

# EMC VisualSAN Storage Network Management Software



Maximize the business value of your storage network—automatically

## The Big Picture

- Provides a single console for end-to-end management of SAN devices
  - Reduces storage network administration costs by improving problem resolution capabilities and providing immediate visual access to all SAN devices and their health status
  - Identifies problems faster through active monitoring with realtime event notification and alert generation
  - Compares point-in-time SAN configurations, providing detailed information on what has been added, deleted, or modified, enabling rapid identification and diagnosis of problems
  - Simplifies provisioning of storage to hosts, improving ease of use and reducing the possibility of error
  - Displays the applications associated with each path from host to storage, providing immediate feedback on the business impact of SAN changes
  - Monitors and stores performance of switches, their ports, and associated links, using this data to chart and record error statistics, monitor potential degradation of devices, and track utilization trends; visualizes performance data in the topology map and in live and historical graphs
  - Generates automatic alerts when performance thresholds are crossed, alerting administrators to potential performance problems
  - Customer-installable with an intuitive browser-based user interface enabling access to all functionality from anywhere on the network
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## Managing your storage area network has never been easier

Using EMC VisualSAN<sup>®</sup>, administrators can proactively manage the storage network to maintain high availability and react immediately to problems should they occur. VisualSAN automatically discovers, manages, and monitors multi-vendor SAN devices. Using the VisualSAN network topology map, administrators can see the SAN environment and its realtime health status at a glance, as well as obtain detailed information by drilling down on all SAN components. Easing storage management tasks, VisualSAN contains active management capabilities that include zone control and LUN masking to assist in the provisioning of storage.

Unlike any other product, VisualSAN includes a powerful, graphical, automated configuration capture and comparison module that can pinpoint changes (physical and logical) in the SAN that may be contributing to SAN problems. Armed with these configuration details, administrators can quickly restore the SAN to a known working state. VisualSAN configuration comparisons can save thousands of dollars that otherwise would be lost to SAN downtime or performance degradation. VisualSAN also actively polls SAN devices and monitors traps from any SAN device, quickly and intelligently distinguishing urgent SAN events and generating alerts based on user-defined policies.

## EMC VisualSAN Packages

VisualSAN capabilities are packaged in “editions,” each one tailored to the needs of different audiences and budgets. Each one adds features on top of the previous edition, and each can be purchased independently, upgradeable to other packages simply by downloading a new license key.

## EMC VisualSAN Standard Edition

VisualSAN Standard Edition steps in where the element managers for SAN devices (such as switches or arrays) fail to deliver. Standard Edition provides essential end-to-end physical and logical SAN visibility and control.

### *Active management*

VisualSAN provides centralized management of storage area networks, ensuring applications have 24x7 access to their storage resources. It enables the system administrator to proactively manage the SAN, ensuring network accessibility and that application availability commitments are met. VisualSAN does not solely rely on receipt of traps, but actively monitors SAN components for immediate notification of problems.

### *Automatic discovery and topology rendering*

VisualSAN automatically discovers devices in the storage area network, including servers, host bus adapters, interconnect devices, storage systems, and logical details such as LUNs and zone configurations. This information is mapped and presented in an intuitive, graphical format and is continuously updated in real time. VisualSAN captures details including IP address, port connectivity, firmware version, hardware version, and more. The user can view these details for each device by drilling down into the various SAN components.

### *Visualization and centralized management*

VisualSAN provides a single console from which to manage the SAN. Its centralized, Web-based interface offers access to SAN devices from anywhere, at any time. It consolidates information from all storage management devices and interconnects, allowing system administrators to troubleshoot problems with just a quick glance at the console. VisualSAN automatically discovers and groups servers contained in a Windows cluster, for example, to

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further simplify the complexity of SAN configurations. Users can also manually group related SAN devices together providing simplified views and management of complex environments.

