

Reducing Administrative Burden with XIOtech's REDI Control Software Suite

XIOtech's REDI Control Software Suite allows one or many storage administrators, located anywhere in the world, to easily monitor, configure, and schedule storage operations for one or multiple MAGNITUDEs. By automating storage processes and allowing remote SAN monitoring and configuration, the REDI Control Software Suite frees IT personnel to focus on business-critical functions.

REDI Control Manager is the foundation software for the REDI Control Software Suite, which also includes REDI Control Scheduler and REDI Control MAGNITUDE.

This paper is intended for CIOs, system administrators, and other IT professionals who are familiar with enterprise storage technology.

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Introduction

A leader in storage area network (SAN) technology, XIOtech® introduced the MAGNITUDE™ in 1998, equipped with a high-performance RAID controller, an eight-port fibre channel switch and up to 64 drives. Using today's top-of-the-line disk drive technology, one MAGNITUDE with its expansion cabinet can hold up to 11.5TB of raw data. The MAGNITUDE supports a true heterogeneous server environment, simultaneously connecting up to 192 servers of varying operating systems, including Windows NT, Windows 2000, NetWare and UNIX.

The technology that sets the MAGNITUDE apart is its ability to virtualize the capacity and performance of individual disk drives into a pool of shared storage. XIOtech invented storage virtualization as a way to decrease downtime and provide a quantum leap in the ease of storage management. Storage virtualization stripes a user's data across all assigned disk drives in the MAGNITUDE, regardless of drive capacity or speed. The combined storage capacity of up to 64 physical drives can be mapped into 256 virtual disks (VDisks) of varying sizes and RAID levels. Spreading the data among all available drives gives the user tremendous flexibility, allowing the user to dynamically expand virtual disks without bringing down attached servers.

The MAGNITUDE's powerful storage management software, the REal-Time Data Intelligence (REDI™) Software Family, is the key to XIOtech's virtualization technology. In a sea of storage options, the MAGNITUDE and the REDI Software Family provide the ideal solution for users who wish to implement server consolidation and storage centralization projects.

The REDI Control Software Suite, part of XIOtech's REDI Software Family, allows users to remotely monitor and configure the MAGNITUDE storage system. It also facilitates the automation of many of the MAGNITUDE's storage management processes. This paper describes how the REDI Control Software Suite's powerful features help businesses save time, reduce errors, and increase efficiency of their storage systems.

REDI Control Software Suite Overview

The REDI Control Software Suite gives the user the ability to remotely monitor, configure, and automate functions of multiple MAGNITUDE storage systems. This remote location could be as close as the office next door or half a world away.

Using the REDI Control Software Suite the user can:

- Remotely monitor MAGNITUDE environmental conditions, hardware status, and system alerts via dial-up modem, LAN, or Internet connection
- Remotely configure and provide server access to VDisks
- Remotely set up automated tasks to be performed at specified times or relative to other events

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Benefits of REDI Control Software Suite

The REDI Control Software Suite's powerful capabilities work in concert to:

- Reduce administrative burden so IT resources can be directed elsewhere
- Improve system availability—automated procedures are performed quicker with less chance for human error
- Lower capital equipment costs—SAN management can be done remotely and automatically from standard workstations on the network
- Safeguard data by alerting IT staff to potential storage issues quickly

Components of the REDI Control Software Suite

REDI Control Manager

With REDI Control Manager, which runs on a standard Windows NT/2000 PC, administrators can monitor a MAGNITUDE's configuration from anywhere in the world. Easy-to-read screens provide information on power, fans, server connections, MAGNITUDE components, and, if applicable, the expansion cabinet. Color-coded statistics quickly let the user know if a component is functioning properly or if there is a potential problem.

REDI Control Manager makes it easy to configure a MAGNITUDE remotely via a dial-up or LAN connection. REDI Control WebWatch, a feature of REDI Control Manager introduced in 2001, allows the user to also monitor the MAGNITUDE via the Internet or Intranet. Whether inside the same office or halfway across the country, administrators can create, delete, and expand VDisks; assign servers to storage; copy, swap, and mirror VDisks; and move storage from one server to another on any MAGNITUDE located worldwide.

In addition, REDI Control Manager supports the Simple Network Management Protocol (SNMP), which makes the MAGNITUDE visible to third-party network management tools.

