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Hitachi Freedom Storage™ Lightning 9900 V Series

Hitachi SANtinel – S/390® User's Guide

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Preface

The 9900V Hitachi SANtinel - S/390® User's Guide describes and provides instructions for using the Hitachi SANtinel - S/390® software on the 9900V storage subsystem. This user's guide assumes that:

■ the user has a background in data processing and understands direct-access storage device (DASD) subsystems and their basic functions,

■ the user has read and understands both the 9900V User and Reference Guide and the 9900V Remote Console - Storage Navigator User's Guide,

■ the user is familiar with the HP-UX, Solaris, Windows NT®, or Windows® 2000 operating system, and

■ the user is familiar with Microsoft® Internet Explorer.

Note: The term "9900V" refers to the entire 9900V subsystem family, unless otherwise noted. Please refer to the 9900V User and Reference Guide for further information on the 9900V disk array subsystems.

Note: The use of the Hitachi SANtinel - S/390® software and all other Hitachi Data Systems products is governed by the terms of your license agreement(s) with Hitachi Data Systems.

Note: In this document, all Storage Navigator panels are captured on the Internet Explorer running on the Windows computer. If you use the Storage Navigator on a UNIX computer, some Storage Navigator panels may display differently from the panels in this document. For the Storage Navigator conventions and notes on using the Storage Navigator, please refer to Remote Console - Storage Navigator User's Guide.

Microcode Level

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COMMENTS

Please send us your comments on this document: doc.comments@hds.com.

Make sure to include the document title, number, and revision.
Please refer to specific page(s) and paragraph(s) whenever possible.

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Thank you!

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Chapter 1   Overview of Hitachi SANtinel - S/390®

The Hitachi SANtinel - S/390® feature protects data in your disk subsystem from I/O operations performed at mainframe hosts. Hitachi SANtinel - S/390® enables you to apply security to logical volumes so that specified mainframe hosts are unable to read from and write to them. Hitachi SANtinel - S/390® also enables you to prevent data on logical volumes from being accidentally overwritten by remote copy operations.

Note: In the 9900V documentation, logical volumes are sometimes referred to as *logical devices* (or *LDEVs*). Also, the 9900V documentation sometimes uses the term *LDEV security* to refer to security policy that Hitachi SANtinel - S/390® enables you to apply to logical volumes.

1.1   Protecting Logical Volumes from I/O Operations at Mainframe Hosts

Hitachi SANtinel - S/390® enables you to protect logical volumes from unauthorized accesses by mainframe hosts. To protect logical volumes from unauthorized accesses, you must create *security groups* and then register mainframe hosts and/or logical volumes in security groups. Security groups are classified into *access groups* or *pool groups*. If you want to allow some (but not all) mainframe hosts to access logical volumes, you must classify the security group as an *access group*. If you want to prohibit all mainframe hosts from access logical volumes, you must classify the security group as a *pool group*.

1.1.1   Enabling Only the Specified Hosts to Access Logical Volumes

To allow only specific mainframe hosts in your network to access logical volumes, you must register the mainframe hosts and the logical volumes in an access group. For example, if you register two hosts (host_A and host_B) and two logical volumes (vol_C and vol_D) in an access group, only the two hosts will be able to access vol_C and vol_D. No other hosts will able to access vol_C and vol_D.

If mainframe hosts are registered in an access group, the hosts will be able to access logical volumes in the same access group, but will be unable to access other logical volumes. For example, if you register two hosts (host_A and host_B) and two logical volumes (vol_C and vol_D) in an access group, the two hosts can access vol_C and vol_D and cannot access other logical volumes.

To register hosts in an access group, you must create a host group, register the hosts in the host group, and then register the host group in the desired access group. To register logical volumes in an access group, you must create an LDEV group, register the logical volumes in the LDEV group, and then register the LDEV group in the desired access group. Any access group can only contain one host group and one LDEV group.

In Figure 1.1, six mainframe hosts are attached to a disk subsystem and two access groups are created. The following security settings are applied:

- The logical volumes ldev1 and ldev2 are accessible only from host1, host2, and host3 because the two volumes and the three hosts are registered in the same access group.

- The logical volume ldev4 is accessible only from host4 because ldev4 and host4 are registered in the same access group.

- The logical volume ldev5 does not belong to any access groups. For this reason, hosts in access groups cannot access ldev5. ldev5 is only accessible from host5 and host6, which are not registered in any access groups.
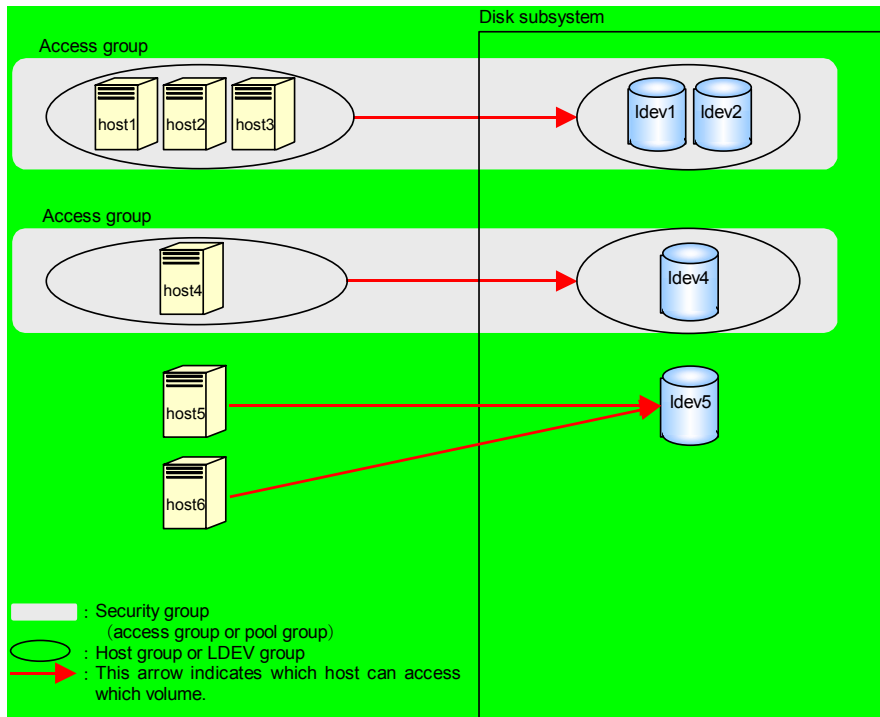
Figure 1.1   Security Example

Caution: Before applying security, confirm which hosts, if any, are performing I/O operations on logical volumes in access groups. If any hosts are performing I/O operations on logical volumes in access groups that the hosts do not belong to, you will need to stop these I/O operations before applying security. For example, if you attempt to apply the security settings illustrated in Figure 1.1, an error occurs and the attempt fails if host4 and host5 are performing I/O operations on ldev1. To be able to apply the security settings, you need to ensure that host4 and host5 are not performing I/O operations on ldev1.

1.1.2   Prohibiting All Hosts from Accessing Logical Volumes

To prevent mainframe hosts from accessing logical volumes, you must register the logical volumes in a pool group (you do not need to register hosts in pool groups). For example, if you register two logical volumes (vol_A and vol_B) in a pool group, all the mainframe hosts connected to your disk subsystem will be unable to access vol_A and vol_B. To register logical volumes in a pool group, you must create an LDEV group, register the logical volumes in the LDEV group, and then register the LDEV group in the desired pool group. A pool group can only contain one LDEV group.

In Figure 1.2, a pool group is created. Logical volumes in this pool group (that is, ldev7, ldev8, and ldev9) are inaccessible from all the hosts.
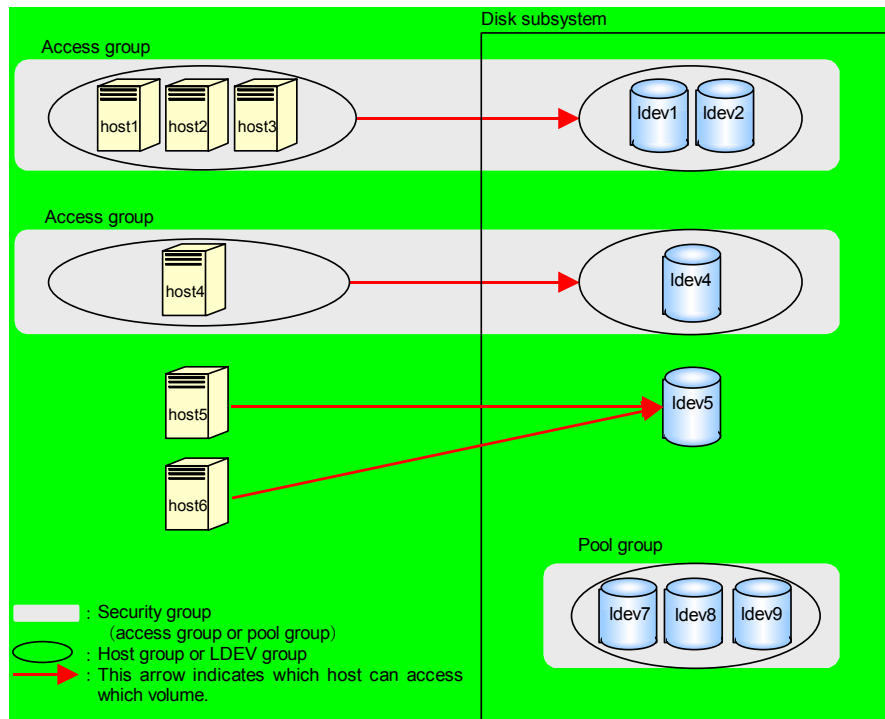
Figure 1.2   Security example

1.2   Protecting Logical Volumes from Erroneous Remote Copy Operations

When Hitachi TrueCopy - S/390® (TC390) or ShadowImage - S/390® (SI390) is used to perform remote copy operations, data is overwritten onto the secondary volumes (that is, the copy destination volumes). If a volume containing data is specified as a secondary volume by mistake, TC390 or SI390 remote copy operations can overwrite the data on the volume and the original data may be lost.

Hitachi SANtinel - S/390® enables you to avoid such loss of data. If a volume contains data that should not be overwritten, you can prevent the volume from being used as a secondary volume (that is, the copy destination volume).

