



EMC Navisphere Management Suite

Your window into the award-winning EMC CLARiiON storage platform

The Big Picture

- Discover, monitor, and configure all CLARiiON storage systems via a secure, easy-to-use, Web-based management interface—anytime, anywhere
- Simplify provisioning by leveraging CLARiiON's metaLUN and virtual LUN capabilities
- Receive automatic display and notification of critical status changes and events for proactive administrative action
- Collect performance information and provide performance graphing/charting to assist in CLARiiON trend analysis, reporting, and system capacity management
- Manage and control CLARiiON platform applications, including Navisphere Quality of Service Manager, Navisphere Analyzer, SnapView, MirrorView/Synchronous, MirrorView/Asynchronous, and SAN Copy

Discover, monitor, and configure all CLARiiON storage systems via a secure, easy-to-use, Web-based management interface

Whether a user is running an initial installation or a daily application, the EMC® Navisphere® Management Suite makes management of EMC CLARiiON® storage arrays simple. The software required to manage CLARiiON runs on the array and can manage all iSCSI and Fibre Channel-based CLARiiON systems, whether they are located at primary or satellite locations. Navisphere can also run on the array or on a Windows workstation.

Navisphere Management Suite can be used to employ a follow-the-sun support strategy so each facility can have 24x7 coverage. For example, the operations staff in one location could handle management of CLARiiON arrays during their business hours and then support could be handed off elsewhere as other locations come online. Management from home or on the road is also facilitated.

To protect data privacy, all data transmitted between the browser and the array is encrypted using Secure Socket Layer (SSL) technology. Robust user-account management is also provided with Navisphere. Individual user accounts can be assigned and maintained for each administrator. Each user account is assigned a role (Monitor, Manager, or Administrator) that defines its access rights.

The Navisphere Management Suite and Navisphere-managed applications are the most complete family of mid-tier storage software products in the industry. Navisphere Management Suite provides an easy way to provision EMC CLARiiON arrays installed throughout your enterprise. It utilizes a familiar Windows Explorer-style user interface that is browser-based so you don't need extensive training. With Navisphere Management Suite, RAID Groups can be configured automatically or manually and then LUNs can be created from these RAID Groups. Administrators can also LUN-mask and control data access across multiple heterogeneous hosts in distributed storage area networks (SANs). Not only does Navisphere Management Suite simplify storage provisioning, your configuration can be changed dynamically as business needs and requirements change. The allocation between read and write cache memory for a storage processor, for example, can be adjusted via Navisphere Management Suite without requiring a reboot of the system or any attached hosts.

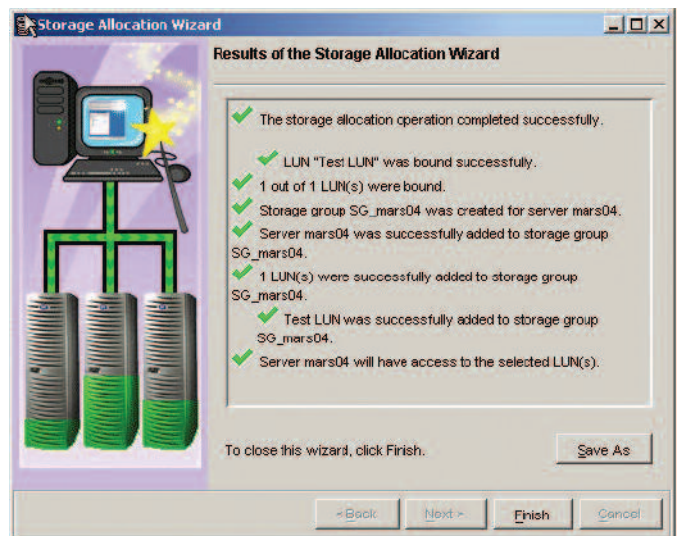
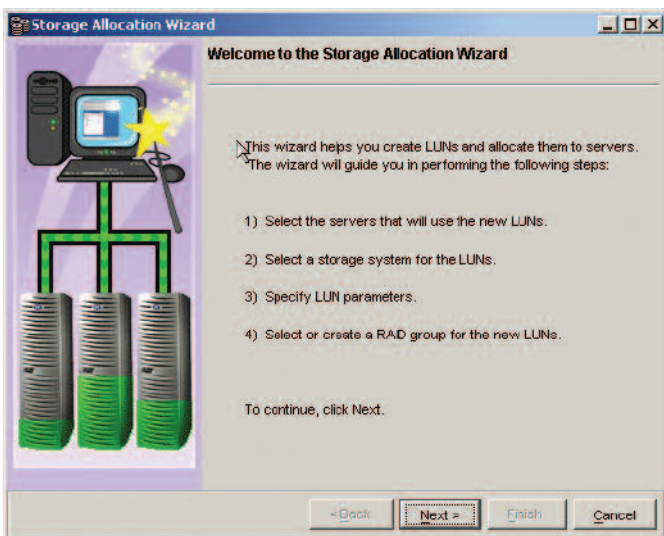
Receive automatic display and notification of crucial status changes and events for proactive administration 24x7x365