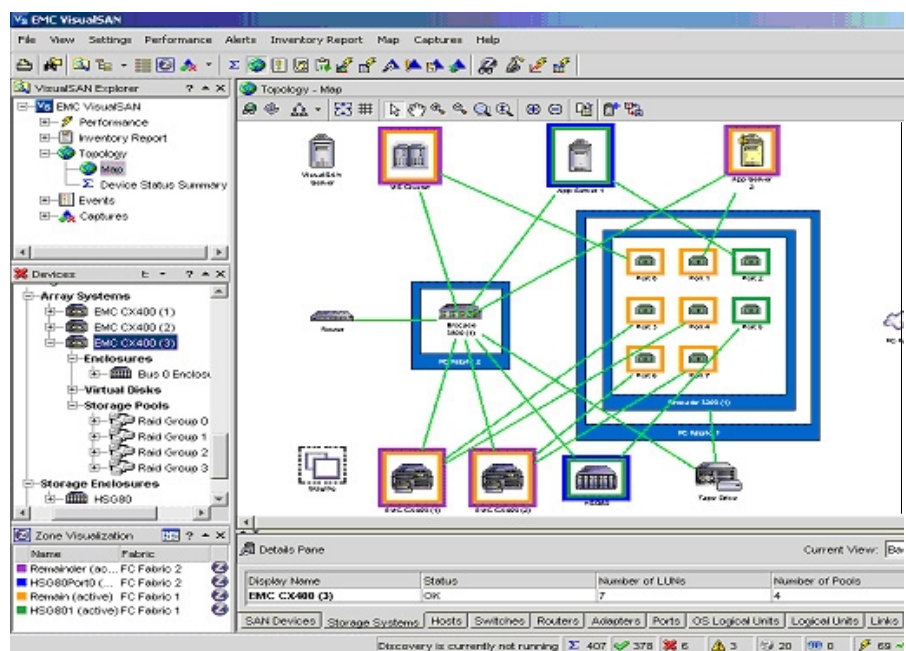
### **Zone management**

VisualSAN provides zone management for industry-leading switches, supporting switch port and device port zoning. The VisualSAN Zone Explorer minimizes SAN complexity by enabling the user to create zones, activate zone configurations, and visualize all zones. Zone visualization on the topology map provides the user with quick identification of the current zone configuration.

### **Event and alert management**

VisualSAN enables IT administrators to monitor all events in real time and specify policy-based actions triggered upon a given event. VisualSAN generates events upon receiving traps from any SNMP device in the SAN as well as when status polling occurs. Events are logged and consolidated, and user-defined alerts can generate an e-mail, page, pop up window, application launch, or SNMP trap to notify the system administrator of fault conditions in a meaningful and intuitive format. Policy-based actions and realtime alerting allow the administrator to quickly and effectively manage the entire storage area network.

VisualSAN provides a SAN-level view, allowing administrators to quickly understand connectivity, zoning, and status information. Detail is only a mouse-click away.



## **EMC VisualSAN Network Edition**

Network Edition adds storage-to-host provisioning features to the Standard Edition package. Further easing administrative burdens, these features make provisioning storage to hosts quick and easy, as well as safe for inexperienced administrators.

### **SAN Assistant wizard**

The SAN Assistant wizard enables rapid delivery of storage to hosts, consolidating several processes. The storage query tool lets administrators search for available LUNs fitting user-defined criteria. The administrator simply selects the LUNs and hosts and VisualSAN automatically takes care of zoning and LUN masking. The wizard also includes special rules to help provision storage to Windows clusters.