Note: Secondary volumes (that is, copy destination volumes) are often referred to as remote volumes or R-VOLs in the *Hitachi 9900 V Series TrueCopy - S/390® (TC390) User's Guide*, MK-92RD107. Also, secondary volumes are referred to as target volumes or T-VOLs in the *Hitachi 9900 V Series ShadowImage - S/390® User's Guide*, MK-92RD110.

1.3 Restrictions and Cautions

Warning: Do not apply security to logical volumes on which any job is running. If you apply security to such a volume, the job could possibly end abnormally.

Warning: When applying security, ensure that the security settings are correct. If incorrect security settings are made, system integrity may be compromised.

Warning: If the CPU of a mainframe host is upgraded after you apply security settings, you must execute the system command **D M=CPU** at the mainframe host to obtain updated information about the host. Use the latest information to update host information in the Add/Change Host panel (see section 3.5).
If you do not update host information, system integrity may be compromised.

- **Volume emulation types** (that is, device emulation types): Hitachi SANtinel - S/390® supports the following volume emulation types:
  - 3990-3
  - 3390-3A
  - 3390-3B
  - 3390-3C
  - 3390-3R
  - 3390-4
  - 3390-9
  - 3390-L
  - BL90-E

- **PCB types:** Hitachi SANtinel - S/390® supports the following PCB types:
  - ESCON or ACONARC
  - FICON or FIBARC

- **Maximum possible number of security groups, host groups, and LDEV groups:** Hitachi SANtinel - S/390® allows you to manipulate up to 32 hosts and 8,192 logical volumes for one disk subsystem. Hitachi SANtinel - S/390® enables you to create up to 32 security groups, 32 host groups, and 32 LDEV groups for one disk subsystem.

  Security groups are classified into access groups and pool groups:
  - One access group can contain only one host group and one LDEV group. One host group can contain up to 16 hosts. One LDEV group can contain up to 8,192 logical volumes.
  - One pool group can contain only one LDEV group. One LDEV group can contain up to 8,192 logical volumes.

- If using Hitachi TrueCopy - S/390® or ShadowImage S/390®: When using SANtinel - S/390® to make security settings, you must register the primary volume and the secondary volume (that is, the copy source volume and the copy destination volume) in the same LDEV group. For details on how to register volumes in LDEV groups, see sections 4.1.4 or 4.2.2.

If you apply security to a primary volume (that is, a copy source volume) of a TC390 pair or an SI390 pair, some mainframe hosts may be unable to read from and write to the primary volume. If this happens, the remote copy operation itself will complete normally and data is copied from the primary volume to the secondary volume.

If you register a primary volume or secondary volume in a security group and then make a setting for preventing the volume from being used as a secondary volume, this setting takes effect after the pair is split.

Mainframe hosts cannot access logical volumes in pool groups. If a logical volume in a pool group is specified as a primary volume, the pair creation command might fail.

Notes:

- In the *Hitachi TrueCopy - S/390® (TC390) User's Guide*, MK-92RD107, primary volumes are often referred to as M-VOLs, or main volumes. Also, secondary volumes are often referred to as R-VOLs or remote volumes.

- In the *Hitachi 9900 V Series ShadowImage - S/390® User's Guide*, MK-92RD110, primary volumes are often referred to as S-VOLs, or source volumes. Secondary volumes are often referred to as T-VOLs, or target volumes.

- **If you are using Virtual LVI/LUN (VLL) volumes:** If you apply security to a VLL volume, you will be unable to change the VLL settings for that volume. To change the VLL settings, you must first use Hitachi SANtinel - S/390® to disable security on that VLL volume. For details on how to disable security, see section 4.4.

- **If you are using Hitachi Parallel Access Volume (HPAV):** If you apply security to an HPAV base volume, the security settings are also applied to the corresponding alias volume.

- **Removing secured logical volumes:** If you apply security to a logical volume, you will be unable to remove that volume. If you want to remove the volume, you must first disable security on that volume. For details on how to disable security, see section 4.4.

Chapter 2 Preparing for Hitachi SANtinel - S/390® Operations

2.1 System Requirements

To perform SANtinel – S/390 operations, you must have the following:

■ 9900V disk subsystem

■ WWW client computer running Storage Navigator

■ Hitachi SANtinel - S/390® option program

To perform Hitachi SANtinel - S/390® operations, you must use the Storage Navigator software, which is a Java applet to be downloaded to a WWN client computer. To be able to use Storage Navigator, you must attach your WWW client computer to the disk subsystem via a LAN, and then make the appropriate browser settings. If you are able to use Storage Navigator, you must install the Hitachi SANtinel - S/390® option program on the Storage Navigator computer. For details, please refer to the *Hitachi Freedom Storage™ Lightning 9900™ V Series Remote Console – Storage Navigator User's Guide,* (MK-92RD101).

2.2 Starting Hitachi SANtinel - S/390®

To start the Hitachi SANtinel - S/390® software:

1. Log on to the SVP to open the Storage Navigator main panel. For details, please refer to the *Hitachi Freedom Storage™ Lightning 9900™ V Series Remote Console – Storage Navigator User's Guide.*

    Note: To make security settings and to apply these settings, you must use a user account that has the write permission (that is, an Administrator account). If using an account that does not have write permission, you will be able to view security settings but not make or apply security settings.

2. Select the **Mainframe Connection** icon [].

3. Select the **Hitachi SANtinel - S/390®** tab. The Hitachi SANtinel - S/390® panel appears (see Figure 3.1).

2.3   Changing to Modify Mode

To implement changes for Hitachi SANtinel - S/390®, you must be in Modify mode. The subsystem information icons (see Figure 2.1) are on the upper right corner of the Storage Navigator main panel, and they appear on all option panels as well. These icons are described in detail in *Hitachi Freedom Storage™ Lightning 9900™ V Series Remote Console – Storage Navigator User's Guide*.

To change from View mode to Modify mode and then return to View mode, note the following icons:

- Exclusive lock icons indicate the operation mode of all currently logged-in users. If all users are operating in View mode, the Unlocked icon ( ) is displayed. If a user is operating in Modify mode (or if subsystem maintenance or SNMP operations are being performed), the Locked icon [ ] is displayed.

- Mode-Changing buttons allow users to change the operation mode between View mode [ ] and Modify mode [ ].

    Note: Only one user at a time may be in Modify mode.

To change from View mode to Modify mode you must have administrator or write access for the option that you want to use. For details on assigning user access, see Hitachi Freedom Storage™ Lightning 9900™ V Series Remote Console – Storage Navigator (MK-92RD101).

1. Verify that the subsystem is unlocked. If all users are operating in View mode, the Unlocked icon [ ] and the View Mode icon [ ] are displayed.

    Note: If a user is operating in Modify mode (or if subsystem maintenance is being performed), the Locked icon is displayed and you cannot implement changes.

2. Select the **Mode Changing** icon, which should be in View mode. A confirmation message displays (see Figure 2.2).

3. Select **OK**. Once you are in Modify mode, the Mode Changing icon changes from a gray background to a yellow background, and the Locked icon is displayed (see Figure 2.3).

Figure 2.1   View Mode
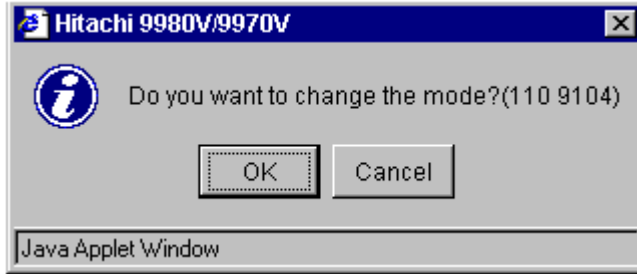
Figure 2.2   Mode Changing Confirmation Message
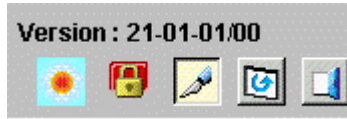
Figure 2.3   Modify Mode

Chapter 3   Hitachi SANtinel - S/390® Panels

3.1   Hitachi SANtinel - S/390® Panel

The Hitachi SANtinel - S/390® panel (see Figure 3.1) appears when you start Hitachi SANtinel - S/390®. This panel is the starting point for all the Hitachi SANtinel - S/390® operations.
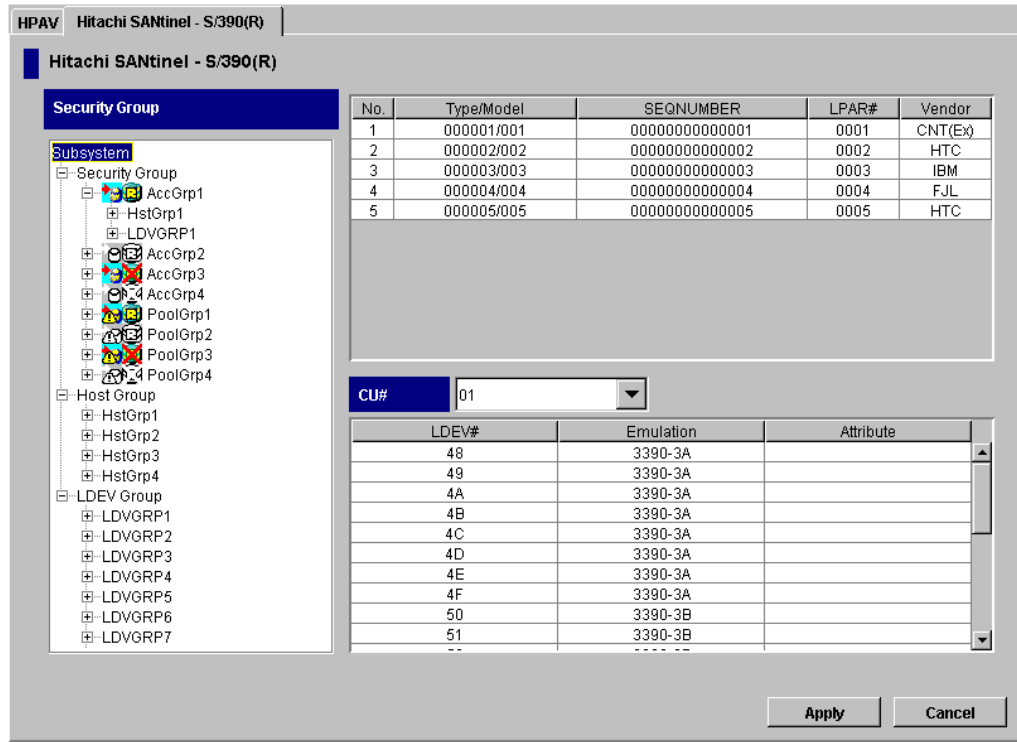
Figure 3.1   Hitachi SANtinel - S/390® Panel

■ **Security Group:** This tree view enables you to view a list of security groups, host groups, and LDEV groups.