REDI Control MAGNITUDE

REDI Control MAGNITUDE enables TCP/IP LAN communication from each MAGNITUDE to the REDI Control Manager application. This is particularly useful for large storage networks and for storage systems that are operated primarily within a single network. To enable LAN communication, the REDI Control MAGNITUDE application must be loaded onto each MAGNITUDE that will be remotely managed over the LAN.

REDI Control Scheduler

REDI Control Scheduler makes it easy to automate many MAGNITUDE operations. From a list of program procedures, the user can create a script to perform complex or critical tasks that occur on a regular basis or at irregular hours, such as backup or data migrations. Once created, scripts are loaded and run from REDI Control Manager.

REDI Control Scheduler improves system availability and reduces the need for human administration of repetitive functions. It allows MAGNITUDE users to create process databases for complex critical tasks.

The recent introduction of the AutoScript function enhances the REDI Control Scheduler offering even further. Now the user can create operating system scripts, such as batch files in Windows NT/2000 or shell scripts in UNIX, to initiate REDI Control Scheduler scripts. By monitoring a predefined directory, AutoScript automatically initiates any scripts it finds, and REDI Control

Manager executes the steps. AutoScript allows scripts to be written and executed remotely, automates repetitive tasks, and reduces the chance of human error.

Monitoring Storage Remotely Via a Dial-Up or LAN Connection

REDI Control Manager is a Microsoft Windows-based application that takes full advantage of the features and functions of the Windows environment. These features include ease of use and graphic displays that quickly and accurately reflect the status of a storage system.

The monitoring capabilities of REDI Control Manager are extensive. Users can remotely access the same information that they would if they were local to the MAGNITUDE and its MAGNITUDE Management Console. REDI Control Manager includes several screens that allow users to monitor the MAGNITUDE and troubleshoot problems.

The following screens are accessed by clicking on the View menu on the main REDI Control Manager screen (fig. 1) and selecting the desired screen.

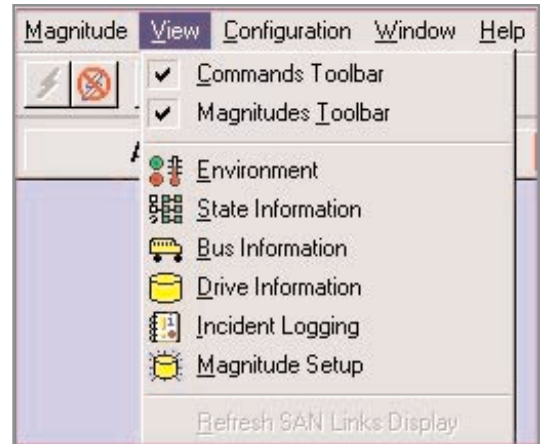


Fig. 1. REDI Control Manager View Menu

Environment Screen

The Environment screen (fig. 2) allows a user to monitor the status and temperatures of a selected MAGNITUDE and its expansion cabinet. Environmental conditions monitored include:

- UPS status
- DC power status
- Fan status
- Temperatures of the host adapter boards (HABs), server HABs (if using the XIOtech XP-HABs), processor, back panel, and communication card

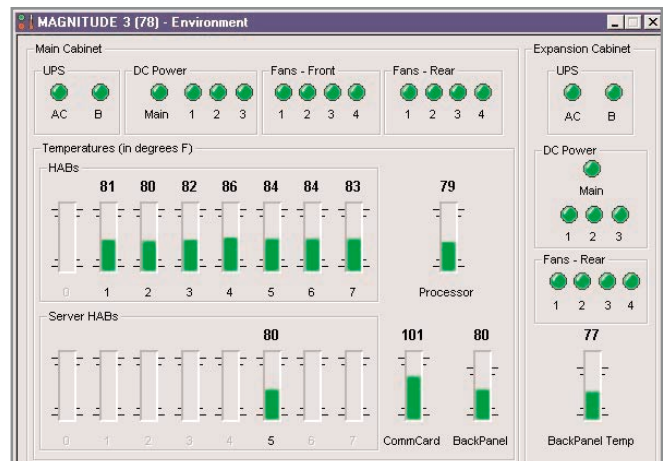


Fig. 2. Environment Screen

Colorful status indicators appear green for good or red for failure. Temperature indicators display green for normal, yellow for temperatures within 10°F (5°C) of the upper or lower temperature limits, and red for temperatures that are outside a component's operating specification.

