Technical Brief

Introduction to SANWatch – Storage Manager

Abstract

When users need to view detailed information or do maintenance and configuration tasks on a specific EonStor subsystem though SANWatch, they have to start Storage Manager. This document introduces what is Storage Manager and its main features.

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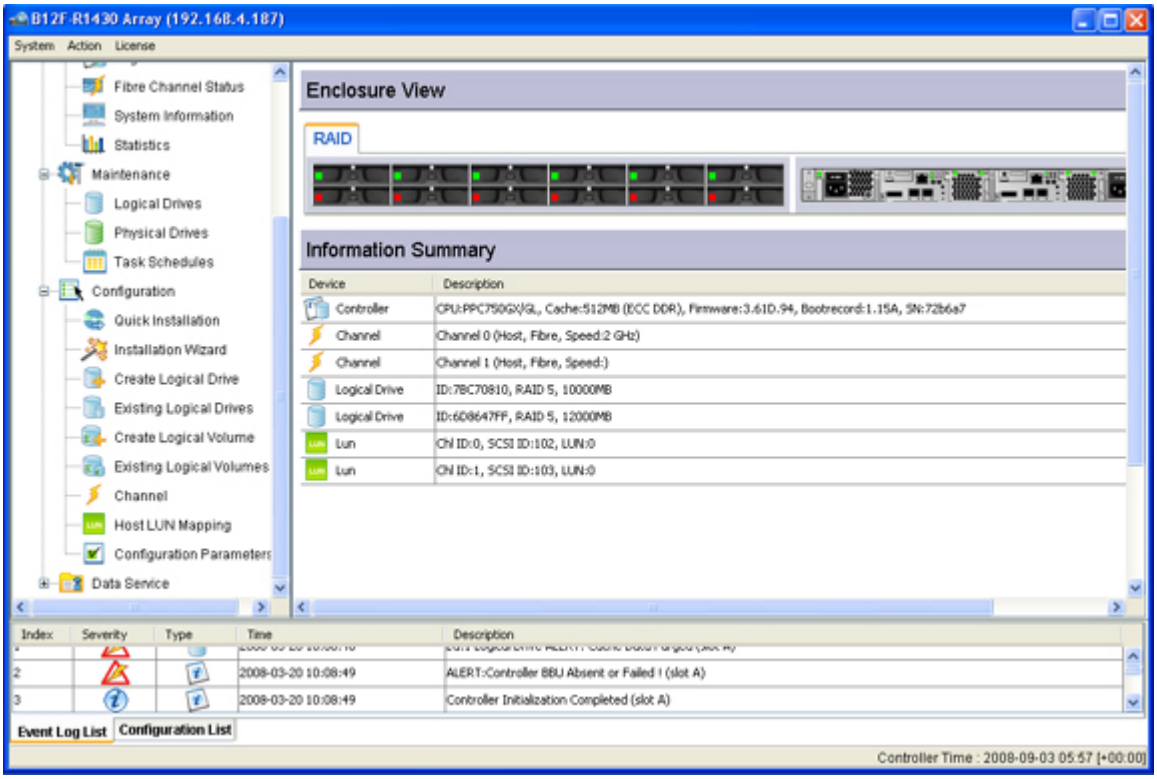
What is Storage Manager

In the initial portal of SANWatch, users can see an overview of all the connected subsystems in the set IP range of local network. Only by clicking on array icons, they can view a status summary and an event list for individual arrays. However, if users would like to get more array-specific details or perform array-specific maintenance and configuration tasks, including those related to SANWatch data service features, they will have to start Storage Manager. Storage Manager is a management session between SANWatch console and a specific RAID subsystem. It allows three levels of authorized access: **Information**, **Maintenance** and **Configuration**. Access levels are governed by password mechanism. **Information** users can examine array status and event messages, **Maintenance** users can do maintenance jobs on configured arrays, while **Configuration** users can create, modify, or delete all array-related configurations. Storage Manager also serves as the interface through which users can activate licensed use of SANWatch data service features.