Navisphere Management Suite provides storage event notification software for enterprises running EMC CLARiiON systems. The software is customizable and can be configured to send an e-mail or to page selected personnel, such as the system or storage administrator, when a system status change occurs. This is accomplished using a point-and-click wizard that guides you through the configuration process and makes monitoring and alerting capabilities quicker and easier to implement. In addition, the wizard helps reduce potential errors by allowing the use of templates to duplicate similar environments.

Navisphere Management Suite provides fully integrated support for CA Unicenter TNG, HP OpenView, and Tivoli NetView. Navisphere Management Suite's framework integration module supports auto-discovery and display of EMC CLARiiON arrays in the network map of these framework applications. The status of CLARiiON arrays is shown and Navisphere Management Suite can be launched when the faulted array is selected for more detailed information.

Simplify common storage management tasks

Navisphere Manager Task Bar, a new addition to the Navisphere Management Suite, simplifies common storage management tasks and provides new reporting capabilities. With a simple, wizard-driven management tool, customers can create, manage, and allocate production LUNs and replicas on the CLARiiON array. The task bar makes it easier to manage the CLARiiON for customers with new staff or IT generalists.



The new Navisphere Task Bar reduces steps for common management tasks by up to 70 percent.

Improve provisioning by leveraging CLARiiON's metaLUN and virtual LUN capabilities

MetaLUNs are groups of LUNs that enable better use of an enterprise's storage capacity. Through either striping or concatenation, metaLUNs enable a user to provide a high degree of flexibility and control through limitless storage configuration options. Not only do metaLUNs increase performance capability by allowing a volume to span a large number of drives, but they also enable better capacity utilization by being able to access capacity anywhere in the array. Finally, since metaLUN capability is non-disruptive, it reduces out-of-disk-space issues and downtime.

Virtual LUN technology, also managed from the Navisphere Manager console or CLI, enables movement of volumes within a CLARiiON CX or CX3 series system without disrupting the application. This capability enables the dynamic movement of data from FC to ATA drives for tiered storage within a single CLARiiON array. RAID types can also be adjusted as needed to improve performance. For example, data can be moved from a volume of one RAID type to a volume of a different RAID type to meet the performance requirements of a particular application. Virtual LUN technology can also be leveraged to improve capacity utilization by moving data to underutilized spindles in the array.

Measure, monitor, and control application performance with Navisphere Quality of Service Manager (NQM)

Navisphere QoS Manager (NQM) is a tool for optimizing application performance within the CLARiiON array by allocating system resources accordingly. NQM lets customers decide which applications get more of the available system resources, which gives them the ability to meet service levels on an application-by-application basis. NQM is an array-based tool that works within the storage processor to measure, compute, and control the I/O requests being sent to the system. It has the ability to monitor, limit, or set performance targets for applications running on a CLARiiON array.

NQM gives a logical view of application performance on the array itself, using built in monitoring and archiving tools. NQM is designed with an integrated scheduler to achieve service levels on the most critical applications in the system at any time. It can be used to achieve specific performance targets for your most critical applications, or for monitoring application performance on the array to determine possible bottlenecks. This can finally give a clear view of the storage array performance so that time and money is not spent addressing a possible storage problem that does not exist.

