.

2. Find the ESM CRU part number on the CRU shipping box. Use Table 2 to determine the ESM firmware version (R1 or R2) of the replacement ESM CRU based on its part number.

Table 2. ESM firmware version by CRU part number

CRU part number	ESM firmware version
24P8814	EXP100 R1 ESM
25R0156	EXP100 R2 ESM

   You can only add a new ESM CRU to an EXP100 if the new ESM CRU is at the same level (R1 or R2) as the existing ESM CRU. You cannot add an R2 ESM CRU to an EXP100 that already contains an R1 ESM CRU; likewise, you cannot add an R1 ESM CRU to an EXP100 that already contains an R2 ESM CRU. See Table 4 on page 6 for more details on ESM CRU compatibility.

   - If the firmware version of the replacement ESM CRU *is not compatible* with the firmware version of the existing ESM module in the FAStT EXP100 enclosure (for example, R1 to R2, or R2 to R1), *do not open the ESM CRU box*. You cannot replace an ESM CRU with firmware that is incompatible with

the firmware of the existing ESM module in the FAStT EXP100 enclosure. Contact IBM technical support, your IBM reseller, or your IBM representative for an EXP100 CRU that is compatible with the ESM firmware of the existing ESM module.

- If the firmware version of the replacement ESM CRU *is compatible* with the firmware version of the existing ESM module in the FAStT EXP100 enclosure (for example, R1 to R1, or R2 to R2), then replace the failed hot-swap ESM CRU as described in detail in Chapter 4 of the *IBM TotalStorage FAStT EXP100 Expansion Unit Installation and User's Guide*. **Continue with Step 3.**

3. After you have replaced the failed ESM CRU with the compatible replacement ESM CRU, you must verify that the precise firmware versions match. For example, you might have removed an ESM CRU with R1 ESM firmware version 953x or earlier and replaced it with an ESM CRU with a different level of R1 ESM firmware version 953x or earlier; or you might have removed an ESM CRU with R2 ESM firmware version 955x or later and replaced it with an ESM CRU with a different level of R2 ESM firmware version 955x or later.

   Go to "Replacing a failed hot-swap ESM CRU" on page 5 and perform the appropriate upgrade procedure.

If you need further assistance, please contact IBM technical support, your IBM reseller, or your IBM representative to find out which EXP100 CRU is compatible with the ESM firmware of your existing ESM module.

For more information about the EXP100 ESM replacement procedure and problem troubleshooting, please refer to the *IBM TotalStorage FAStT EXP100 Expansion Unit Installation and User's Guide*, GC26–7601–02 (P/N 25R0140).

When you receive a new EXP100 expansion unit

In the event that you plan to add a new EXP100 expansion unit to an existing EXP100 drive loop, you must first determine the firmware versions of both the new EXP100 expansion unit and the existing EXP100 expansion units in the drive loop.

You can only add EXP100 expansion units to the existing EXP100 drive loop if the ESMs in the new EXP100 units are of the same version (either R1 or R2) as the ESMs in the existing drive loop. If there are firmware mismatches (such as adding an R1 EXP100 to an existing R2 loop, or an R2 EXP100 to an existing R1 loop), you cannot add the new expansion unit unless you first upgrade the existing ESMs to the firmware level of the new EXP100, and this cannot always be done. Depending on the version combinations of the new and existing ESMs, you might not be able to upgrade the existing setup to accommodate the new EXP100 units. See Table 5 on page 8 for more information.

Perform the following steps before you add a new EXP100 expansion unit to an existing EXP100 drive loop.

1. Use the procedure described in "Determining ESM firmware versions" on page 3 to determine the ESM firmware version of the existing EXP100 enclosure.

   Note: *Do not* rely solely on the CRU part number of an already installed ESM to determine the ESM firmware version, because the existing ESM firmware might have been previously updated.