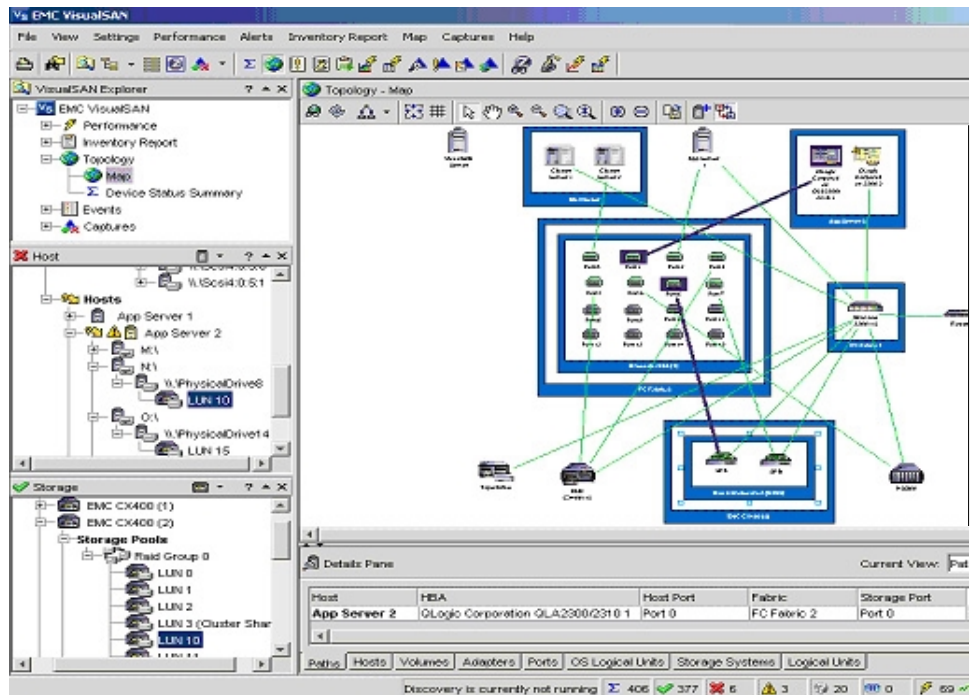
## Path visualization

Path visualization lets administrators see, at a glance, host to storage-array associations. A mouse click exposes a path down to the LUN level, saving administrators valuable time when evaluating SAN connectivity.

## Application to path association

When a SAN fault occurs, administrators need to immediately know which applications are affected. VisualSAN associates applications on host machines to their data paths and storage locations and displays these associations in a device properties window. In the case of a SAN failure, administrators can see at a glance the business impact and take immediate, appropriate action.

VisualSAN displays application to storage connectivity in its SAN topology map. It visually correlates the logical connectivity between hosts and storage, enabling administrators to immediately identify applications affected by SAN changes.



## EMC VisualSAN Configuration Edition

VisualSAN Configuration Edition adds features for rapid problem isolation and asset management to the Network Edition package. Features include tools for configuration comparison, historical reference, change management, fault isolation, and asset management.

## Configuration capture

Device details in a VisualSAN configuration capture include manufacturer, model name, serial number, driver version, firmware version, port configurations, LUN information, and more. The administrator can use this information to create asset reports and to compare two captured configurations (see “Rapid problem isolation” below). The administrator can choose to capture the entire SAN, a single fabric within the SAN, or devices belonging to a specific zone or group.

Configuration captures can be taken automatically on a periodic schedule, based on an event trigger, or manually using the VisualSAN GUI, enabling administrators to regularly check for specific types of SAN configuration changes (authorized or unauthorized). Rules can be included such as “only take a capture if the configuration has changed” and “e-mail an alert to the administrator when a capture is taken.”