Improve performance graphing/charting to assist in trend analysis, reporting, and capacity management with Navisphere Analyzer

Navisphere Analyzer is a browser-based performance analysis tool that enables you to investigate performance patterns and trends in normal operation mode as well as in benchmarks and performance tests. It helps find performance bottlenecks, which can be addressed by fine-tuning parameters of disk arrays or by adding hardware components, such as cache memory or disks. Navisphere Analyzer can be used to continually monitor and analyze performance and to determine how to fine-tune array performance for maximum utilization.

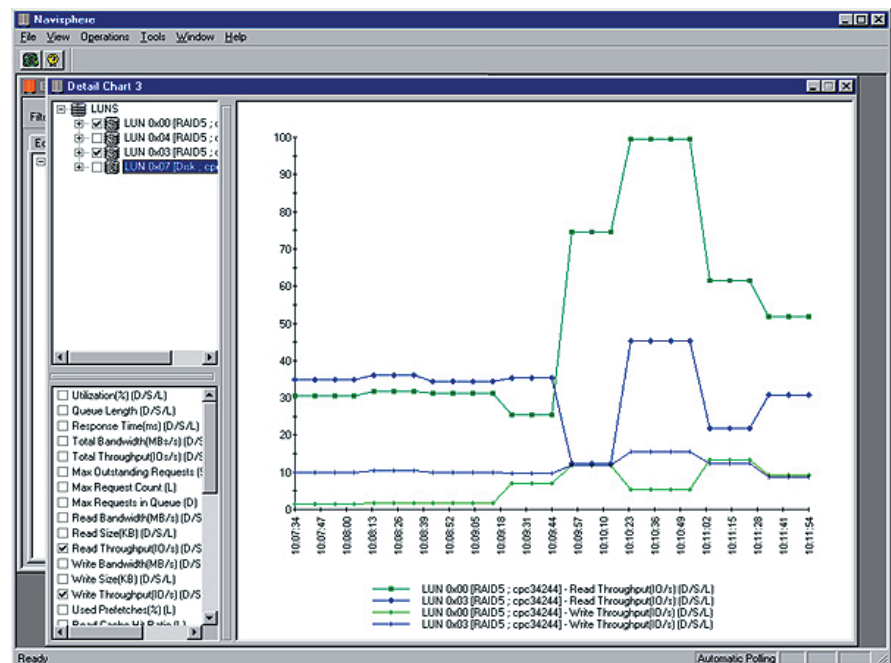
Navisphere Analyzer provides detailed realtime and historical information about your CLARiiON systems. Performance data is collected for disks, storage processors (SPs), LUNs, cache, and EMC SnapView™ sessions. You set the schedule of when to record the data, where to store the results, and from which arrays to gather data. This allows you to

investigate performance patterns and trends before problems occur and provides a powerful tool for hardware capacity planning, as well as for intelligent load balancing. With Navisphere Analyzer, drill-down operations are used to zero in on more detailed information in a consistent and intuitive fashion.

Manage and control CLARiiON platform replication applications including MirrorView/Synchronous, MirrorView/Asynchronous, Navisphere Analyzer, SAN Copy, and SnapView

EMC MirrorView™ software provides highly available data storage across geographically separate locations. By maintaining synchronous and asynchronous data mirroring between EMC CLARiiON arrays, MirrorView ensures data availability of byte-for-byte mirrored images. Navisphere Management Suite supplies powerful easy-to-use tools for implementing these mirror configurations and allows for faster disaster recovery by quickly managing failover to a secondary site.

Navisphere Analyzer helps identify performance patterns and trends before problems occur.