2. Find the serial number on the EXP100 expansion unit packaging to determine the ESM firmware version (R1 or R2) of the new EXP100 expansion unit.
   - If the serial number begins with **13**, then the EXP100 expansion unit ESMs are at firmware level **R2**.
   - If the serial number begins with **23** *and* a white square R2 label is affixed to the box, then the EXP100 expansion unit ESMs are at firmware level **R2**.
   - If the serial number begins with **23** *and no* white square R2 label is affixed to the box, then the EXP100 expansion unit ESMs are at firmware level **R1**.

Table 3. New EXP100 expansion unit ESM firmware version by serial number and packaging label

Serial number begins with...	New EXP100 expansion unit ESM firmware level
13	R2
23 (and a white square R2 label is affixed to the box)	R2
23 (and a white square R2 label is *not* affixed to the box)	R1

3. Review Table 5 on page 8 for the compatibility of and upgrade procedure for your combination of existing and new EXP100 ESM firmware versions.

   Attention: If you have received an EXP100 with R2 ESMs, and your drive loop already contains EXP100s with R1 ESMs, you cannot connect the new R2 expansion unit *until* you upgrade the R1 firmware in the existing EXP100 ESMs and FAStT storage server controller to the R2 code version. However, if you have received an EXP100 with R1 ESMs, and your drive loop already contains EXP100s with R2 ESMs, you *cannot* attach the new EXP100 (because you cannot downgrade the R2 firmware in existing FAStT storage server controllers and EXP100 ESMs to the R1 level). If this is the case, contact IBM technical support, your IBM reseller, or your IBM representative. See Table 5 on page 8 for full ESM firmware compatibility details and upgrade procedures.

   - If you *cannot* perform the applicable ESM firmware upgrade procedure in Table 5 on page 8, or if no upgrade procedure is possible (as in the case of adding an EXP100 with R1 ESM firmware version to a drive loop that already contains EXP100s with R2 ESM firmware version), please contact IBM technical support, your IBM reseller, or your IBM representative.

   - If you *can* perform the applicable ESM firmware upgrade procedure in Table 5 on page 8, connect the new EXP100 expansion unit as described in the *IBM TotalStorage FAStT EXP100 Expansion Unit Installation and User's Guide*. **Continue with Step 4.**

     Note: When you open the shipping box, you can confirm the ESM firmware version (R1 or R2) of the new EXP100 expansion unit ESMs. You do not need to remove the ESM CRUs from the expansion unit to verify their firmware version. If the ESM faceplates are affixed with CRU labels that read 25R0156, the ESMs are at firmware level R2. If the ESM faceplates are not affixed with CRU labels, or if the CRU labels do not read 25R0156, then the new EXP100 expansion unit ESM CRUs are at firmware level R1.

4. After you have added the new EXP100 expansion unit, you must match the precise firmware versions of the new and existing EXP100 expansion units.

   Important: Depending on the firmware version loaded in the existing drive loop, you might have to suspend all I/O activity, including background firmware operations such as hot spare rebuilds or copybacks, to the FAStT storage server before applying the firmware updates.

   Go to "Adding an EXP100 to an existing drive loop" on page 7 and perform the appropriate upgrade procedure.

If you need further assistance, please contact IBM technical support, your IBM reseller, or your IBM representative.

For more information about the procedure for adding a new EXP100 to an existing EXP100 drive loop and problem troubleshooting, please refer to the *IBM TotalStorage FAStT EXP100 Expansion Unit Installation and User's Guide*, GC26–7601–02 (P/N 25R0140).

Replacing a failed hot-swap ESM CRU

If you find that there is an ESM firmware mismatch when you replace an ESM, you must make corrections to match the ESM firmware as soon as background firmware operations, such as rebuilds and copybacks, have completed. Refer to Table 4 on page 6 for your particular upgrade procedure. In certain cases, you must schedule down time for the upgrade because there can be no I/O activity, including

background firmware operations, to the storage server at the time of the upgrade. See "Determining ESM firmware versions" on page 3 for more information on how to determine your current ESM card firmware version.