    – If you double-click **Security Group** (below **Subsystem** at the top of the tree), a list of security groups appears.

    – If you double-click a security group, the tree view displays the host group and/or LDEV group registered in the security group.

The security group icons indicate security settings for logical volumes, as explained below:

Table 3.1   Hitachi SANtinel – S/390® Panel Icon Definitions

Icon	Description
	This is an access group. Logical volumes in this access group can be used as secondary volumes (that is, copy destination volumes) for remote copy operations.
	This is an access group. Logical volumes in this access group cannot be used as secondary volumes (that is, copy destination volumes) for remote copy operations.
	This is a pool group. Logical volumes in this pool group can be used as secondary volumes (that is, copy destination volumes) for remote copy operations.
	This is a pool group. Logical volumes in this pool group cannot be used as secondary volumes (that is, copy destination volumes) for remote copy operations.
	The security settings in this security group are currently disabled. If you enable the security settings, this security group will be classified as an access group. Also, logical volumes in this security group can be used as secondary volumes (that is, copy destination volumes) for remote copy operations.
	The security settings in this security group are currently disabled. If you enable the security settings, this security group will be classified as an access group. Also, logical volumes in this security group will be unavailable for use as secondary volumes (that is, copy destination volumes) for remote copy operations.
	The security settings in this security group are currently disabled. If you enable the security settings, this security group will be classified as a pool group. Also, logical volumes in this security group will be available for use as secondary volumes (that is, copy destination volumes) for remote copy operations.
	The security settings in this security group are currently disabled. If you enable the security settings, this security group will be classified as a pool group. Also, logical volumes in this security group will be unavailable for use as secondary volumes (that is, copy destination volumes) for remote copy operations.

— If you double-click Host Group, a list of host groups appears.

— If you double-click LDEV Group, a list of LDEV groups appears.

■ The upper-right table (Hosts table): This table displays information about hosts. The table contents depends on the selection in the Security Group tree view, as explained below:

— Select Subsystem, Security Group, Host Group, or LDEV Group - the table displays all the hosts.

— Select a security group - the table displays all the hosts that belong to the selected security group.

— Select a host group - the table displays all the hosts that belong to the selected host group.

— Select an LDEV group – nothing is displayed.

Table column headings:

- **Type/Model:** Type and the model number of a host (or a channel extender).

- **SEQNUMBER**: Node ID of a host (or a channel extender).

- **LPAR#:** Logical partition number of a host.

- **Vendor:** Vendor of the host. This column may display FJL (Fujitsu), IBM, HTC (Hitachi), and CNT(Ex). If CNT(Ex) appears, the table row indicates the type, the model number, and the node ID of a channel extender.

- **CU#**: Drop-down list that allows you to select the desired logical CU image. The table below this drop-down list displays a list of logical volumes in the selected CU image.

- **Lower-right table (LDEVs table)**: Displays information about logical volumes. The table contents depends on the selection in the Security Group tree view, as explained below:

  - Select **Subsystem**, **Security Group**, **Host Group**, or **LDEV Group** - the table displays all the logical volumes that are accessible from the mainframe hosts.

  - Select a security group - the table displays all the logical volumes that belong to the selected security group.

  - Select an LDEV group - the table displays all the logical volumes that belong to the selected LDEV group.

  - Select a host group - the table displays nothing.

Table column headings:

- LDEV#: Logical volume ID. This ID is a hexadecimal number (00 to FF).

- Emulation: Emulation type of the logical volume.

- Attribute indicates the status of the logical volume. If an asterisk (*) appears, the logical volume is specified as a secondary volume (copy destination) for TC390 or SI390.

- If a plus symbol (+) appears, one or more LU paths are assigned to the logical volume.

  Note: If an asterisk (*) appears, the logical volume is specified as a secondary volume (copy destination) for TC390 or SI390.

  If a plus symbol (+) appears, one or more LU paths are assigned to the logical volume.

- **Apply**: Applies the settings made on this panel to the 9900V subsystem.

- **Cancel**: Discards changes in this panel to restore the initial settings.

3.1.1   Naming Conventions

When performing such steps as renaming Security groups, naming host groups, or naming an LDEV group, the following naming conventions apply:

    –   Up to eight characters can be used.

    –   Characters are case-sensitive.

    –   The following characters cannot be used:

        \   ,   / : ;   * ? " < > |

    –   The first character and the last character must not be a space.

3.2 Add/Change Security Group Panel

To access the **Add/Change Security Group** panel, right-click a security group or the Security Group entry in the tree view of the Hitachi SANtinel - S/390® panel (see Figure 3.2).
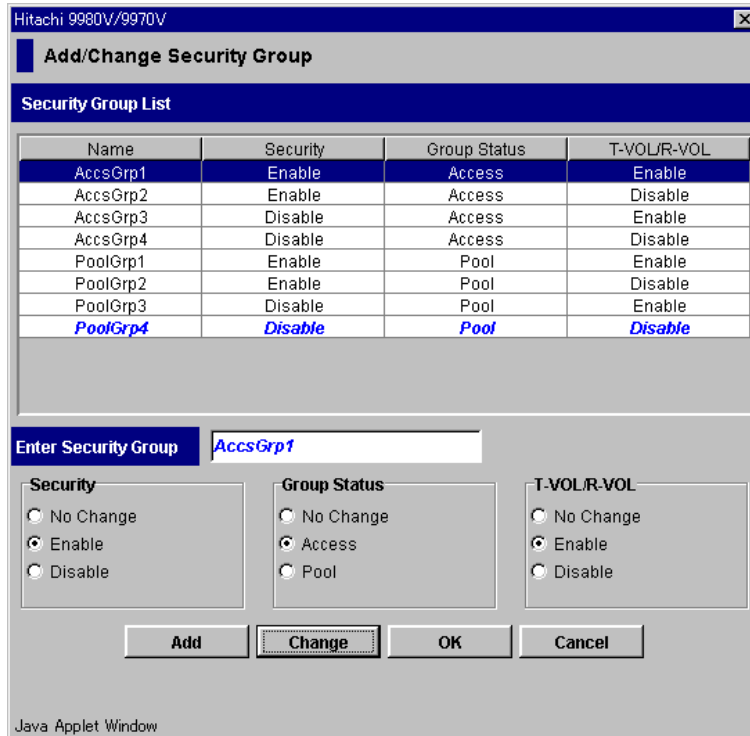
Figure 3.2   Add/Change Security Group Panel

The following sections explain how to:

- Create a security group and classify the security group as an access group or a pool group (see sections 4.1.5 and 4.2.3)

- Prevent data in logical volumes from being overwritten by remote copy operations (see section 4.3)

- Disable security settings (see section 4.4)

- Rename security groups (see section 5.1.3)

- Delete security groups (see section 5.1.4)

■ **Security Group List:** This table displays a list of security groups. The table contents change depending on the current selection:

- Security Group (below Subsystem at the top of the tree) in the tree view of the Hitachi SANtinel - S/390® panel. The table lists all security groups.

- Security group in the tree view of the Hitachi SANtinel - S/390® panel. The table only displays the selected security group.

Table columns headings:

- **Name**: Name of a security group

- **Security**: Settings in the security group are enabled or disabled.

  Caution: It is possible that security settings are disabled even if Enable is displayed. If Group Status (see below) is Access and the security group contains neither a host group nor an LDEV group, security settings in the security group are disabled unconditionally.

- **Group Status**: Security group is either an access group or a pool group.

    If **Access** is displayed, the security group is an access group. Logical volumes in the group can only be accessed by hosts registered in the same group.

    If **Pool** is displayed, the security group is a pool group. Logical volumes in the group cannot be accessed by any hosts.

- **T-VOL/R-VOL:** Logical volumes in the security group can be used as secondary volumes (that is, copy destination volume).

    If Enabled is displayed, the logical volumes can be used as secondary volumes.

    If Disabled is displayed, the logical volumes cannot be used as secondary volumes.

  Note: Secondary volumes are often referred to as remote volumes or R-VOLs in the manual Hitachi TrueCopy - S/390® (TC390) User's Guide. Also, secondary volumes are referred to as target volumes or T-VOLs in the manual ShadowImage - S/390® User's Guide.

- **Enter Security Group:** When creating a new security group, enter the name of the security group in the **Enter Security Group** text box. When renaming an existing security group, select the security group in the **Security Group List** table. Enter a new name.

  For security group naming conventions, please see section 3.1.1.

- **Security:** This box allows you to enable or disable security settings. Enable is the default.

  - **No Change** does not change the security status of the security groups selected in the Security Group List table.

    For example, if you select a security-enabled group and a security-disabled group in the table, **Disable** disables security settings in both groups, but **No Change** does not change the current security status for both groups (The former remains security-enabled and the latter remains security-disabled).

  - **Enable** turns on the security settings that are made in the security groups selected in the Security Group List table.

    Caution: It is possible that security settings are disabled even if Enable is selected. If Access is selected in the Group Status box (see below) and the security group contains neither a host group nor an LDEV group, security settings in the security group are disabled unconditionally.

  - **Disable** turns off the security settings that are made in the security groups selected in the Security Group List table.

- **Group Status:** This box enables you to classify the selected security groups as access groups or pool groups. The default is **Access**.

  - **No Change** does not change the group status of the security groups selected in the **Security Group List** table. For example, if you select one access group and one pool group, **Access** changes the two groups into access groups, but **No Change** does not change the two groups (The former remains an access group and the latter remains a pool group).

  - **Access** specifies the selected security groups as access groups. Logical volumes in an access group can only be accessed by hosts registered in the same access group but cannot be accessed by other hosts.

  - **Pool** specifies the selected security groups as pool groups. Logical volumes in a pool group cannot be accessed by any hosts.

- **T-VOL/R-VOL:** This box enables you to specify whether logical volumes in the security group can be used as secondary volumes (that is, copy destination volumes). The default is **Enable**.

  Note: Secondary volumes are often referred to as remote volumes or R-VOLs in the manual Hitachi TrueCopy - S/390® (TC390) User's Guide. Also, secondary volumes are referred to as target volumes or T-VOLs in the manual ShadowImage - S/390® User's Guide.