State Information Screen

The State Information screen (fig. 3) displays the operation state of various components in the MAGNITUDE:

- Management processor
- MAGNITUDE processor

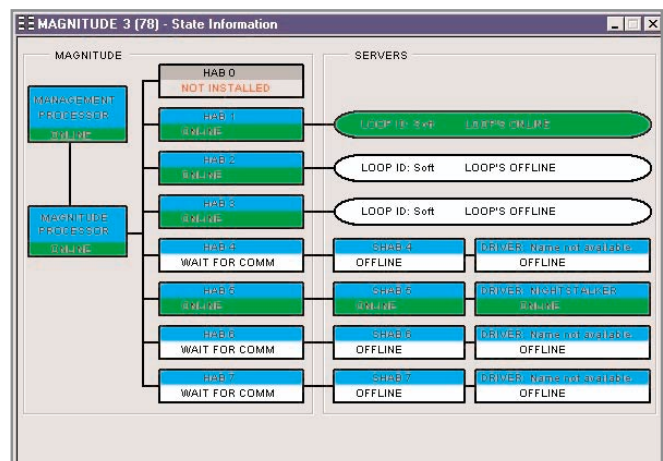


Fig. 3. State Information Screen

- MAGNITUDE HABs
- Server loop

Status information indicates if the component is online, offline, not installed, or waiting for communication.

Bus Information Screen

The Bus Information screen (fig. 4) allows users to view statistical information for individual SCSI buses, as well as individual SCSI IDs. Bus performance information includes:

- Queue depth
- Megabytes per second (MB/Sec)
- I/O operations per second (IO/Sec)
- Number of reads (#Reads)
- Number of writes (#Writes)
- Transfer size (in sectors)
- Errors

Totals:							
Bus #	Queue Depth	MB/Sec	IO/Sec	# Reads	# Writes	Transfer Size	Errors
A	0	0.00	0	33518998	54460777	0	0
B	0	0.00	0	44139440	41981576	0	0
C	0	0.00	0	39568866	54452732	0	0
D	0	0.00	0	32753615	41343286	0	0
E	0	0.00	0	34469356	34465088	0	6
F	0	0.00	0	41086007	44393922	0	0
G	0	0.00	0	32867809	44820418	0	0
H	0	0.00	0	47125158	39607095	0	6

Bus A SCSI ID	Bus B	Bus C	Bus D	Bus E	Bus F	Bus G	Bus H
1	0	0.00	0	6583645	8453383	0	0
2	0	0.00	0	4080719	5133547	0	0
3	0	0.00	0	2687457	5108518	0	0
4	0	0.00	0	3319561	5166289	0	0
5	0	0.00	0	4128105	13494096	0	0
6	0	0.00	0	4305418	7027927	0	0
7	0	0.00	0	4403962	5120961	0	0
8	0	0.00	0	4010131	4956056	0	0

Fig. 4. Bus Information Screen

Drive Information Screen

The Drive Information screen (fig. 5) displays the hierarchy and relationships among the logical (virtual) and physical disks of a MAGNITUDE. For instance, the user can see information about the actual physical disk and RAID groups that make up a VDisk.

The user can view status, properties, and statistics of:

- MAGNITUDEs
- Clusters
- VDIsks
- RAIDs
- Physical disks

Magnitude

- CLUSTER-0
- CLUSTER-1
 - VDISK-00
 - VDISK-01
 - VDISK-02
 - RAID-014
 - PDC1
 - PDC3
 - PDC5
 - PDC7
 - PDD1
 - PDD3
 - PDD5
 - PDD7
- CLUSTER-2
- CLUSTER-3
- CLUSTER-4
- CLUSTER-5
- CLUSTER-6
- CLUSTER-7

Status

Device Status: Ready

Properties | Statistics

Serial Number: 457
 MMC version: 7.51
 PROC version: 7.06
 HAB version: N/A
 BIOS version: N/A
 Address: 10.64.58.253
 Connection: TCP/IP

Fig. 5. Drive Information Screen

The statistics are updated about once a second, so the user can be sure that he or she is getting a current view of the storage system.

Incident Logging Screen

Warnings and errors that occur on the MAGNITUDE are recorded in the Incident Log. Users can display the log in order to review the date, time, and description of the incident.