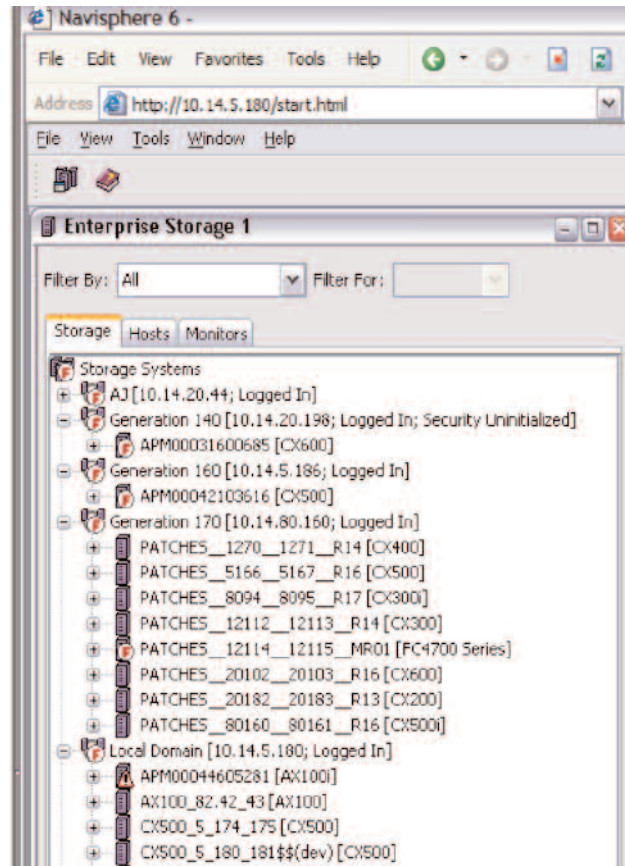
Navisphere Management Suite controls SnapView operations for the capture of an instantaneous, point-in-time image of a LUN and retains the image independently of subsequent changes to the original data. These SnapView snapshots and clones can make data available to another host or direct-connect backup device for backup operations, decision support, or testing while I/Os continue to the production data.

EMC SAN Copy™ software, also controlled through the Navisphere Management Suite, is array-based software that runs on a CLARiiON system. It moves and copies data across a SAN, providing data mobility between two or more CLARiiON systems, and/or between CLARiiON systems, CLARiiON and EMC Symmetrix® systems, or CLARiiON and supported non-EMC storage systems. With the ability to move data over distance, SAN Copy is the ideal application to simplify data migrations, streamline data distribution, or improve protection of valuable information assets.

Navisphere CLI enhances Navisphere Management Suite's GUI capabilities

The Navisphere command-line interface (CLI) runs on a management host that communicates with the storage system and can be used in a non-graphical environment or from a remote location. For additional security, the Secure CLI uses SSL sockets to provide encrypted communications between the client and the storage management server. Local security credentials are stored in an encrypted file specific to the host and the user so they cannot be accessed if copied and/or moved. The Secure CLI also generates audit logging for all important events.

Navisphere Management Suite's easy-to-use graphical user interface (GUI) enables complete provisioning and configuration capabilities across your CLARiiON storage environment. Since the Navisphere Management Suite is Web-based, your CLARiiON storage environment can be managed from anywhere, any time.



Maximize CLARiiON system benefits with EMC Services

EMC Services delivers expert planning, design, and implementation services for EMC CLARiiON hardware and software to ensure that your CLARiiON system performs as expected in your environment, minimizing risk to your business and your budget. Choose from QuickStart services that help you quickly realize the value of your hardware and software in your environment to custom services for more complex solutions. Extensively trained professional services personnel and project management teams, leveraging EMC's extensive storage deployment best practices and guided by our proven methodology, accelerate the business results you need without straining the resources you have.

EMC Services delivers results to our customers throughout the IT lifecycle: Plan, Build, Manage, and Run. Strategic storage consulting services from EMC Consulting help companies achieve the maximum value from their information, at the lowest total cost, at every point in the information lifecycle. EMC delivers product specific point solutions in addition to comprehensive custom planning, design, implementation, and integration

services for EMC technology. And EMC Customer Service—four-time winner of the SSPA STAR Award for outstanding mission-critical support—helps you keep your information available 24/7 to deliver competitive advantage and drive revenue.

Ask your EMC sales representative about the full spectrum of services from EMC that can benefit your organization.

The EMC Navisphere Management Suite is just the beginning

The EMC Navisphere Management Suite works together with other EMC storage management applications such as the EMC ControlCenter® family, Replication Manager family, and VisualSRM™ and VisualSAN® products to provide an end-to-end solution for storage resource, SAN, and replication management.

Take the Next Step

For more information on the EMC Navisphere Management Suite or any EMC software products, contact your EMC sales representative or authorized EMC value-added systems integrator. Or visit our website at www.EMC.com.



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