  - **No Change** does not change the secondary volume settings of the security groups selected in the Security Group List table. For example, if volumes in one of the selected security groups are usable as remote copy destinations, but volumes in the other security group are unusable, Enable makes volumes in both groups usable as destinations. However, No Change does not change volumes in both groups (The former remains usable, and the latter remains unusable).

  - **Enable** makes logical volumes in the selected security groups usable as secondary volumes (remote copy destinations).

  - **Disable** makes logical volumes in the selected security groups unusable as secondary volumes (remote copy destinations).

- **Add:** Enter the name of a new security group. Click **Add**. The new security group is added to the Security Group List table.

- **Change:** Change a setting of the selected security group. Click **Change**. The changes are reflected in the Security Group List table.

- **OK:** Applies settings in the Add/Change Security Group panel to the Hitachi SANtinel - S/390® panel, and then closes the Add/Change Security Group panel.

Caution: The OK button applies the settings to the Hitachi SANtinel - S/390® panel, but does not apply the settings to the disk subsystem. To apply the security settings to the subsystem, you must continue to click Apply in the Hitachi SANtinel - S/390® panel.

- **Cancel:** Cancels settings in the Add/Change Security Group panel and closes the panel.

3.3 The Add/Change Host Group Panel

To access the Add/Change Host Group panel, right-click a host group or the Host Group entry in the tree view of the Hitachi SANtinel - S/390® panel. Select **Add/Change** (see Figure 3.1).

Figure 3.3   The Add/Change Host Group Panel

The following sections explain how to:

- – Create host groups (see section 4.1.1)

- – Rename host groups (see section 5.2.3)

- – Delete host groups (see section 5.2.4)

- **Host Group List:** This box displays a list of host groups. The table contents change depending on the current selection:

  - – Select **Host Group** in the tree view of the Hitachi SANtinel - S/390® panel and the table lists all host groups.

  - – Select a host group in the tree view of the Hitachi SANtinel - S/390® panel and the table only displays the selected host group.

- **Enter Host Group**: When creating a new host group, enter the name of the host group in this Enter Host Group text box. When renaming an existing host group, select the host group in the Host Group List table. Enter a new name.

  For host group naming conventions, please see section 3.1.1.

■ **Add:** Enter the name of a new host group. Click **Add**. The new host group is added to the Host Group List table.

■ **Change:** Change the name of the selected host group. Click **Change**. The change is reflected in the Host Group List table.

■ **OK:** Applies settings in the Add/Change Host Group panel to the Hitachi SANtinel - S/390® panel and closes the panel.

Caution: The OK button applies the settings to the Hitachi SANtinel - S/390® panel, but does not apply the settings to the disk subsystem. To apply the settings to the subsystem, click Apply in the Hitachi SANtinel - S/390® panel.

■ **Cancel:** Cancels settings in the Add/Change Host Group panel and closes the panel.

3.4   The Add/Change LDEV Group Panel

To access the Add/Change LDEV Group panel, right-click an LDEV group or the LDEV Group entry in the tree view of the Hitachi SANtinel - S/390® panel. Select **Add/Change** (see Figure 3.1).
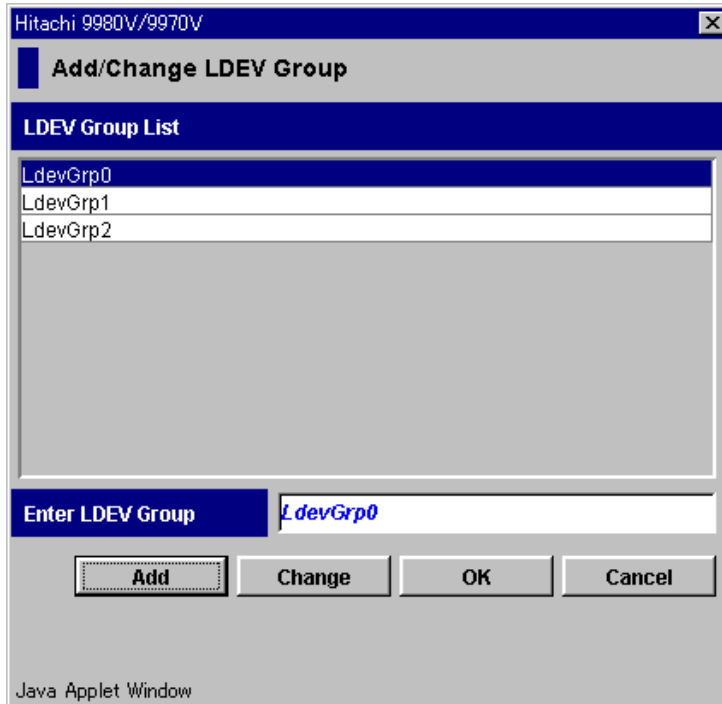
Figure 3.4   The Add/Change LDEV Group Panel

The following sections explain how to:

- – Create LDEV groups (see section 4.1.3 or 4.2.1)
- – Rename LDEV groups (see section 5.3.2)
- – Delete LDEV groups (see section 5.3.3)

- ■ **LDEV Group List:** List of LDEV groups. The table contents change depending on the current selection.

  - – Select LDEV Group in the tree view of the Hitachi SANtinel - S/390® panel, the table lists all LDEV groups.

  - – Select an LDEV group in the tree view of the Hitachi SANtinel - S/390® panel, the table only displays the selected LDEV group.

- ■ **Enter LDEV Group:** When creating a new LDEV group, enter the name of the LDEV group in this text box. When renaming an existing LDEV group, select the LDEV group in the LDEV Group List table. Enter a new name.

  For LDEV group naming conventions, please see section 3.1.1.

- ■ **Add:** Enter the name of a new LDEV group. Click Add. The new LDEV group is added to the LDEV Group List table.

- **Change:** Change the name of the selected LDEV group. Click **Change**. The change is reflected in the LDEV Group List table.

- **OK:** The OK button applies settings in the Add/Change LDEV Group panel to the Hitachi SANtinel - S/390® panel and closes the panel.

  Caution: The **OK** button applies the settings to the Hitachi SANtinel - S/390® panel, but does not apply the settings to the disk subsystem. To apply the settings to the subsystem, you must click **Apply** in the Hitachi SANtinel - S/390® panel.

- **Cancel**: Cancels settings in the Add/Change LDEV Group panel and closes the panel.

3.5   The Add/Change Host Panel

To access the **Add/Change** Host panel (see Figure 3.1), right-click a host group in the tree view of the Hitachi SANtinel - S/390® panel -> **Specify** -> Host.
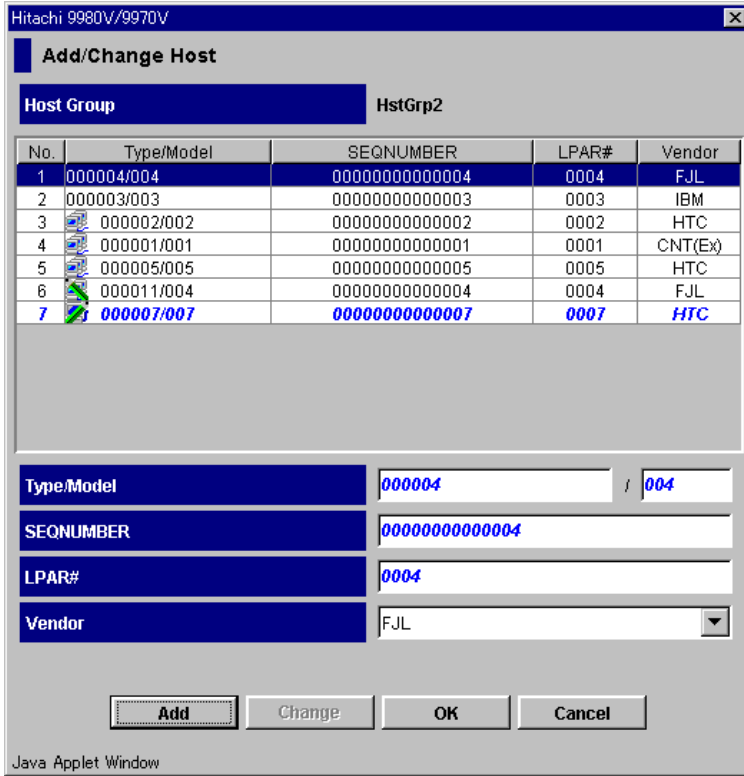
Figure 3.5   The Add/Change Host Panel

The following sections explain how to:

  — Register hosts attached to the disk subsystem in host groups (see section 4.1.2)

  — Register hosts unattached to the disk subsystem in host groups (see section 5.2.1)

  — Delete hosts groups (see section 5.2.4)

■ **Host Group**: Displays the name of the host group.

■ **Table Row**: Each table row usually displays information about a host. However, if a host is attached to the disk subsystem via a channel extender, the table row displays information about the channel extender.

■ **No.**: Displays a number starting from 1.

■ **Type/Model**: Type and the model number of a host (or a channel extender). The type appears on the left of the slash (/). The model number appears on the right of the slash.

Table 3.2   Add/Change Host Panel Icon Definitions

Icon	Description
	The host is registered in the current host group (which is displayed above the table), and is attached to the disk subsystem via a cable.
	The host is registered in the current host group, and is *not* attached to the disk subsystem.
	The host is registered in another host group (though the host can be registered in the current host group). The host is attached to the disk subsystem via a cable.
	The host is registered in another host group (though the host can be registered in the current host group). The host is *not* attached to the disk subsystem.
No icon	The host is *not* registered in any host group. The host is attached to the disk subsystem via a cable.

- **SEQNUMBER**: Node ID of a host (or a channel extender).

- **LPAR#**: Logical partition number of a host. Logical partitions are virtual systems created as a result of sectioning a computer's memory into separate units.

- **Vendor**: Vendor of a host. This column can display FJT (Fujitsu), IBM, and HTC (Hitachi). This column can also display CNT(Ex). If CNT(Ex) is displayed, the **Type/Model** column indicates the type and the model number of a channel extender, and the **SEQNUMBER** column indicates the node ID of the channel extender.

- **Type/Model**: When adding a host to the table

  - Enter the type of the host in the text box on the left.

  - Enter the model number of the host in the text box on the right.