The MAGNITUDE assigns one of four severity levels to the events that are written to the Incident Log:

- **Informative:** General information about MAGNITUDE operations and status
- **Warning:** Minor issues that do not represent a threat to the MAGNITUDE or its data

- **Error:** Wide range of problems that frequently require human intervention to fix; errors may include high temperatures, power supply failures, or loss of communication with a server
- **Fatal:** Extremely serious incident which can ultimately lead to lost data if not corrected

For incidents with a severity level of Error or Fatal, the Incident Logging screen is automatically displayed and a warning message is placed on the status bar (fig. 6). The user must acknowledge all incidents rated as Error or Fatal. This ensures that those serious incidents are corrected as soon as possible.

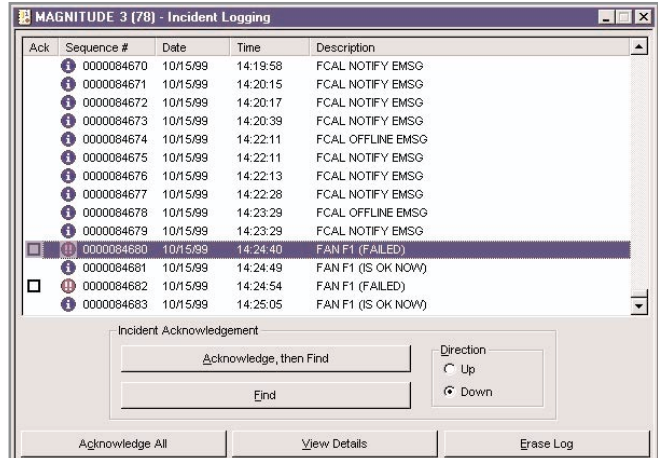


Fig. 6. Incident Logging Screen

MAGNITUDE Setup Screen

The MAGNITUDE Setup screen (fig. 7) displays a graphic layout of all the components connected to the MAGNITUDE, including:

- Loop IDs
- MAGNITUDE HABs
- Clusters
- VDisks with their sizes

There are separate screens for clusters that are assigned to a server and those that are unassigned. This screen is used to access many of the remote configuration capabilities that are described later in this document.

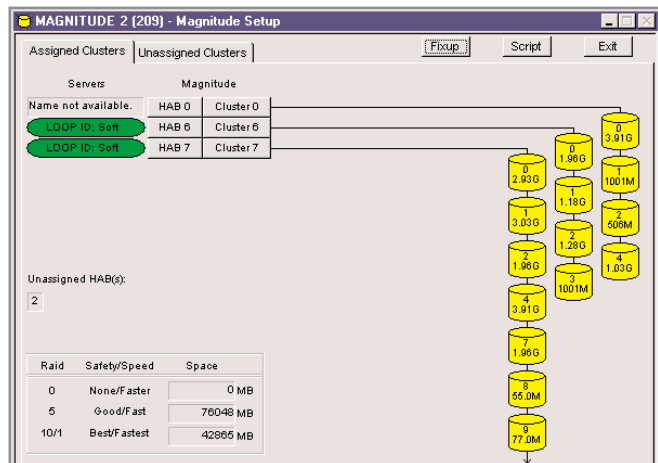


Fig. 7. MAGNITUDE Setup Screen

Monitoring Storage Remotely with a Web Browser

REDI Control WebWatch is a feature of REDI Control Manager that gives users the ability to remotely monitor multiple MAGNITUDEs from a Web browser. REDI Control WebWatch is configured to publish user-selected data to an HTML file, which is continuously updated to provide real-time storage status information. The file can be located and updated on a LAN/WAN public directory or a Web server, allowing multiple users to monitor a MAGNITUDE simultaneously from various locations.

Users have the ability to select the types of MAGNITUDE data they want monitored, updated, and displayed by REDI Control WebWatch. Users can get a bird's eye view of their SAN by viewing the general status of all MAGNITUDEs (fig. 8). This page displays which MAGNITUDEs are connected as well as their overall status and transfer and I/O rates.