Main Features of Storage Manager

Information Access Features

When users log in a subsystem with **Information** access, they can view various kinds of information. In the **Enclosure View** window, the physical views of the front and the

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rear of the subsystem are represented in graphic. Besides reading the information summary, users can also mouse over the graphic to get detailed information of each drive and overall system operation status. For more system information, users can get to the **System Information** window. There they can know not only the status of all hardware components but some value-related details, such as cache size, firmware version, CPU and board temperature, voltage and etc. If there are any tasks currently processed by the subsystem, task descriptions and the percentage of progress will be shown in **Tasks Under Process** window. In **Logical Drive Information** and **Logical Volume Information** windows, users can examine the details of all logical drives/volumes in the subsystem, including the related event messages. **Information** access also allows users to get dynamic I/O-related information. In **Statistics** window, the percentage of cache blocks in use and read/write performance (MB/s) of each controller are displayed in graphs whose curves change along with time to reflect real-time status.

Maintenance Access Features

Authorized **Maintenance** login allows users to perform maintenance functions on individual configured arrays to ensure their integrity. In **Logical Drives** window, users can do three maintenance tasks on the selected logical drive: **Media Scan**, **Regenerate Parity** and **Rebuild**. Media scan can detect bad blocks on drives. If any data blocks are found defective during the scanning process, the data will be automatically recalculated, retrieved and stored onto undamaged sectors. Users can also set a task schedule for media scan, designating when media scan should be performed on which disk drives or logical drives and the task's priority level (determining how much system resources will be leveraged to execute the task). Parity data is essential to RAID protection because when a member drive of a logical drive fails, system has to rely on parity to reconstruct the data. **Regenerate Parity** function is used to verify parity blocks on the logical drives with parity protection, i.e., those configured to RAID level 1, 3, 5 and 6. If any inconsistency is found with the parity data, system would regenerate parity and overwrite the original data. In the presence of a spare drive, when a member drive of a parity-protected logical drive fails**,** rebuilding will be automatically initiated. The **Rebuild** function is required only when no spare drive can be used for automatic rebuilding and users therefore have to manually start the rebuilding after replacing the failed drive.

In **Physical Drives** window, users can do six main maintenance tasks on individual drives: **Media Scan**, **Maintain Spare**, **Copy and Replace**, **Clone**, **Identify Drive**, and **Read/Write Test**. **Media Scan** allows users to perform media scan on a selected drive in the configured mode and priority. **Maintain Spare** allows users to assign a selected

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drive as Global, Local or Enclosure spare[1]. When users need to expand a logical drive, they can use **Copy and Replace** to replace the member drives with drives of higher capacity. When users encounter a drive with predicted error, they can use **Clone** to create an exact copy of the drive on a standby spare drive. According to the user-configurable policy, the clone will immediately replace the failing drive or just standby as a ready replacement. In a datacenter with numbers of subsystems installed, locating a particular subsystem or a particular drive can be quite time-consuming. **Identify Drive** function helps users identify the location by making the LED(s) on a designated drive or all the drives of a subsystem flash. To ensure drive's health, users can perform **Read/Write Test** on new drives.

Configuration Access Features

Logging in with **Configuration** access, users are granted the right to do all configuration tasks on a subsystem. For users unfamiliar with RAID configuration, Storage Manager provides **Quick Installation** and **Installation Wizard** functions for quick and easy configuration. Quick Installation function is available only when there is not any created logical drive in the connected RAID subsystem. As simple as selecting the desired RADI level and then clicking **Apply**, users can get a useable logical drive including all drives in and mapped to the host. If users want to further customize logical drives during the creation process, they can use **Installation Wizard** function. Following step-by-step instructions to specify all parameters, users can create the logical drives more suitable for their applications. After logical drives are created, users can freely change their settings, such as the number of partitions, capacity, and RAID level, when application needs vary. Besides the logical drive configuration, users are also allowed to set various system parameters and execute some system operations by a two-step procedure. Configurable system parameters include event trigger thresholds, authorized access passwords, write policy, disk response timeout and etc., while executable system operations include controller resetting, default resetting, controller shutdown and firmware download, and etc.

[1] Global spare participates in the rebuilding of any logical drive, even those in another enclosure. Local spare participates only in the rebuilding of the logical drive it is assigned to, while enclosure spare participates in the rebuilding of any logical drive in the same enclosure.

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