  - When changing the type or the model number of a host that you have already added, select the host in the table. Enter the new type or the new model number in the text boxes.

The following conventions apply to the host type:

Six characters must be used.

Characters are case-sensitive.

The following characters cannot be used:

\   ,   /   :   ;   *   ?   "   <   > |

The first character and the last character must not be a space.

The following conventions apply to the model number:

Two or three characters can be used.

Characters are case-sensitive.

The following characters cannot be used:

\   ,   /   :   ;   *   ?   "   <   > |

The first character and the last character must not be a space.

- **SEQNUMBER**: Enter the node ID of the host. When changing the node ID of a host that you already added, select the host in the table. Enter the new node ID.

  The following conventions apply to the node ID:

  – 14 characters can be used.

  – Characters are case-sensitive.

  – The following characters cannot be used:

    \   ,   /   :   ;   *   ?   "   <   > |

  – The first character and the last character must not be a space.

- **LPAR#**: When adding a host to the table, enter a logical partition number of the host in the text box. When changing a logical partition number of a host that you already added, select the host in the table. Enter the new logical partition number.

  The logical volume number must consist of four hexadecimal digits (0-9, A-F).

- **Vendor**: When adding a host to the table, use this drop-down list to specify the vendor of the host. Select FJT (Fujitsu), IBM, HTC (Hitachi), or CNT(Ex). Select CNT(Ex) (and do not select any vendor) if your host is attached to the disk subsystem via a channel extender.

- **Add**: Enter information about a new host. Click **Add**. The host is added to the table.

- **Change**: Change information about the host selected in the table. Click **Change**. The change is reflected in the table.

- **OK**: Applies settings in the Add/Change Host panel to the Hitachi SANtinel - S/390® panel and closes the panel.

  Caution: The **OK** button applies the settings to the Hitachi SANtinel - S/390® panel but does not apply the settings to the disk subsystem. To apply the settings to the subsystem, click **Apply** in the Hitachi SANtinel - S/390® panel.

- **Cancel**: Cancels settings in the Add/Change Host panel and closes panel.

3.6   The Select LDEV Panel

To access the **Select LDEV** panel (see Figure 3.6), right-click an LDEV group in the tree view of the Hitachi SANtinel - S/390® panel -> **Specify** -> LDEV.
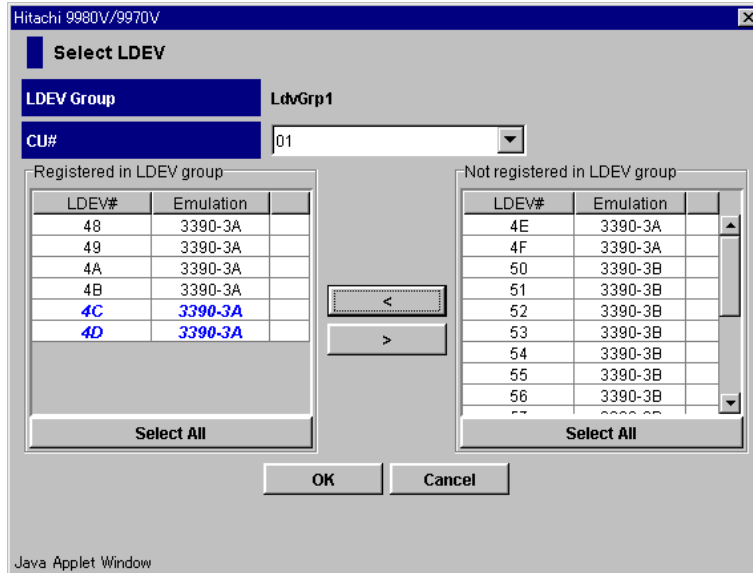

Figure 3.6   The Select LDEV Panel

This following sections explain how to:

–   Register logical volumes (LDEVs) in an LDEV group (see section 4.1.4 or 4.2.2)

–   Delete logical volumes from an LDEV group (see section 5.3.1)

■   **LDEV Group**: Name of the LDEV group in which logical volumes are registered

■   **CU#**: Select the desired logical CU image. The two tables below this drop-down list display logical volumes in the selected CU image

■   **Registered in LDEV group**: Lists logical volumes registered in the LDEV group. One table row indicates one logical volume.

–   **LDEV#**: LDEV numbers

–   The **Emulation** column indicates emulation types of volumes. If an asterisk (*) appears in the cell on the right, the logical volume is a secondary volume (that is, copy destination volume for remote copy operations) or an SI390 reserved volume. If a plus symbol (+) appears in the cell on the right, one or more LU paths are assigned to the logical volume.

–   **Select All**: selects all logical volumes in the table.

- **Not Registered in LDEV group**: The table in this box lists logical volumes that are not registered in the LDEV group. One table row indicates one logical volume.

    – **LDEV#**: LDEV numbers

    – The **Emulation** column indicates emulation types of volumes. If an asterisk (*) appears in the cell on the right, the logical volume is a secondary volume (that is, copy destination volume for remote copy operations) or an SI390 reserved volume. If a plus symbol appears in the cell on the right, one or more LU paths are assigned to the logical volume.

    – The **Select All** button selects all logical volumes in the table.

- **<** button: Use to register logical volumes in the LDEV group. If you select logical volumes in **Not Registered in LDEV group**, click this button. The selected logical volumes move to **Registered in LDEV group**.

- **>** button: Use this button when you want to delete logical volumes from the LDEV group. If you select logical volumes in **Registered in LDEV group**, click this button. The selected logical volumes move to **Not registered in LDEV group**.

- **OK**: Applies settings in the Select LDEV panel to the Hitachi SANtinel - S/390® panel, and closes the **Select LDEV** panel

    Caution: **OK** applies the settings to the Hitachi SANtinel - S/390® panel, but does not apply the settings to the disk subsystem. To apply the settings to the subsystem, click **Apply** in the Hitachi SANtinel - S/390® panel.

- **Cancel**: Cancels settings in the **Select LDEV** panel and closes the panel.

3.7 The Specify Security Group Panel (for Registering a Host Group)

To access the Specify Security Group panel, right-click a host group in the tree view of the Hitachi SANtinel - S/390® panel -> **Specify** -> Security Group (see Figure 3.7). This panel enables you to register a host group in a security group (see section 4.1.6).

Figure 3.7 The Specify Security Group Panel (for Registering a Host Group)

- **Host Group**: Name of the specified host group.

- **Select Security Group**: Specify the security group in which you want to register the specified host group.

- **OK**: Applies settings in the **Specify Security Group** panel to the Hitachi SANtinel - S/390® panel and closes the panel.

  Caution: **OK** applies the settings to the Hitachi SANtinel - S/390® panel, but does not apply the settings to the disk subsystem. To apply the settings to the subsystem, click **Apply** in the Hitachi SANtinel - S/390® panel.

- **Cancel**: Cancels settings in the **Specify Security Group** panel and closes the panel.

3.8 The Specify Security Group Panel (for Registering an LDEV Group)

To access the Specify Security Group, right-click an LDEV group in the tree view of the Hitachi SANtinel - S/390® panel -> **Specify** -> Security Group (see Figure 3.8). This panel enables you to register an LDEV group in a security group (see section 4.1.6 or 4.2.4).
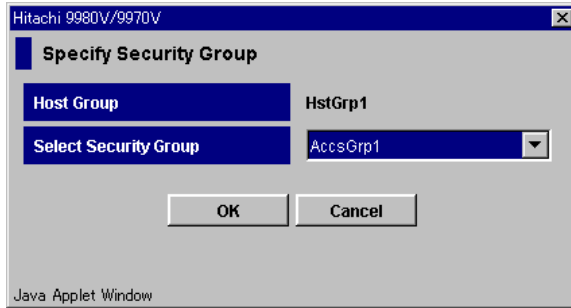
Figure 3.8   The Specify Security Group Panel (for Registering an LDEV Group)

- **LDEV Group**: Name of the specified LDEV group.

- **Select Security Group**: Specify the security group in which you want to register the specified LDEV group.

- **OK**: Applies settings in the Specify Security Group panel to the Hitachi SANtinel - S/390® panel and closes the panel.

   Caution: The OK button applies the settings to the Hitachi SANtinel - S/390® panel, but does not apply the settings to the disk subsystem. To apply the settings to the subsystem, you must continue to click Apply in the Hitachi SANtinel - S/390® panel.

- **Cancel**: Cancels settings in the Specify Security Group panel and closes the panel.

3.9   The Error Detail Panel

When you attempt to apply security in the Hitachi SANtinel - S/390® panel, an error might occur if hosts are performing I/O operations (for details, refer to section 1.1.1). The Error Detail panel (Figure 3.9) enables you to find hosts currently performing I/O operations.
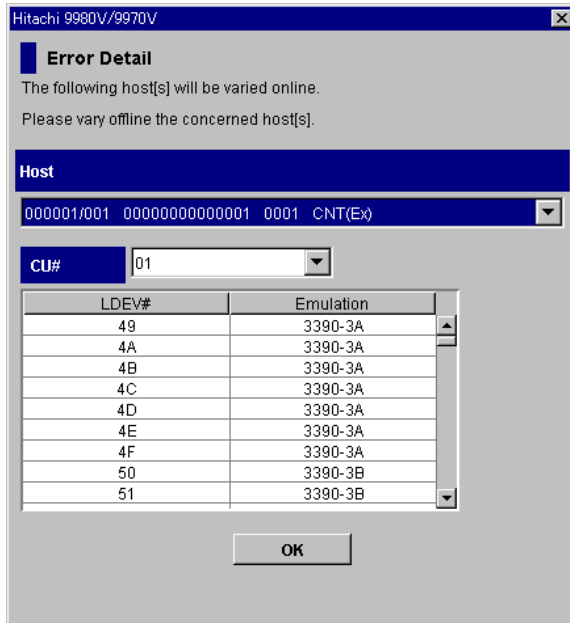
Figure 3.9   The Error Detail Panel

- **Host**: If you click the arrow button on the right of this drop-down list, a list of hosts currently performing I/O operations appears. If you have selected a host, you will be able to find logical volumes on which the host is performing I/O operations.

- **CU#**: This drop-down list allows you to specify a CU image. If you specify a CU image, a table displays logical volumes on which the host is currently performing I/O operations and which of those operations belong to the specified CU image.

  − The LDEV# column indicates LDEV numbers.

  − The Emulation column indicates emulation types of volumes.