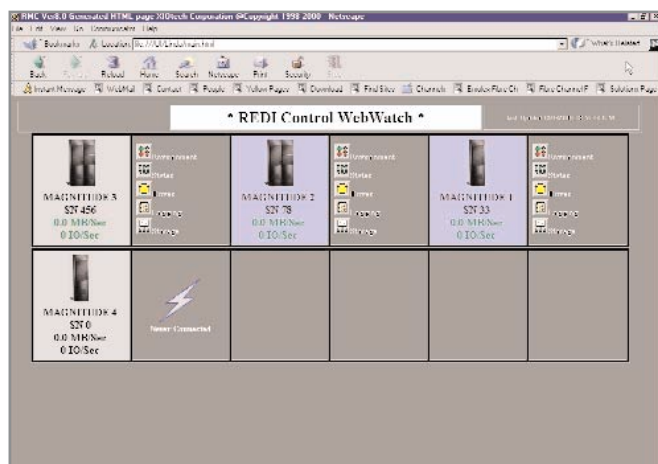


Fig. 8. REDI Control WebWatch Main Screen

Users can then drill down to more detailed information about each MAGNITUDE. Five subsets of information are available to provide details about the status of a selected MAGNITUDE.

The information subsets are:

- **Environment:** Displays the same information shown on the Environment screen
- **States:** Displays the same information shown on the State screen
- **Drives:** Displays information about the physical disk drives, including location and state (data, hot spare, not safe, rebuilding, spinning down or up)

By selecting the Drive Detail Information screen, the user can view specifics about each disk drive, including: disk location, product ID, disk drive serial number, revision level, size, available free space, disk information, error messages, and MAGNITUDE serial number

- **Logging:** Displays the last 100 incidents that occurred on the MAGNITUDE, along with the incident number, date, time, and brief description; this is the same information shown on the Incident Logging screen
- **Storage:** Displays performance statistics about each device connected to a MAGNITUDE, including server name, type of connection (FC-AL or point-to-point), I/Os per second, megabytes per second, and unassigned megabytes

Because security is an issue with all IT-related information, the HTML file created by REDI Control WebWatch is read-only. No configuration changes can be made with REDI Control WebWatch.

With REDI Control WebWatch, administrators can truly monitor their MAGNITUDE storage system from anywhere in the world via a Web interface with a connection to a secure Intranet or Internet connection. They are free to focus on business-critical functions, instead of being tied to a single SAN management console.

Monitoring Storage Remotely Via SNMP

The REDI Control Manager software supports Simple Network Management Protocol (SNMP) by acting as a proxy agent for the MAGNITUDE. When configured appropriately, the REDI Control Manager application forwards SNMP event notifications (traps) to a third-party network management application. The REDI Control Manager SNMP agent also has a rich set of SNMP compliant managed objects that can be used by a SAN management application to inquire about the status and configuration of the MAGNITUDE(s).

REDI Control Manager defines the following SNMP traps:

- Informative
- Minor: Incidents that have a warning severity level in the REDI Control Manager
- Major: Incidents that have an error severity level in the REDI Control Manager
- Fatal
- Unknown

REDI Control Manager supplies the Management Information Base (.mib) file, which defines all managed aspects of the MAGNITUDE(s) configured on the REDI Control Manager application. Querying of .mib variables for a MAGNITUDE is accomplished using standard SNMP compliant management software applications. MAGNITUDE managed objects can only be monitored, not configured.

SNMP allows IT administrators to monitor their MAGNITUDEs from central SAN management application software. This frees them from having to individually manage pieces of the SAN infrastructure from independent applications.

Configuring Storage Remotely Via a Dial-Up or LAN Connection

With REDI Control Manager, the user can remotely configure the MAGNITUDE via a dial-up or LAN connection. As a security precaution, MAGNITUDE configuration cannot be changed via an Internet connection.

Remote MAGNITUDE configuration options are accessed through the REDI Control Manager's MAGNITUDE Setup screen.

User Access

In order to perform any remote configuration operations, the user needs to be logged in as Advanced User. Users who are logged in as Non-Advanced can only monitor the MAGNITUDE and cannot make changes to the configuration. The user logs in by clicking on the Configuration menu from the main REDI Control Manager screen and selecting Advanced User Log In.

Configuring MAGNITUDE HABs

The HAB buttons on the REDI Control Manager's MAGNITUDE Setup screen allow the user to assign or remove HABs from clusters or configure HABs for fabric or FC-AL connections.

Configuring MAGNITUDE Clusters

By clicking on a Cluster button on the MAGNITUDE Setup screen, the user accesses the Cluster screen (fig. 9). From here, the user can view information about the VDisks in the cluster as well as configure the VDisks.