Table 4. ESM firmware upgrade procedures for replacing ESMs

Existing ESM CRU firmware	New ESM CRU firmware	Upgrade procedure
EXP100 R1 ESM firmware version 953x or earlier	EXP100 R1 ESM firmware version 953x or earlier (but a different R1 version than the existing ESM firmware)	In this case, you have removed an ESM CRU with R1 ESM firmware version 953x or earlier, and you have replaced it with an ESM CRU with a different level of R1 ESM firmware version 953x or earlier. It is recommended that you upgrade both the controller firmware and ESM firmware to the EXP100 R2 version to enable EXP100 failover capability support. See the *IBM TotalStorage FAStT EXP100 Expansion Unit Installation and User's Guide* for more information. If you decide not to upgrade the configuration to EXP100 R2, you still must correct the ESM firmware mismatch, as described in the following steps. **Important:** Perform this ESM firmware upgrade during periods when you are not using the FAStT storage server. Schedule downtime for the upgrade. If you upgrade the ESM firmware with I/O activity to the storage server, including background firmware operations, drives might be randomly marked as Failed, causing the RAID arrays to fail. **Note:** ESM firmware mismatch conditions must be corrected as soon as soon as background firmware operations, such as rebuilds and copybacks, have completed. 1. In the Subsystem Management window, select **Advanced → Download → Environmental (ESM) card firmware**. 2. When the Download Environmental (ESM) card firmware window opens, follow the online help to download the ESM firmware to the EXP100 enclosure with the new ESM. **Note:** When you specify the file name of the firmware file to download, you might need to select All Files in the Files of type pull-down menu to display the correct file name for the ESM firmware file. If you do, then a warning window opens. Click **OK** when the warning window opens to continue. 3. When the ESM firmware download completes, verify that the ESM firmware mismatch error in the Subsystem Management window has been corrected.
EXP100 R1 ESM firmware version 953x or earlier	EXP100 R2 ESM firmware version 955x or later	In this case, you have removed an ESM CRU with R1 ESM firmware version 953x or earlier, and you have replaced it with an ESM CRU with R2 ESM firmware version 955x or later. This is an unsupported configuration. You cannot downgrade the new EXP100 R2 ESM firmware with the existing EXP100 R1 ESM firmware file. If the new R2 ESM is inserted in an EXP100 that contains an existing R1 ESM, the new R2 ESM will not be locked down by the FAStT storage server controller firmware. You might see all drive slots in the enclosure marked as *empty slots*. Remove the newly inserted ESM from the EXP100 chassis. Contact IBM technical support, your IBM reseller, or your IBM representative for the EXP100 R1 CRU that is compatible with the ESM firmware of the existing ESM module. **Note:** If there are any failed arrays because more than one drive in a given array failed, contact IBM technical support for recovery instructions.

Table 4. ESM firmware upgrade procedures for replacing ESMs (continued)

Existing ESM CRU firmware	New ESM CRU firmware	Upgrade procedure
EXP100 R2 ESM firmware version 955x or later	EXP100 R2 ESM firmware version 955x or later (but a different R2 version than the existing ESM firmware)	In this case, you have removed an ESM CRU with R2 ESM firmware version 955x or later, and you have replaced it with an ESM CRU with a different level of R2 ESM firmware version 955x or later. Use the following procedure to correct the ESM firmware mismatch. **Important:** Even though the EXP100 R2 firmware supports concurrent ESM firmware download, it is recommended that you download the ESM firmware during a period of low FAStT storage server I/O activity. All other background firmware operations, such as hot spare rebuilds or copybacks, *must be* completed before upgrading the firmware. **Note:** ESM firmware mismatch conditions must be corrected as soon as soon as background firmware operations, such as rebuilds and copybacks, have completed. 1. In the Subsystem Management window, select **Advanced → Download → Environmental (ESM) card firmware**. 2. When the Download Environmental (ESM) Card Firmware window opens, follow the online help to download the ESM firmware to the EXP100 enclosure with the new ESM. **Note:** When you specify the file name of the firmware file to download, you might need to select All Files in the Files of type pull-down menu to display the correct file name for the ESM firmware file. If you do, then a warning window opens. Click **OK** when the warning window opens to continue. 3. When the ESM firmware download completes, verify that the ESM firmware mismatch error in the Subsystem Management window has been corrected.
EXP100 R2 ESM firmware version 955x and later	EXP100 R1 ESM firmware version 953x and earlier	In this case, you have removed an ESM CRU with R2 ESM firmware version 955x or later, and you have replaced it with an ESM CRU with R1 ESM firmware version 953x or earlier. This is an unsupported configuration. You cannot upgrade the EXP100 R1 ESM firmware with the EXP100 R2 ESM firmware file. The new ESM will be locked down by the FAStT storage server controller firmware. Remove the down-level ESM CRU. Please contact IBM technical support, your IBM reseller, or your IBM representative for the EXP100 R2 CRU that is compatible with the ESM firmware of the existing ESM module.