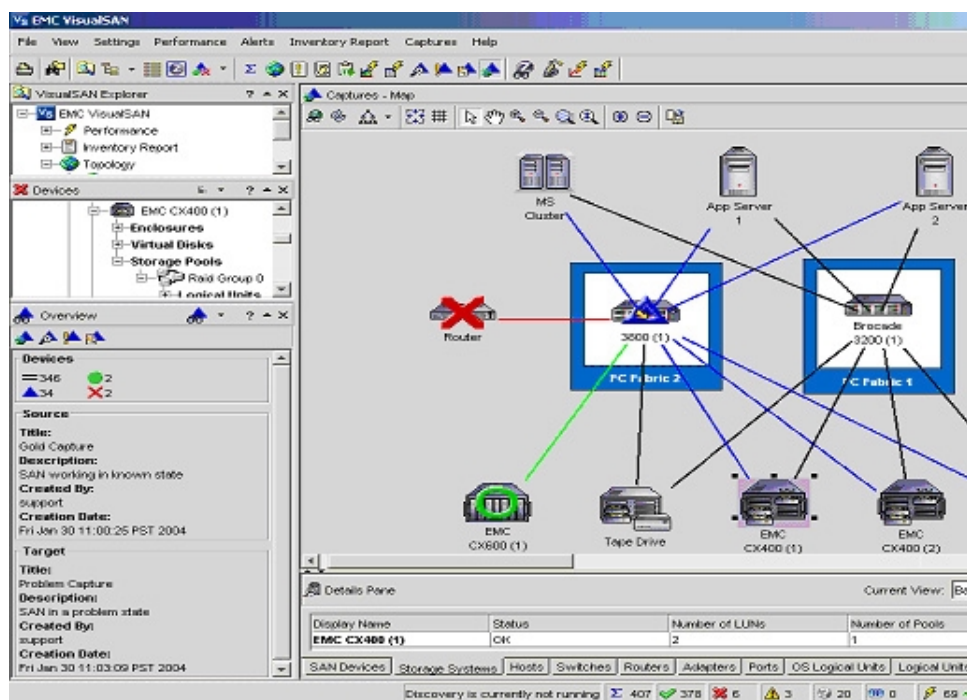
## Rapid problem isolation

With VisualSAN, a user can make a comparison between the current SAN configuration and one that was previously saved. The administrator is provided with information regarding what has been added, deleted, or modified in the SAN, as well as the time and date of the occurrence. In addition, changes made to logical elements, such as paths and zones, can be revealed and tracked. Using this information, administrators can pinpoint the changes that may be contributing to SAN problems and restore the SAN to its last working configuration.

## Change management

VisualSAN provides a change management system to accurately track the changes made to the SAN configuration over time. A baseline capture can be taken for historical reference and used to make comparisons if problems arise in the future. When a problem is identified, a new configuration capture can be taken and a modification history is automatically created. This history identifies all of the changes that have been made to the SAN between captures. Additionally, the administrator can assign an owner to each modification for use in tracking changes. Having a detailed account of “who made what changes when” enables the administrator to quickly assess changes that may have had an effect on the performance and integrity of the SAN.

Symbols on the topology map visually identify the location of changes in the SAN. Users can drill down through the map to view the specifics of each change.



## EMC VisualSAN Performance Edition Features

VisualSAN Performance Edition adds powerful performance management features to those in the Configuration Edition package. These features graphically represent link performance threshold information for throughput and error rates, giving administrators an important tool for ensuring that applications have optimal access to their data.

## Realtime performance

VisualSAN's performance management strength comes from its ability to gather and display realtime link performance information. This data is represented on the topology

map with corresponding colors indicating threshold levels, in live graphs that can contain one or more links and variables, and in the SANMeter, displaying the top-performing links in order of performance. Additionally, alerts can be defined to automatically notify the administrator when threshold levels are crossed, thus decreasing the need for hands-on management of the SAN.

### Visualization

VisualSAN can overlay performance thresholds on switch links in the topology map. Color-coded lines are displayed and correspond to their user-defined threshold values. Users can monitor the throughput of the entire SAN in a single window to quickly locate hot and cold spots. This gives SAN administrators the ability to optimize the network, maximize throughput of SAN devices, maintain high availability, and squeeze the greatest value out of the SAN investment.