The Cluster screen displays 32 rows (0-31) of VDisk slots (there can be up to 32 VDisks per cluster). Information about each VDisk includes VDisk number, RAID level (safety and speed), and current status.

After selecting a VDisk from the list, the user can:

- Create, delete, or expand a VDisk
- Move the VDisk from one slot to another
- Lock the VDisk to prevent accidentally overwriting the data
- Copy, copy/swap, or mirror the VDisk (available if the user has REDI Copy software)

Once the user has initiated one of the above operations, the status column of the VDisk changes to indicate what is happening to the VDisk. For instance, the status of a VDisk being created changes from Empty (before the VDisk has been configured), to Creating (VDisk is in the process of

VDisk #	Safety	Speed	Size	State	Name
0	Best	Fastest	4002 MB	Locked	win2kqms
1	Best	Fastest	102 MB	Locked	New Disk
2	Best	Fastest	204 MB	Locked	New Disk
3	Best	Fastest	300 MB	Locked	New Disk
4	Best	Fastest	402 MB	Locked	New Disk
5	Best	Fastest	510 MB	Locked	New Disk
6 ->	Best	Fastest	345 MB	Locked	mj-elvis
7				Empty	
8				Empty	
9 ->	Best	Fastest	2888 MB	Locked	TBw2k QM6
10				Empty	
11 ->	Best	Fastest	3905 MB	Locked	TBw2k QM7
12	Best	Fastest	3300 MB	Locked	TBQMS1-7
13				Empty	
14				Empty	
15 ->	Best	Fastest	3000 MB	Locked	elvislink
16				Empty	
17				Empty	
18				Empty	
19				Empty	
20 vL	vLink	Unknown	500 MB	Locked	
21 vL	vLink	Unknown	600 MB	Locked	
22 vL	vLink	Unknown	700 MB	Locked	
23	Best	Fastest	2505 MB	Locked	martest
24 ->	Best	Fastest	105 MB	Locked	New Disk
25 ->	Best	Fastest	210 MB	Locked	New Disk
26 ->	Best	Fastest	300 MB	Locked	New Disk
27				Empty	
28				Empty	
29				Empty	
30				Empty	
31	Best	Fastest	4002 MB	Locked	win2kqms

Fig. 9. Cluster Screen

being created), to Ready (VDisk is configured and ready for other operations).

Other status labels include:

- **Locked:** VDisk cannot be deleted or modified unless it is manually unlocked
- **Mirrored:** VDisk is being mirrored from another (source) VDisk
- **Tagged:** VDisk is tagged to be copied, mirrored, or moved
- **Deleting:** VDisk is in the process of being deleted and the associated capacity is being returned to the available storage pool
- **Expanding:** VDisk is in the process of expanding
- **Moving:** VDisk is in the process of being moved
- **Copying:** VDisk is in the process of having data copied to it

Configuring Physical Disks

The Fixup button on the REDI Control Manager’s MAGNITUDE Setup screen opens the Fixup Information screen. From here, the user can view physical disk information and perform corrective actions in case of problems. For example, the user can:

- Unlabel a physical disk
- Relabel a physical disk as data (has RAID applied to provide redundant storage), hot spare (used for automatic failover), or not safe (RAID 0—striping but no mirroring)
- Defragment a disk

The Fixup screen also displays a grid of all the physical disks in the MAGNITUDE.

Virtual Disk Masking/Mapping

VDisk masking provides the ability to break down a cluster into a subset of VDIs that are visible to a specific server. After a VDisk is created, it must be masked so a server can see it and mount the storage space.

From the Cluster screen, the user selects “Mask/Map,” which brings up the VDisk Masking/Mapping screen (fig. 10). This screen graphically displays the layout from the server connection on the left, to the MAGNITUDE HAB, to the cluster, and finally to the VDIs on the right. From this screen, the user can configure which server connections have access to what VDIs in the cluster.

The user also can determine the default VDisk access for new servers: “New Server sees all VDIs” or “New Server sees nothing.” If the default is set to “New Server sees nothing,” then the user must manually assign the VDisk to a server in order for the server to have access. This is done by selecting a server (shown on the left of the screen), then selecting the VDisk the user wants assigned (masked) to the server, and choosing “Toggle Ownership” from the pop-up menu.