Adding an EXP100 to an existing drive loop

In the event that new EXP100s have different ESM firmware versions than the existing EXP100s, you must make corrections to match the ESM firmware as soon as background firmware operations, such as rebuilds and copybacks, have completed. Use the options described in Table 5 on page 8 for your particular upgrade procedure. In certain cases, you must schedule down time for the upgrade because there can be no I/O activity, including background firmware operations, to the storage server at the time of the upgrade.

Table 5. ESM firmware upgrade procedures for new EXP100s

ESM firmware version of the existing EXP100s	ESM firmware version of the new (added) EXP100s	Firmware upgrade procedure for ESMs in the new (added) EXP100
EXP100 R1 ESM firmware version 953x or earlier	EXP100 R1 ESM firmware version 953x or earlier (but a different R1 version than the existing EXP100s)	In this case, you have added an EXP100 with R1 ESM firmware version 953x or earlier to an EXP100 drive loop that already contains EXP100s with a different level of R1 ESM firmware version 953x or earlier. It is recommended that you upgrade both the ESM firmware and the controller firmware to the R2 version to enable EXP100 R2 support. See *IBM TotalStorage FAStT EXP100 Expansion Unit Installation and User's Guide* for the upgrade procedures. If you decide not to upgrade the configuration to EXP100 R2, you still must correct the ESM firmware mismatch, as described in the following steps. **Important:** Perform this ESM firmware upgrade during periods when you are not using the FAStT storage server. Schedule downtime for the upgrade. If you upgrade the ESM firmware with I/O activity to the FAStT storage server, or with background firmware operations running, drives might be randomly marked as Failed, causing the RAID arrays to fail. **Note:** ESM firmware mismatch conditions must be corrected as soon as soon as background firmware operations, such as rebuilds and copybacks, have completed. 1. In the Subsystem Management window, select **Advanced ➔ Download ➔ Environmental (ESM) card firmware**. 2. When the Download Environmental (ESM) Card Firmware window opens, follow the online help to download the ESM firmware to the EXP100 enclosure with the new ESM. **Note:** When you specify the file name of the firmware file to download, you might need to select All Files in the Files of type pull-down menu to display the correct file name for the ESM firmware file. If you do, then a warning window opens. Click **OK** when the warning window opens to continue. 3. When the ESM firmware download completes, verify that the ESM firmware mismatch error in the Subsystem Management window has been corrected.

Table 5. ESM firmware upgrade procedures for new EXP100s (continued)