### Performance alerts

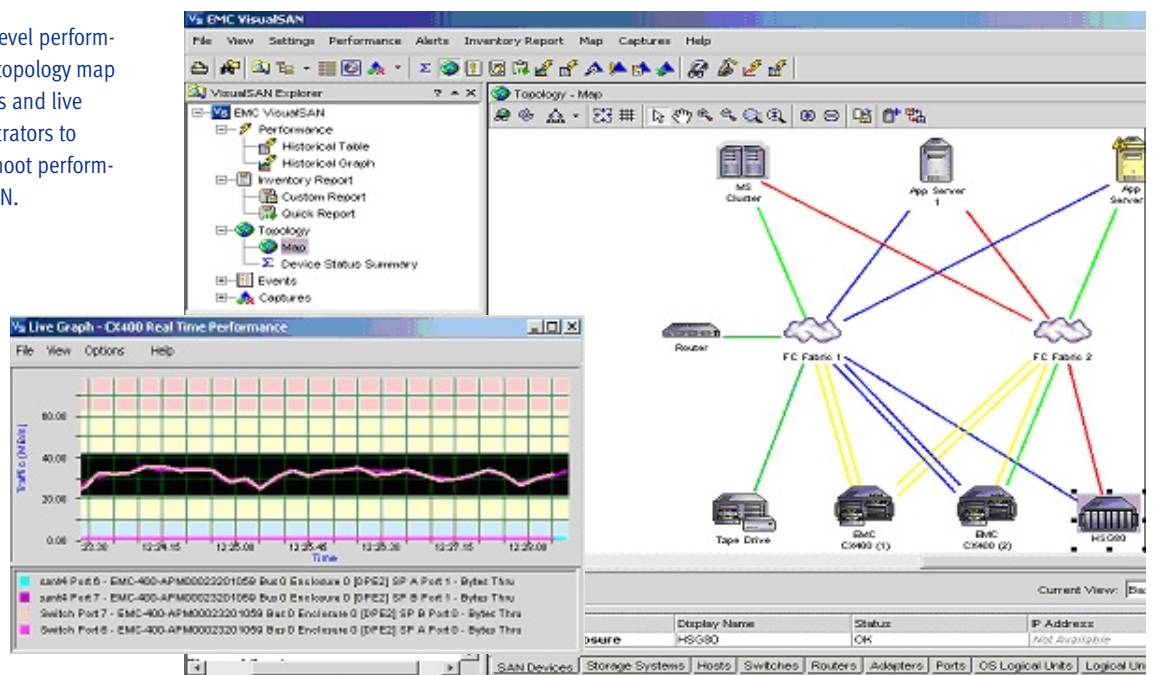
When a performance threshold is crossed for a specific link, VisualSAN can be configured to automatically notify administrators of the event via e-mail, pager, popup window, application launch, and SNMP traps. Alerts can be generated for both link saturation as well as link quiescent situations.

### Historical analysis and trending

VisualSAN maintains a persistent performance database that can be used to analyze traffic patterns, perform predictive analysis, and create performance reports from the data that is collected. The Historical graph plots performance data, including traffic and errors, for one or multiple links over a user-specified time period. The graph can also scroll through the database by day, week, or month to provide a complete historical overview of SAN performance.

For network capacity planning and device degradation analysis, trending algorithms can be applied to historical performance and error rate data. The results of these algorithms help predict and avoid future performance problems, as well as potential device failures.

VisualSAN provides SAN-level performance monitoring through topology map visualization of thresholds and live graphs, allowing administrators to understand and troubleshoot performance issues across the SAN.



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## Take the Next Step

For more information on the EMC VisualSAN storage network management software, contact your EMC sales representative or authorized EMC value-added systems integrator. Or visit our website at [www.EMC.com](http://www.EMC.com).

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Data Sheet  
H1013.1

**Installation Specification:**

This product, if entitled to EMC installation, will be installed within one hundred twenty (120) days after shipment unless otherwise delayed by (i) customer's acts or omissions, (ii) mutual agreement, or (iii) conditions beyond EMC's control.

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