- **Table**: This table displays a list of logical volumes on which the host is performing I/O operations and which belong to the specified CU image.

- **OK**: This button closes the Error Detail panel.

Chapter 4 Applying and Disabling Security Operations

This section explains how to enable specified hosts to access certain logical volumes and provides information on:

■ Preventing all the hosts from accessing logical volumes (see section 4.2).

■ Preventing data in logical volumes from being overwritten by remote copy operations (see section 4.3)

■ Disabling security (see section 4.4)

4.1 Enabling Only the Specified Hosts to Access Logical Volumes

■ Create a host group (see section 4.1.1).

■ Register the hosts in the host group (see section 4.1.2).

■ Create an LDEV group (see section 4.1.3).

■ Register the logical volumes in the LDEV group (see section 4.1.4).

■ Create a security group and classify the security group as an access group (see section 4.1.5).

■ Register the host group and the LDEV group in the security group (see section 4.1.6).

4.1.1 Creating a Host Group

To specify hosts that can access volumes, you must create a host group and then register the hosts in the host group.

The following is the procedure for creating a host group. For details on how to register hosts in a host group, refer to section 4.1.2.

To create a host group:

1. Ensure that you are in Modify mode. For details, refer to section 2.3.

2. In the Hitachi SANtinel - S/390® panel (Figure 3.1), right-click **Host Group**.
    A pop-up menu appears.

3. Select **Add/Change** from the pop-up menu.
    The Add/Change Host Group panel (see Figure 3.3) appears.

4. In the **Enter Host Group** box, enter the name of the host group that you want to create, and then click the **Add** button.

    For host group naming conventions, please see section 3.1.1.

5. Confirm that the new host group is displayed in blue in **Host Group List**, and then click **OK**.
    Caution: Here, the settings in the panel have not been applied to the disk subsystem.

6. Click **Apply** in the Hitachi SANtinel - S/390® panel.

Caution: If you do not click **Apply**, you may lose the host group if you encounter an error while registering it and the LDEV group (see section 4.1.6).

A message appears and asks whether you want to apply the settings to the disk subsystem.

7. Click **Yes**.
    The settings are applied to the disk subsystem.

4.1.2   Registering Hosts in a Host Group

After you have created a host group, you need to register the hosts in the host group:

1. Ensure that you are in **Modify** mode.

2. In the Hitachi SANtinel - S/390® panel, right-click a host group. A pop-up menu appears.

3. Select **Specify** -> **Host** from the pop-up menu.

4. The **Add/Change Host** panel appears displaying a list of hosts.

    −   Select and right click one or more hosts that you want to register.

        Note: If the icon or appears next to the host selection, the host is already registered in the specified host group. For icon definitions, see section 3.5.

    −   Select **Registration** -> **Register Host in Host Group** from the pop-up menu.
        The specified hosts are displayed by blue and also indicated by or .

5. Click **OK**.

    Caution: The settings in the panel have not been applied to the disk subsystem.

6. Click **Apply**.

    Caution: If you do not click **Apply**, the hosts might become unregistered if you encounter an error registering the host group and the LDEV group (see section 4.1.6).

7. A message appears and asks whether you want to apply the settings to the disk subsystem.

8. Click **Yes**. The settings are applied to the disk subsystem.

4.1.3 Creating an LDEV Group

To specify logical volumes that should be secured, you must create an LDEV group and then register the logical volumes in that LDEV group.

1. Ensure that you are in the **Modify** mode.

2. In the Hitachi SANtinel - S/390® panel, right-click **LDEV Group**. A pop-up menu appears.

3. Select **Add/Change**. The Add/Change LDEV Group panel appears.

4. In the **Enter LDEV Group** box, enter the name of the LDEV group that you want to create.

5. Click **Add**.

6. Confirm that the new LDEV group is displayed in blue on the LDEV Group List. Click **OK**.

   Caution: The settings in the panel have not been applied to the disk subsystem.

7. Click **Apply**.

   Caution: If you do not click **Apply**, you might lose the LDEV group if you encounter an error registering the host group and the LDEV group (see section 4.1.6).

   A message appears and asks whether you want to apply the settings to the disk subsystem.

8. Click **Yes**. The settings are applied to the disk subsystem.

4.1.4 Registering Logical Volumes in an LDEV Group

When you have created an LDEV group, you need to register logical volumes in that LDEV group.

1. Ensure that you are in the **Modify** mode.

2. In the Hitachi SANtinel - S/390® panel, right-click an LDEV Group. A pop-up menu appears.

3. Select **Specify** -> **LDEV**. The Select LDEV panel appears.

4. Specify a CU image from the CU# drop-down list.

5. Logical volumes in the specified CU image are displayed in the two boxes below the drop-down list.

   – The **Registered in LDEV Group** box displays logical volumes registered in the LDEV group.

   – The **Not registered in LDEV Group** box displays logical volumes that are not registered in the LDEV group.

6. In the **Not registered in LDEV Troup** box, select logical volumes that you want to register.

7. Click the **<** button. The selected logical volumes move to the **Registered in LDEV Group** box.

8. Click **OK**.

    Caution: The settings in the panel have not been applied to the disk subsystem.

9. Click **Apply** in the Hitachi SANtinel - S/390® panel.

    Caution: If you do not click **Apply**, the logical volumes might become unregistered if you encounter an error registering the host group and the LDEV group (see section 4.1.6).

    A message appears and asks whether you want to apply the settings to the disk subsystem.

10. Click **Yes**. The settings are applied to the disk subsystem.

11. If you want to register logical volumes in other CU images, return to step 2.

4.1.5   Creating a Security Group for Use As an Access Group

Classify a security group as an access group to allow logical volumes to be accessed only by specified hosts.

1. Ensure that you are in **Modify** mode.

2. In the Hitachi SANtinel - S/390® panel, right-click **Security Group**. A pop-up menu appears.

3. Select **Add/Change**. The **Add/Change Security Group** panel appears.

4. In the **Enter Security Group** box, enter the name of the security group that you want to create.

    For security group naming conventions, please see section 3.1.1.

5. Select **Enable** in the Security box.

6. Select **Access** in the Group Status box.

7. Select **Enable** or **Disable** In the T-VOL/R-VOL box.

    – Select **Enable** if you want make logical volumes in the security group usable as secondary volumes for remote copy operations.

    – Select **Disable** if you want make logical volumes in the security group unusable as secondary volumes for remote copy operations.

8. Click **Add**. Information about the new security group is added to the Security Group List table and is displayed in blue.

9. Click **OK**.

    Caution: The settings in the panel have not been applied to the disk subsystem.

10. Click **Apply** in the Hitachi SANtinel - S/390® panel. A message appears and asks whether you want to apply the settings to the disk subsystem.

11. Click **Yes**. The settings are applied to the disk subsystem.

4.1.6   Registering a Host Group and an LDEV Group in a Security Group

Your last task is to register your host group and LDEV group into the security group. When you finish registration, the logical volumes in the LDEV group are secured and can only be accessed by hosts in the host group. Other hosts cannot access the logical volumes.

1. Ensure that you are in **Modify** mode.

2. In the Hitachi SANtinel - S/390® panel, right-click a host group. A pop-up menu appears.

3. Select **Specify** -> **Security Group**. The Specify Security Group panel (see Figure 3.7) appears.

4. Select a security group from the Select Security Group drop-down list. Click **OK**.

5. In the Hitachi SANtinel - S/390® panel, right-click an LDEV group. A pop-up menu appears.

6. Select **Specify** -> Security Group from the pop-up menu. The Specify Security Group panel appears.

7. Select the security group from the Select Security Group drop-down list. Click **OK**.

8. Click **Apply** in the Hitachi SANtinel - S/390® panel. A message appears and asks whether you want to apply the settings to the disk subsystem.

9. Click **Yes**.

    The settings are applied to the disk subsystem.

    Caution: If the Error Detail panel (section 3.9) appears, refer to section 1.1.1.

4.2 Prohibiting All Hosts from Accessing Logical Volumes

- Creating an LDEV group (see section 4.2.1)

- Registering logical volumes in the LDEV group (see section 4.2.2)

- Creating a security group and classifying the security group as a pool group (see section 4.2.3)

- Registering the LDEV group in the security group (see section 4.2.4)

4.2.1 Creating an LDEV Group

To specify logical volumes that should be secured, create an LDEV group, and then register the logical volumes in the LDEV group.

1. Ensure that you are in **Modify** mode.

2. In the Hitachi SANtinel - S/390® panel, right-click **LDEV Group**. A pop-up menu appears.

3. Select **Add/Change**. The Add/Change LDEV Group panel appears.

4. In the **Enter LDEV Group** box, enter the name of the LDEV group that you want to create.

5. Click **Add**.

   For LDEV group naming conventions, please see section 3.1.1.

6. Confirm that the new LDEV group is displayed in blue on the LDEV Group List. Click **OK**.

   Caution: Here, the settings in the panel have not been applied to the disk subsystem.

7. Click **Apply** in the Hitachi SANtinel - S/390® panel.

   Caution: If you do not click **Apply**, the LDEV group may not be registered if you encounter an error registering the LDEV group (see section 4.2.4).

   A message appears and asks whether you want to apply the settings to the disk subsystem.

8. Click **Yes**. The settings are applied to the disk subsystem.

4.2.2   Registering Logical Volumes in an LDEV Group

Now that you have created an LDEV group, register the logical volumes in the LDEV group.

1. Ensure that you are in **Modify** mode.

2. In the Hitachi SANtinel - S/390® panel, right-click an LDEV group. A pop-up menu appears.

3. Select **Specify** -> **LDEV**.

4. The **Select LDEV** panel appears. Use the CU# drop-down list to specify a CU image.

5. The two boxes below the drop-down list display logical volumes in the specified CU image.

    – The **Registered in LDEV Group** box displays logical volumes registered in the LDEV group.

    – The **Not registered in LDEV Group** box displays logical volumes that are not registered in the LDEV group.

6. In the **Not registered in LDEV Group** box, select logical volumes that you want to register.

7. Click the **<** button. The selected logical volumes move to the Registered in LDEV group box.

8. Click **OK**.

    Caution: The settings in the panel have not been applied to the disk subsystem.

9. Click **Apply**.

    Caution: If you do not click **Apply**, the logical volumes might be unregistered if you encounter an error registering the LDEV group (see section 4.2.4).

    A message appears and asks whether you want to apply the settings to the disk subsystem.