ESM firmware version of the existing EXP100s	ESM firmware version of the new (added) EXP100s	Firmware upgrade procedure for ESMs in the new (added) EXP100
EXP100 R1 ESM firmware version 953x or earlier	EXP100 R2 ESM firmware version 955x or later	In this case, you have added an EXP100 with R2 ESM firmware version 955x or later to an EXP100 drive loop that already contains EXP100s with R1 ESM firmware version 953x or earlier. This configuration is not supported. You cannot downgrade the new EXP100 R2 ESM firmware with the existing EXP100 R1 ESM firmware file. It is recommended that you upgrade both the ESM firmware and the controller firmware to the R2 version to enable EXP100 R2 support. See Appendix C of the *IBM TotalStorage FAStT EXP100 Expansion Unit Installation and User's Guide* to upgrade the EXP100 ESM firmware. If you cannot perform the upgrade immediately, do not proceed with any additional configuration tasks using the new EXP100 enclosure with EXP100 R2 ESM firmware. Disconnect the new EXP100 enclosure with EXP100 R2 ESM firmware from the existing EXP100 drive loop. Schedule down time to upgrade the existing EXP100 enclosures and FAStT storage server to full failover-support EXP100 R2 ESM and controller firmware. Then, re-attach the EXP100 enclosures with EXP100 R2 ESMs. **Important:** Perform this ESM firmware upgrade during periods when you are not using the FAStT storage server. Schedule downtime for the upgrade. If you upgrade the ESM firmware with I/O activity to the FAStT storage server, or with background firmware operations running, drives might be randomly marked as Failed, causing the RAID arrays to fail. If you need further assistance, contact IBM technical support, your IBM reseller, or your IBM representative.
EXP100 R2 ESM firmware version 955x or later	EXP100 R2 ESM firmware version 955x or later (but a different R2 version than the existing EXP100s)	In this case, you have added an EXP100 with R2 ESM firmware version 955x or later to an EXP100 drive loop that already contains EXP100s with a different level of R2 ESM firmware version 955x or later. Use the following procedure to correct the ESM firmware mismatch. **Important:** Even though the EXP100 R2 firmware supports concurrent ESM firmware download, it is recommended that you download the ESM firmware during a period of low FAStT storage server I/O activity. All other background firmware operations, such as hot spare rebuilds or copybacks, *must be* completed before upgrading the firmware. **Note:** ESM firmware mismatch conditions must be corrected as soon as soon as background firmware operations, such as rebuilds and copybacks, have completed. 1. In the Subsystem Management window, select **Advanced → Download → Environmental (ESM) card firmware**. 2. When the Download Environmental (ESM) card firmware window opens, follow the online help to download the ESM firmware to the EXP100 enclosure with the new ESM. **Note:** When you specify the file name of the firmware file to download, you might need to select All Files in the Files of Type pull-down menu to display the correct file name for the ESM firmware file. If you do, then a warning window opens. Click **OK** to continue when the warning window opens. 3. When the ESM firmware download completes, verify that the ESM firmware mismatch error in the Subsystem Management window has been corrected.

Table 5. ESM firmware upgrade procedures for new EXP100s (continued)

ESM firmware version of the existing EXP100s	ESM firmware version of the new (added) EXP100s	Firmware upgrade procedure for ESMs in the new (added) EXP100
EXP100 R2 ESM firmware version 955x and later	EXP100 R1 ESM firmware version 953x and earlier	In this case, you have added an EXP100 with R1 ESM firmware version 953x or earlier to an EXP100 drive loop that already contains EXP100s with R2 ESM firmware version 955x or later. This configuration is not supported. The FAStT storage server controller firmware (version 05.41.5x.xx or later) cannot upgrade the ESM (with R1 firmware) in the new EXP100 enclosure to the EXP100 R2 ESM firmware version. Do not proceed with any additional configuration tasks using the new EXP100 enclosure with EXP100 R1 ESM firmware. Disconnect the new EXP100 enclosure with EXP100 R1 ESM firmware from the existing EXP100 drive loop and contact your IBM technical support, IBM reseller, or your IBM representative for further assistance.

FAStT EXP100 support code upgrades

To enable support for the FAStT EXP100, you *must* perform the following software and firmware support code upgrades:

- FAStT Storage Manager version 8.41 or higher host software upgrade in the host servers and in the management station
- FAStT controller version 5.41.5x.xx firmware and NVSRAM upgrade in the FAStT600 or FAStT900 storage servers (if the FAStT storage servers were not shipped from the factory with 05.41.5x.xx controller firmware code)

  Note: The FAStT100 firmware is already enabled for SATA HDDs. No firmware upgrades are required for the FAStT100.