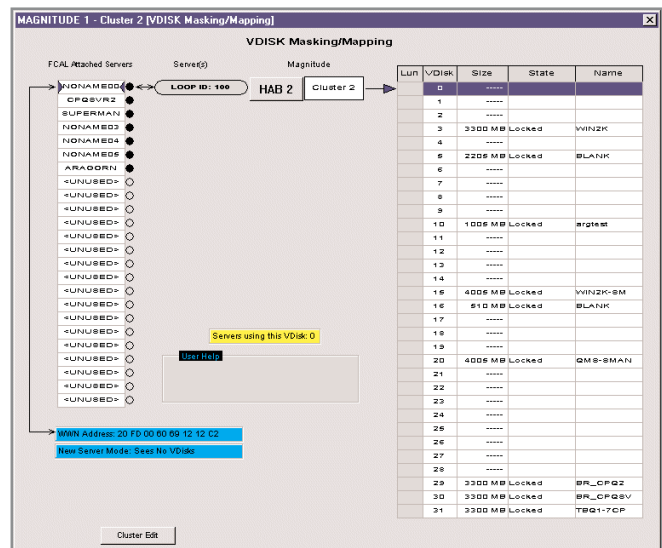


Fig. 10. Cluster (VDisk Masking/Mapping) Screen

From this same VDisk Masking/Mapping pop-up menu, the user can modify the VDisk's LUN number. This is called LUN mapping and is useful for meeting the requirements of certain operating systems. For instance, LUN mapping allows multiple servers to boot directly from the MAGNITUDE.

The user can also configure a VDisk as normal, hidden, or private:

- **Hidden:** no server can see the VDisk; this is useful for hiding temporary VDIs from users and for protecting backup copies of critical data from corruption
- **Private:** only one server can access the VDisk

Automating MAGNITUDE Operations with REDI Control Scheduler

As stated briefly earlier in this document, REDI Control Scheduler allows the user to automate MAGNITUDE operations. The user creates process scripts with the REDI Control Scheduler Process Editor (fig. 11) and runs them with the REDI Control Scheduler application that resides in REDI Control Manager.

REDI Control Scheduler scripts give the user the ability to automate the following operations:

- Create, delete, or expand a VDisk
- Copy, copy/swap, or mirror a VDisk
- Break a VDisk mirror
- Assign or deassign a HAB
- Create or delete a VLink
- Mask a VDisk or map a LUN
- Run a batch file or executable on the Windows workstation (i.e., start backup or page a user)
- Send a message to a user and pause the script until the user clicks on the “Enter” or “Cancel” key

REDI Control Scheduler also includes steps to enable the script to be time or event driven. These conditional commands instruct the system to:

- Wait until a specific or relative date and time (August 1, 2002, or tomorrow) before continuing to the next step
- Wait for a specified amount of time before continuing to the next step
- Validate that the script is being run on the appropriate MAGNITUDE
- Move to another step in the script, either immediately or after the user clicks on the “Cancel” key
- Skip one or more step(s) in the script

Once a process script is created, it can be loaded into the REDI Control Manager application to be launched at a specific time. It can also be loaded through the MAGNITUDE Setup screen. With the recent introduction of the AutoScript feature, REDI Control Scheduler scripts can also be launched remotely and automatically by an external program or operating system scripting routine.

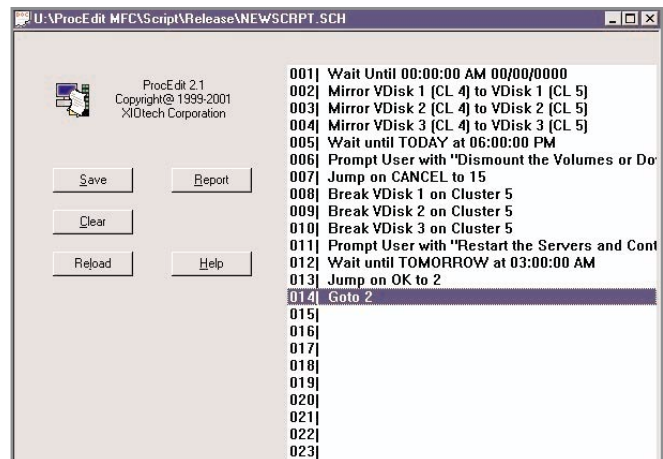


Fig. 11. REDI Control Scheduler Process Editor

Initiating Automated Operations Remotely with AutoScript

AutoScript expands the convenience features of REDI Control Scheduler two ways. Users can now launch REDI Control Scheduler scripts remotely from PCs that are not loaded with the REDI Control Manager application. The new feature also allows users to program external applications or operating systems to initiate REDI Control Scheduler scripts automatically through Microsoft batch scripts, UNIX shell scripts, and Pearl scripts.