10. Click **Yes**. The settings are applied to the disk subsystem.

11. If you want to register logical volumes in other CU images, return to step 2.

4.2.3   Creating a Security Group for Use As a Pool Group

Security groups can be classified as access groups or pool groups. Classify a security group as a pool group if you want to prohibit all the hosts from accessing logical volumes.

1. Ensure that you are in **Modify** mode.

2. In the Hitachi SANtinel - S/390® panel (see Figure 3.1), right-click **Security Group**. A pop-up menu appears.

3. Select **Add/Change** from the pop-up menu.

4. The **Add/Change Security Group** panel appears. In the Enter Security Group box, enter the name of the security group that you want to create.

    For host group naming conventions, please see section 3.1.1.

5. In the Security box, select **Enable**.

6. In the Group Status box, select **Pool**.

7. In the T-VOL/R-VOL box, select **Enable** or **Disable**.

    –   Select **Enable** if you want make logical volumes in the security group usable as secondary volumes for remote copy operations.

    –   Select **Disable** if you want make logical volumes in the security group unusable as secondary volumes for remote copy operations.

8. Click **Add**. Information about the new security group is added to the Security Group List table and is displayed in blue.

9. Click **OK**.

    Caution: The settings in the panel have not been applied to the disk subsystem.

10. Click **Apply**. A message appears and asks whether you want to apply the settings to the disk subsystem.

11. Click **Yes**. The settings are applied to the disk subsystem.

4.2.4   Registering an LDEV Group in a Security Group

The final task is to register your LDEV group into the security group. When you finish registration, the logical volumes in the LDEV group are secured and inaccessible from any hosts.

1. Ensure that you are in **Modify** mode.

2. In the Hitachi SANtinel - S/390® panel, right-click an LDEV group. A pop-up menu appears.

3. Select **Specify** -> **Security Group** from the pop-up menu.

4. The **Specify Security Group** panel appears.

5. Select a security group from the Select Security Group drop-down list. Click **OK**.

6. Click **Apply**. A message appears and asks whether you want to apply the settings to the disk subsystem.

7. Click **Yes**. The settings are applied to the disk subsystem.

Caution: If the Error Detail panel (section 3.9) appears, refer section 1.1.1.

PRELIMINARY RELEASE

4.3   Protecting Logical Volumes from Remote Copy Operations

The following procedure makes logical volumes in a security group unusable as secondary volumes for remote copy operations. This protects data in the logical volumes from being overwritten by remote copy operations.

1. Ensure that you are in **Modify** mode.

2. In the Hitachi SANtinel - S/390® panel, right-click Security Group or the desired security group. A pop-up menu appears.

3. Select **Add/Change** from the pop-up menu. The Add/Change Security Group panel appears.

4. Ensure that the desired security group is selected in the Security Group List table. Select **Disable** in the T-VOL/R-VOL box.

5. Click **Change**. The change is reflected in the panel.

6. Click **OK**.

   Caution: The settings in the panel have not been applied to the disk subsystem.

7. Click **Apply**. A message appears and asks whether you want to apply the settings to the disk subsystem.

8. Click **Yes**. The settings are applied to the disk subsystem.

Tip: To make logical volumes in your security group usable as secondary volumes for remote copy operations:

■ Select the security group in the **Add/Change Security Group** panel.

■ Select **Enable** in the T-VOL/R-VOL box.

■ Click **Change** -> **OK.**

■ Click **Apply** in the Hitachi SANtinel - S/390® panel.

4.4   Disabling Security

If security is disabled, logical volumes in the security group are accessible from all hosts and are usable as secondary volumes for remote copy operations, regardless of whether the security group is an access group or a pool group.

Note: If you are sure that you do not need to restore security, you can delete your security group to disable security. For details on how to delete security groups, see section 5.1.4.

1. Ensure that you are in **Modify** mode.

2. In the Hitachi SANtinel - S/390® panel (see Figure 3.1), right-click the security group in which the desired logical volumes are registered. A pop-up menu appears.

3. Select **Add/Change** from the pop-up menu. The Add/Change Security Group panel appears.

4. Ensure that the desired security group is selected in the Security Group List table. Select **Disable** in the Security box.

5. Click **Change**. The change is reflected in the panel.

6. Click **OK**.

    Caution: The settings in the panel have not been applied to the disk subsystem.

7. Click **Apply** in the Hitachi SANtinel - S/390® panel. A message appears and asks whether you want to apply the settings to the disk subsystem.

8. Click **Yes**. The settings are applied to the disk subsystem.

Tip: To restore security:

■ Select the **Security Group** in the Add/Change Security Group panel.

■ Select **Enable** in the Security box.

■ Click **Change** -> **OK**.

■ Click **Apply** in the Hitachi SANtinel - S/390® panel.

Chapter 5   Modifying Security Settings

5.1   Editing Security Groups

This section explains the following operations that allow you to modify security groups:

- Unregistering a host group from a security group (see section 5.1.1)

- Unregistering an LDEV group from a security group (see section 5.1.2)

- Renaming a security group (see section 5.1.3).

- Deleting a security group (see section 5.1.4)

5.1.1   Unregistering a Host Group from a Security Group

1. Ensure that you are in **Modify** mode.

2. In the Hitachi SANtinel - S/390® panel, locate and double-click a security group. The tree view displays the host group in the specified security group.

3. Right-click the host group. Select **Delete** from the pop-up menu. A message appears and asks whether you want to *unregister* the specified host group.

4. Click **Yes**.

   Caution: The changes in the panel have not been applied to the disk subsystem.

5. Click **Apply** in the Hitachi SANtinel - S/390® panel. A message appears and asks whether you want to apply the changes to the disk subsystem.

6. Click **Yes**. The changes are applied to the disk subsystem.

5.1.2   Unregistering an LDEV Group from a Security Group

1. Ensure that you are in **Modify** mode.

2. In the Hitachi SANtinel - S/390® panel, locate and double-click a security group. The tree view displays the LDEV group in the specified security group.

3. Right-click the LDEV group and the select **Delete** from the pop-up menu. A message appears and asks whether you want to *unregister* the specified LDEV group.

4. Click **Yes**.

   Caution: The changes in the panel have not been applied to the disk subsystem.

5. Click **Apply** in the Hitachi SANtinel - S/390® panel. A message appears and asks whether you want to apply the changes to the disk subsystem.

6. Click **Yes**. The changes are applied to the disk subsystem.

5.1.3   Renaming Security Groups

1. Ensure that you are in **Modify** mode.

2. In the Hitachi SANtinel - S/390® panel (see Figure 3.1), right-click **Security Group** or a security group. A pop-up menu appears.

3. Select **Add/Change** from the pop-up menu. The Add/Change Security Group panel appears.

4. Ensure that the desired security group is selected in the Security Group List table. In the **Enter Security Group** box, enter the new name for the security group.

    For security group naming conventions, please see section 3.1.1.

5. Click **Change**. The change is reflected in the panel.

6. Click **OK**.

    Caution: Here, the change in the panel has not been applied to the disk subsystem.

7. Click **Apply** in the Hitachi SANtinel - S/390® panel. A message appears and asks whether you want to apply the change to the disk subsystem.

8. Click **Yes**. The change is applied to the disk subsystem.

5.1.4   Deleting Security Groups

1. Ensure that you are in **Modify** mode.

2. In the Hitachi SANtinel - S/390® panel, do either of the following:
    − Right-click a security group in the tree view.
    − Right-click Security Group in the tree view and then select **Add/Change** from the pop-up menu. Next, in the **Add/Change Security Group** panel, select one or more security groups in the Security Group List table and right-click the selection.

3. Select **Delete** from the pop-up menu. A message appears and asks whether you want to delete the specified security group(s).

4. Click **Yes**. If the **Add/Change Security Group** panel remains open, click **OK** to close the panel.

    Caution: The change in the panel has not been applied to the disk subsystem.

5. Click **Apply** in the Hitachi SANtinel - S/390® panel. A message appears and asks whether you want to apply the change to the disk subsystem.

6. Click **Yes**. The change is applied to the disk subsystem.

5.2 Editing Host Groups

This section explains the following operations that allow you to edit host groups:

- Registering hosts that have not been attached to the disk subsystem into a host group (see section 5.2.1)

- Deleting hosts from a host group (see section 5.2.2)

- Renaming a host group (see section 5.2.3).

- Deleting a host group (see section 5.2.4)

5.2.1 Registering Hosts to be Attached to the Disk Subsystem

If your organization is planning to attach new mainframe hosts to the disk subsystem, you possibly need to revise security settings on logical volumes.

For example, if you do not want to allow the new hosts to access some logical volumes, you might need to register the new hosts in the host group in an existing access group. Hitachi SANtinel -S/390® enables you to register new hosts in host groups before the new hosts are attached via cables to the disk subsystem.

To register a mainframe host to be attached into a host group:

1. Execute the following system command at the mainframe host:

   ```
   D M=CPU
   ```

   This command displays the type, the model number, the node ID and the logical partition number of the host. Write down the information on a paper so that you do not forget it.

   Note: For details of the system command, please refer to the documentation for system commands.

2. Ensure that you are in **Modify** mode.

3. In the Hitachi SANtinel - S/390® panel, right-click **Host Group** to display a list of host groups.

4. Right-click the host group in which you want to register the host. Select **Specify** -> **Host** from the pop-up menu. The **Add/Change Host** panel appears.

   Use the text boxes and the drop-down list to specify information about the host you want to register. You have already obtained the information earlier in this procedure (see step 1).

5. Click **Add**. The specified host is added to the table and is indicated by the icon .

6. Click **OK**.

   Caution: The settings in the panel have not been applied to the disk subsystem.

7. Click **Apply** in the Hitachi SANtinel - S/390® panel. A message appears and asks whether you want to apply the settings to the disk subsystem.

8. Click **Yes**. The settings are applied to the disk subsystem.

Notes:

— If you registered a host in an incorrect host group, follow the previous procedure (this section) to register the host in the correct host group. After you do this, follow the procedures in section 5.2.2 to remove the host from the incorrect host group.

— To modify information, select the desired host in the table and use the text boxes and/or drop down list to change information. Click **Change** -> **OK** -> **Apply**.

— To delete a host, select and right-click the host. Select **Delete** from the pop-up menu. Select **OK** -> **Apply**.