- Latest ESM firmware in the FAStT EXP100 expansion unit
- Latest drive firmware in the SATA hard drive

Attention

To successfully upgrade the FAStT storage server controller firmware to R2 version 05.41.5x.xx, you *must* first upgrade the FAStT EXP100 ESM firmware to version 955x or higher, or verify that the ESM firmware is already at this level. DO NOT upgrade the controller firmware to R2 version 05.41.5x.xx when the FAStT EXP100 ESM firmware is at version 953x or lower.

The required support code is shipped with the FAStT EXP100 on the *FAStT Storage Manager version 8.41 Support for FAStT EXP100 SATA Storage Expansion Unit* CD. To download the latest version of the FAStT Storage Manager 8.41 or higher host software, the FAStT storage server controller firmware and NVSRAM 5.41.5x.xx, the EXP100 disk drive firmware, and the latest FAStT EXP100 ESM firmware, go to the following Web site and click **Storage Manager 8.41**:

www.ibm.com/servers/storage/support/fastt

You should download the latest version of the FAStT Storage Manager host software, the FAStT storage server controller firmware, the FAStT EXP100 ESM firmware and the EXP100 disk drive firmware at the time of the initial installation and when product updates become available.

FAStT Storage Manager 8.41 or higher required

FAStT EXP100 support requires that you upgrade any host servers that are connected to the FAStT600, FAStT900, or FAStT100 storage servers that attach to FAStT EXP100 expansion enclosures with the FAStT Storage Manager version 8.41 or higher host software package. Furthermore, you must also upgrade the host software to Storage Manager version 8.41 or higher in the management stations that manage the FAStT600, FAStT900, or FAStT100 storage servers with FAStT EXP100. For host software upgrade instructions, see the *IBM TotalStorage FAStT Storage Manager version 8.4x Installation and Support Guide* appropriate to your operating system.

FAStT controller firmware 5.41.5x.xx required (FAStT600 and FAStT900 only)

FAStT EXP100 R2 support requires that you upgrade any connected FAStT600 or FAStT900 storage servers with FAStT controller firmware and NVSRAM version 5.41.5x.xx. (No firmware upgrades are required for the FAStT100. The FAStT100 firmware is already enabled for SATA HDDs.) If you did not order your FAStT storage server from the factory with firmware version 5.41.5x.xx installed, you must upgrade the controller firmware manually from firmware version 5.40.xx.xx or earlier.

Note: You might have to update the controller code to support EXP100 R2. The controller code threads for the EXP100 R2 and R1 are 05.41.5x.xx and 05.41.1x.xx, respectively. Follow the upgrade instructions provided in Appendix C of the *IBM TotalStorage FAStT EXP100 Expansion Unit Installation and User's Guide*. You can upgrade the FAStT controller firmware to R2 version 05.41.5x.xx from any R1 version 05.41.1x.xx.

Attention

It is essential that you review and understand the following issues *before* you upgrade the FAStT storage server controller firmware to version 5.41.5x.xx in order to support the FAStT EXP100:

1. After you upgrade the FAStT storage server with controller firmware 5.41.5x.xx, you *cannot* downgrade the firmware to an earlier version.

2. After you upgrade the FAStT storage server with controller firmware 5.41.5x.xx, FAStT600 and FAStT900 storage servers *will not* be able to attach to fibre-channel expansion unit enclosures such as FAStT EXP500 or EXP700, even when these enclosures are not part of the same drive loop or loops as the EXP100s. You *must* disconnect any FAStT EXP500 or EXP700 enclosures from the FAStT storage server *before* you upgrade the controller firmware to version 5.41.5x.xx.

3. After you upgrade the FAStT storage server with controller firmware 5.41.5x.xx, FAStT600 storage servers *will not* be able to use fibre-channel drives within the controller enclosure.

   A FAStT600 storage server with controller firmware 5.41.5x.xx installed will not support any fibre-channel hard disk drives (FC HDDs) in the FAStT600 drive slots. You must remove any FC HDDs that are installed in these drive slots and replace them with drive blanks.