AutoScript continually monitors a local or network directory (configured by the user) for a file with the appropriate name and file extension that designates it as a script for AutoScript to run. AutoScript supports subdirectories to facilitate management of multiple scripts. By saving files to appropriate subdirectories, multiple scripts can be managed in succession. In addition, subdirectories may be added or removed while AutoScript is monitoring the “main” directory for scripts or additional subdirectories. AutoScript sorts the subdirectories alphabetically and searches through them in order. During the process, when AutoScript finds a file with the appropriate name and file extension, it launches the script via REDI Control Manager. After the script is run, AutoScript changes the file name and extension to indicate the script has been completed. When AutoScript reaches the end of the directory list, the list is gathered again and the process is repeated.

In its basic form, AutoScript allows users to launch a REDI Control Scheduler script from a remote PC by copying the script file into the directory being monitored by AutoScript. For example, if a user wants to launch a REDI Control Scheduler script from a remote PC, all he or she has to do is copy the script file into the predetermined directory. Because AutoScript monitors this directory continuously, it quickly locates the script file and loads it into REDI Control Manager, which runs the script. The user can even check the directory later to make sure the script has run, which will be immediately apparent by the new file name.

Perhaps the most powerful use for AutoScript is to completely automate many common and complex storage functions. The user can instruct an application or OS (via a batch file or shell script) to copy REDI Control Scheduler script files to a folder within the directory being monitored by AutoScript and to save the script files with a specific name. AutoScript loads the script into REDI Control Manager, the script is run, and the file name is changed. The initiating application or OS can be instructed to monitor the directory for a file with this new name and to continue on with the batch operation upon locating the file. Now tasks such as backup and data migration can be performed automatically, while the user focuses his or her efforts elsewhere.

A Real-Life Example of AutoScript

A common storage task that users may frequently perform is making copies of their storage volumes for backup purposes. By using REDI Control Scheduler and the AutoScript function, this task can be automated from start to finish. Here is a brief overview of the process for backing up an Oracle database in a UNIX environment.

The user first writes REDI Control Scheduler scripts to perform the necessary operations on the MAGNITUDE. These steps might include “Create VDisk” for the backup data, “Copy VDisk with Mirror” to copy data from a source VDisk to the VDisk the system just created, and “Break VDisk Mirror.” The user then saves the scripts to a specific directory.

To ensure the point-in-time copy of the VDisk is complete, the Oracle application must be briefly shut down or quiesced. Therefore, the user creates a UNIX shell script to automate the process.

This shell script includes commands to:

- Copy the REDI Control Scheduler script which contains the “Create VDisk” and “Copy VDisk with Mirror” commands into the directory being monitored by AutoScript
- Check for the completion of the mirror process
- Place the Oracle database into backup mode
- Copy the REDI Control Scheduler script which contains the “Break VDisk Mirror” commands to the appropriate directory
- Take the Oracle database out of backup mode and end the script

Because the backup process does not require any human intervention, the task can be completed faster, at any time of the day or night, and without the opportunity for human error; therefore the user is able to focus his or her energy on other critical functions. AutoScript is also useful for more complex scripting scenarios, such as masking and mapping the copies of VDIs to a server, then initiating tape backup commands via the OS script or program.

Conclusion

In today’s world, where time is money and qualified IT personnel are in short supply, businesses need to make the most of their IT resources. Data and applications must be constantly available, and downtime—whether planned or unplanned—is something most businesses cannot afford.

However, valuable IT personnel should not be relegated to a single system status workstation or have their time used up performing repetitive storage management tasks.

The REDI Control Software Suite from XIOtech, now with REDI Control WebWatch and AutoScript, offers the tools businesses need to make the most of their IT personnel. REDI Control Manager, the heart of the suite, allows users to monitor and configure storage on the MAGNITUDE SAN from practically anywhere in the world. REDI Control Scheduler automates most common storage management tasks and removes valuable IT personnel from these repetitive processes.

The REDI Control Software Suite’s powerful features, coupled with the solid MAGNITUDE storage foundation, ensure that data and applications remain available 24x7, while actually reducing administrative burden.



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