5.2.2 Deleting Hosts from Host Groups

1. Ensure that you are in **Modify** mode.

2. In the Hitachi SANtinel - S/390® panel, right-click a host group. A pop-up menu appears.

3. Select **Specify** -> **Host** from the pop-up menu. The **Add/Change Host** panel appears and displays a list of hosts. The icons and indicate hosts registered in the specified host group.

4. Select and right click one or more hosts (indicated by or) that you want to delete. Select **Registration** -> **Unregister Host from Host Group** from the pop-up menu. The specified hosts are displayed by blue. Also, icons disappear or change to or .

   Note: The icons and indicate that the host is registered in another host group.

5. Click **OK**.

   Caution: The settings in the panel have not been applied to the disk subsystem.

6. Click **Apply**. A message appears and asks whether you want to apply the settings to the disk subsystem.

7. Click **Yes**. The settings are applied to the disk subsystem.

5.2.3 Renaming Host Groups

1. Ensure that you are in **Modify** mode.

2. In the Hitachi SANtinel - S/390® panel, right-click **Host Group** or a host group. A pop-up menu appears.

3. Select **Add/Change** from the pop-up menu. The **Add/Change Host Group** panel appears.

4. Ensure that the desired host group is selected in the Host Group List table. In the **Enter Host Group** box, enter the new name for the host group.

   For host group naming conventions, please see section 3.1.1.

5. Click **Change**. The change is reflected in the panel.

6. Click **OK**.

   Caution: Here, the change in the panel has not been applied to the disk subsystem.

7. Click **Apply**. A message appears and asks whether you want to apply the change to the disk subsystem.

8. Click **Yes**. The change is applied to the disk subsystem.

5.2.4   Deleting Host Groups

1. Ensure that you are in Modify mode.

2. In the Hitachi SANtinel - S/390® panel, do either of the following:

   – Right-click a host group in the tree view.

   – Right-click **Host Group** in the tree view. Select **Add/Change** from the pop-up menu. In the **Add/Change Host Group** panel, select one or more host groups in the **Host Group List** table and right-click the selection.

3. Select **Delete** from the pop-up menu. A message appears and asks whether you want to delete the specified host group(s).

4. Click **Yes**. If the Add/Change Host Group panel still remains displayed, click **OK** to close the panel.

   Caution: The change in the panel has not been applied to the disk subsystem.

5. Click **Apply** in the Hitachi SANtinel - S/390® panel. A message appears and asks whether you want to apply the change to the disk subsystem.

6. Click **Yes**. The change is applied to the disk subsystem.

5.3   Editing LDEV Groups

This section explains the following operations that allow you to edit host groups:

■   Deleting logical volumes from an LDEV group (see section 5.3.1)

■   Renaming an LDEV group (see section 5.3.2).

■   Deleting an LDEV group (see section 5.3.3)

5.3.1   Deleting Logical Volumes from LDEV Groups

1.   Ensure that you are in **Modify** mode.

2.   In the Hitachi SANtinel - S/390® panel, right-click an LDEV group. A pop-up menu appears.

3.   Select **Specify** -> **LDEV** from the pop-up menu. The Select LDEV panel appears.

4.   Use the **CU#** drop-down list to specify a CU image. The two boxes below the drop-down list displays logical volumes in the specified CU image.

    –   The **Registered in LDEV** group box displays logical volumes registered in the LDEV group.

    –   The **Not registered in LDEV** group box displays logical volumes that are not registered in the LDEV group.

5.   In the **Registered in LDEV** group box, select the logical volumes that you want to delete. Click the > button. The selected logical volumes move to the Not registered in LDEV group box.

    Note: If you want to delete logical volumes in other CU images, return to step 4.

6.   Click **OK**.

    Caution: The settings in the panel have not been applied to the disk subsystem.

7.   Click **Apply**. A message appears and asks whether you want to apply the settings to the disk subsystem.

8.   Click **Yes**. The settings are applied to the disk subsystem.

5.3.2   Renaming LDEV Groups

1.   Ensure that you are in **Modify** mode.

2.   In the Hitachi SANtinel - S/390® panel, right-click **LDEV Group** or an LDEV group. A pop-up menu appears.

3.   Select **Add/Change** from the pop-up menu. The Add/Change LDEV Group panel appears.

4.   Ensure that the desired LDEV group is selected in the LDEV Group List table. In the **Enter LDEV Group** box, enter the new name for the LDEV group.

    For LDEV group naming conventions, please see section 3.1.1.

5.   Click **Change**. The change is reflected in the panel.

6. Click **OK**.

    Caution: The change in the panel has not been applied to the disk subsystem.

7. Click **Apply**. A message appears and asks whether you want to apply the change to the disk subsystem.

8. Click **Yes**. The change is applied to the disk subsystem.

5.3.3   Deleting LDEV Groups

1. Ensure that you are in **Modify** mode.

2. In the Hitachi SANtinel - S/390® panel, do one of the following:

    –   Right-click an LDEV group in the tree view, <u>or</u>

    –   Right-click **LDEV Group** in the tree view. Select Add/Change from the pop-up menu. In the **Add/Change LDEV Group** panel, select one or more LDEV groups in the **LDEV Group List** table and right-click the selection.

3. Select **Delete**. A message appears and asks whether you want to delete the specified LDEV group(s).

4. Click **Yes**. If the Add/Change LDEV Group panel still remains displayed, click **OK** to close the panel.

    Caution: The change in the panel has not been applied to the disk subsystem.

5. Click **Apply**. A message appears and asks whether you want to apply the change to the disk subsystem.

6. Click **Yes**. The change is applied to the disk subsystem.

For troubleshooting information on host operations, please refer to IBM's Multiple Virtual Storage (MVS) documentation.

Chapter 6   Troubleshooting

6.1   Troubleshooting

For troubleshooting information on the 9900V subsystem, please refer to the 9900V user and reference guides. For a complete list of Storage Navigator error codes, please refer to *9900V Remote Console - Storage Navigator Error Codes*.

The user is responsible for the operation and normal maintenance of the Storage Navigator computer. Here are some guidelines for troubleshooting the Storage Navigator computer:

- Check the cabling and the LAN. Verify that both the computer and LAN cabling are firmly attached, and that the LAN is operating properly.

- Reboot the computer. Close any programs that are not responding. If necessary, reboot the computer and restart the Storage Navigator Java applet program.

- Check for any General Error Conditions. Table 6.1 describes some general error conditions, along with the recommended resolution for each item. If you are still unable to resolve an error condition, call the Hitachi Technical Support Center for assistance.

- **Check the status lamp on the Storage Navigator main panel.** If the color of the lamp becomes yellow (🟡) or red (🔴), confirm the severity level of the DKC and DKU on the Status panel (please refer to *9900V Remote Console - Storage Navigator User's Guide*). If you are unable to resolve an error condition, contact the Hitachi Data Systems Technical Support Center.

- **Download the Storage Navigator trace files using the FD Dump Tool.** If you are unable to resolve an error condition, first copy the 9900V Storage Navigator configuration information onto floppy disk(s) using the FD Dump Tool (please refer to *9900V Remote Console - Storage Navigator User's Guide*). Contact the Hitachi Data Systems Technical Support Center and give the information on the floppy disk(s) to the Hitachi Data Systems service personnel.

Table 6.1   General Error Conditions

Error Condition	Recommended Action
The program on the SVP is updated.	Exit all Web browsers on the Storage Navigator computer. Restart the browsers. If in doubt, you should exit and restart the browsers.
The Storage Navigator computer experiences an error.	Save the Java log file on the Storage Navigator computer, and report to the Hitachi Data Systems Technical Support Center. For Windows 2000, the Java log file is in the following place: `c:\Documents and Settings\login user ID\plugin131.trace` Restart the Storage Navigator computer.
A network error occurred.	Restart the Storage Navigator computer.
Only the Exit and Refresh buttons are effective when accessing the SVP from the Storage Navigator computer.	The SVP might not be ready because it is performing some write process from the other system. Wait for a while. Select the Refresh button.
After dragging and dropping objects to another location or area, the scroll bar on that location becomes unusable.	Close all panels including the Storage Device List panel. Log onto the Storage Navigator again.
A focus disappears from the edit box.	Close all panels including the Storage Device List panel. Log onto the Storage Navigator again.
A Storage Navigator panel is closed by - Clicking the button on the panel - Using the commands such as File and Exit on the Web browser - Pressing the Alt and F4 keys.	Wait for an RMI time-out (default is 1 min.), and then restart the Storage Navigator.
An internal error occurs, or a Web browser ends abnormally (forcibly).	Close all panels including the Storage Device List panel. Log onto the Storage Navigator again. If the same error occurs, restart the Storage Navigator computer.
If you are unable to resolve an error condition.	Copy the 9900V Storage Navigator configuration information onto floppy disk(s) using the FD Dump Tool (please refer to *9900V Remote Console - Storage Navigator User's Guide)*, and contact the Hitachi Data Systems Technical Support Center.

For troubleshooting information on host operations, please refer to the MVS documentation.

If you need to call the Hitachi Data Systems Support Center, please provide the following information about the problem.

- The 9900V Storage Navigator configuration information saved on diskette using the FDCOPY function (please refer to the Hitachi Freedom Storage™ Lightning 9900™ V Series Remote Console – Storage Navigator User's Guide).

- The circumstances surrounding the error or failure.

- The exact content of any error messages displayed on the host system(s).

- The SANtinel (or other) error code(s) displayed on the Storage Navigator computer.

- The remote service information messages (R-SIMs) logged on the Storage Navigator computer

- The reference codes and severity levels of the recent R-SIMs.

6.2 Calling the Hitachi Data Systems Technical Support Center

- Hitachi Data Systems North America/Latin America
San Diego, California, USA
1-800-348-4357

- Hitachi Data Systems Europe
Contact Hitachi Data Systems Local Support

- Hitachi Data Systems Asia Pacific
North Ryde, Australia
011-61-2-9325-3300

Acronyms and Abbreviations

LDEV	logical device
M-VOL	main volume
MVS	Multiple Virtual Storage (IBM)
PC	personal computer
R-SIM	remote service information message
R-VOL	remote volume
SI	ShadowImage
SIM	service information message
SI390	ShadowImage – S/390®
SVP	service processor
TC	Hitachi TrueCopy
TC390	Hitachi TrueCopy - S/390®
TC390A	Hitachi TrueCopy - S/390® Asynchronous
T-VOL	target volume