See the *FAStT EXP100 Storage Expansion Unit Installation and User's Guide* for instructions to manually upgrade a FAStT storage server from firmware version 5.40.xx.xx or earlier to firmware version 5.41.5x.xx. If you are upgrading from firmware version 5.41.5x.xx to a later firmware version, you can follow the online help in the FAStT storage server Subsystem Management window or see the *IBM TotalStorage FAStT Storage Manager version 8.4x Installation and Support Guide* appropriate to your operating system.

Note: For some operating systems, you might be required to suspend I/O activity, including background firmware operations such as hot spare rebuilds or copybacks, during the FAStT storage server controller firmware upgrade process. For details, see the latest FAStT Storage Manager readme file for your operating system.

FAStT EXP100 ESM and SATA hard drive firmware upgrade

To ensure the highest level of functionality, verify that both your FAStT EXP100 ESM firmware and your FAStT EXP100 SATA firmware versions are at the latest level. (See "Determining ESM firmware versions" on page 3 for information on how to determine your current ESM card firmware version.) If they are not, upgrade to the latest version of the firmware at the following Web site:

www.ibm.com/servers/storage/support/fastt

> **Attention**
>
> To successfully upgrade the FAStT storage server controller firmware to R2 version 05.41.5x.xx, you *must* first upgrade the FAStT EXP100 ESM firmware to version 955x or higher, or verify that the ESM firmware is already at this level. *Do not* upgrade the controller firmware to R2 version 05.41.5x.xx when the FAStT EXP100 ESM firmware is at version 953x or lower.

If the EXP100 ESM firmware version is 953x or earlier, suspend all I/O activity, including background firmware operations such as hot spare rebuilds or copybacks, to the FAStT storage servers that use EXP100 expansion enclosures while you perform EXP100 ESM firmware or SATA hard drive firmware upgrades. Stop clustering services such as Microsoft® MSCS if the cluster disks and quorum disks are defined using the disks that are in the EXP100 enclosures whose ESMs or SATA hard drives are being updated with new firmware.

If the EXP100 ESM firmware version is 9554 or later, the EXP100 ESM firmware upgrade can be performed with I/O activity to the storage server. The SATA drive firmware upgrades, however, require that I/O activity, including background firmware operations, be suspended regardless of EXP100 ESM version.

Determining storage server firmware versions

There are two different ways to determine the FAStT storage server firmware versions. You can go to the Subsystem Management window and select **View → Storage Subsystem Profile**. When the Storage Subsystem Profile window opens, go to the All tab and scroll through the Profile For Storage Subsystem to locate the following information:

Note: The Profile For Storage Subsystem contains all the profile information for the entire subsystem. Therefore, it may be necessary to scroll through a large amount of information to locate the firmware version numbers.

FAStT storage server
- NVSRAM version
- Appware version
- Bootware version

Drives
- Firmware version

Alternately, you could perform the following actions to obtain the firmware versions:

To obtain the controller firmware version:
Right click the Controller icon in the Physical View pane of the Subsystem Management window and select Properties. The Controller Enclosure properties window opens and displays the properties for that controller.

You must perform this step for each individual controller.

To obtain the drive firmware version:

Right Click the Drive icon in the Physical View pane of the Subsystem Management window and select Properties. The Drive Properties window opens and displays the properties for that drive.

You must perform this step for each individual drive.

See "Determining ESM firmware versions" on page 3 for information on how to determine your current ESM card firmware version.

Product updates

You should download the latest version of the FAStT Storage Manager host software, the FAStT storage server controller firmware, the FAStT EXP100 ESM firmware and the EXP100 disk drive firmware at the time of the initial installation and when product updates become available.

To be notified of important product updates, you must first register at the IBM Support and Download Web site:

www.ibm.com/servers/storage/support/fastt

Go to the **Personalized Support** section of the web page and click **My Support**. On the next page, go to the **We use IBM Registration** section. To register to use this site, click **Register**.

Perform the following steps to receive product updates:
1. Once you have registered, type your user ID and password to log into the site. The Welcome page opens.
2. In the Select a Product Family pull-down menu, scroll down to the listing of hardware topics and select **Computer Storage**. Click **Go**. The Computer Storage page opens.
3. On the Computer Storage page, scroll down to the Disk Storage Systems category and check the boxes for EXP100 (1710) and for one or more of the FAStT controllers that manage the EXP100. The FAStT controllers compatible with the EXP100 are FAStT900 (1742 90U), FAStT600 (1722 60U or 60X), and FAStT100 (1724 100). Also check the boxes for any other FAStT products about which you would like to receive information. Scroll to the bottom of the page and select **Save and Return**. The main page opens.
4. Select your mail preferences. Select **Flashes and Downloadable files** to receive important information about product updates. Click **Submit**. You should see a confirmation at the bottom of the page that indicates that your profile was successfully updated.

FAStT storage server model support

The FAStT storage server models that support the FAStT EXP100 drive expansion enclosure are the FAStT600 (both Standard and Turbo options), the FAStT900, and the FAStT100.

For the latest IBM FAStT products interoperability matrix, go to the following Web site:

www.storage.ibm.com/disk/fastt/supserver.htm

Operating system support

Microsoft Windows® 2000 Server and Advance Server, Microsoft Windows 2003 Server and Enterprise Server, Sun Solaris, IBM AIX® 5.1 and 5.2, RedHat Enterprise Linux Server 2.1, and SuSE Linux Enterprise Server 8 are the supported operating systems for host servers that have mapped LUNs created in the

FAStT storage server with FAStT EXP100 drive expansion enclosures. See the latest FAStT Storage Manager 8.41 or higher host software readme file and the IBM FAStT products interoperability matrix at the following Web site for additional host operating system support:

www.storage.ibm.com/disk/fastt/supserver.htm

ESM failover support considerations

Upgrading to FAStT EXP100 R2 enables full failover support in case of loss of connectivity due to bad components in the drive paths, or due to ESM failure. For this reason, IBM strongly recommends upgrading firmware to R2 support.

Without FAStT EXP100 R2 support, each ESM in the FAStT EXP100 drive expansion enclosure manages only half of the drives in the enclosure. The ESM on the left side manages drives at odd-numbered slots (1, 3, 5, 7, 9, 11, 13), and the ESM on the right side manages drives at even-numbered slots (2, 4, 6, 8, 10, 12, 14). As a result, half of the EXP100 drives could become inaccessible to the controllers if an ESM fails. You can avoid this situation by upgrading your firmware to enable FAStT EXP100 R2 support.

Attention: See the instructions and configuration guidelines in Appendix B of the *FAStT EXP100 Storage Expansion Unit Installation and User's Guide* before you create arrays using drives in FAStT EXP100 enclosures.

Remote boot or FCboot

"Remote boot" ("root boot") or "FCboot" is not supported with FAStT storage servers that use the FAStT EXP100. You cannot use a logical drive that is created on the FAStT EXP100 drive expansion enclosure as a "boot" disk or as a server operating system disk. Contact your IBM reseller or representative for information about possible future support.

Migration of expansion units and HDDs

For the new release (R2) of the FAStT EXP100, expansion unit and HDD migration between FAStT storage servers is not supported. Contact your IBM reseller or representative for information about possible future support.

Premium copy services

The premium copy services FlashCopy® and VolumeCopy are supported by the new release (R2) of the FAStT storage server controller firmware.

The premium copy service Remote Mirroring is not supported by the new release (R2) of the FAStT storage server controller firmware. Contact your IBM reseller or representative for information about possible future support.

Trademarks

The following terms are trademarks of International Business Machines Corporation in the United States, other countries, or both:

IBM	FlashCopy
AIX	TotalStorage

Microsoft and Windows are trademarks of Microsoft Corporation in the United States, other countries, or both.

Other company, product, or service names may be trademarks or service marks of others.