Improving Availability and Reducing Operating Costs for Your UC Environment

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Contents

Introduction

People in your organization communicate in many ways, including e-mail, phone, fax, instant messaging, web, and video conferencing. Integrating these many technologies in order to create a unified communications (UC) system can reduce costs and improve productivity.

Because communications technology is critical to communication between business colleagues, customers and suppliers, the reliability of that technology directly impacts your organization's success. Unfortunately, the complexity of a unified communications environment makes it difficult to monitor, diagnose and resolve issues accurately and efficiently.

This whitepaper explains how Quest Spotlight on Messaging can improve the availability of your communications system and reduce operating costs through integrated preventative monitoring and speedy problem resolution.

You will learn how to manage and monitor your unified communications environment to ensure smooth operation and customer satisfaction. This information is useful for IT professionals who have implemented any combination of Exchange 2007, Office Communications Server 2007, and BlackBerry Enterprise Server.

Your Unified Communications (UC) Environment

Benefits of Unified Communications (UC)

Many companies today are migrating from disparate phone, e-mail, and instant messaging systems to a consolidated unified communications solution. Unified communications promises lower costs, increased productivity and easier compliance.

How exactly does unified communications provide these benefits? Consider e-mail: unified communications extends your e-mail system to voicemail messages and fax. Voicemail messages can be messages stored in the user's mailbox, enabling uniform access and easy discovery across all types of communications. Users can apply the same productivity features they use with e-mail (such as flagging, categorizing, and forwarding) to voicemail and fax.

Consolidated e-mail, voicemail, and fax directories also simplify administration and backup. Maintaining disparate systems that require specialized skills is a costly and error-prone task. Exchange 2007 offers administrators familiar administrative tools and methodologies to manage unified messaging functionality.

In addition, video conferencing and web conferencing technologies can greatly reduce or even eliminate travel costs. These technologies are an environmentally friendly alternative to travelling to onsite meetings. Regulated organizations and government departments are encouraged to explore video conferencing to prove their commitment to operating in an environmentally sustainable way.

Finally, web and video conferencing can greatly increase employee productivity and expand the reach of your organization. Many companies use these options to conduct meetings, demonstrations, training and collaborative sessions with teammates and customers around the world.

Unified Communications Components

The UC environment consists of multiple communication technologies as detailed below. Many vendors today provide UC software and hardware components. Popular solutions include Microsoft Exchange Server 2007 for e-mail and unified messaging; Microsoft Office Communications Server 2007 for instant messaging and conferencing; voice over internet protocol (VoIP) to integrate the telephone system with the UC environment and BlackBerry Enterprise Server to provide mobile access.

E-mail and Unified Messaging – Voicemail and Fax Services

Microsoft Exchange Server is an established enterprise e-mail solution, and Exchange Server 2007 introduces new unified messaging features. When unified messaging is enabled, the Exchange server acts as the voicemail system: it receives voicemail and fax messages and places them into the appropriate user's mailbox. Exchange unified messaging integrates into the telephony environment using VoIP technologies. It can be connected directly with a compatible VoIP PBX or with an incompatible analog or digital PBX using an inexpensive VoIP gateway device.

Instant Messaging – Text, Voice, and Video

Microsoft Office Communications Server (OCS), Office Communicator, and Office Live Meeting provide enterprise level instant messaging (IM) services. Although many organizations use "home-user" products like Windows Live Messenger or AOL Instant Messaging, some are realizing the benefits of implementing a corporate instant messaging system. OCS offers retrieval of contact information from Active Directory, group IM functionality, enterprise security, and compliance archiving features. Corporate IM solutions increase employee productivity through the convenience of asynchronous, non-invasive communication, while enabling compliance with regulations like the Public Records Act (PRA). It also allows IT administrators to lock down the use of Live Messenger and other applications.

OCS provides seamless voice and video messaging, as well as ad-hoc voice and video conferencing facilities. It can integrate with your telephony system so users can place outside calls using Office Communicator and receive calls from the public telephone network (PSTN). A VoIP advanced gateway device may be required to connect OCS to the corporate PBX.

Web Conferencing and Video Conferencing

When used together, Office Communications Server and the Live Meeting client provide a formal multi-party conferencing solution. Web conferencing allows users to hold interactive online meetings and view digital content like PowerPoint presentations, images, and video. High quality audio and video from multiple parties is mixed on the server and delivered to every attendee's desktop.

Mobile Communications – BlackBerry Enterprise Server, ActiveSync, Communicator Mobile

Mobile e-mail is a mature technology that many users rely on daily. BlackBerry devices are immensely popular, and many organizations deploy their own BlackBerry Enterprise Servers to deliver e-mail services from the Exchange server to the users' devices. Other organizations use Windows Mobile devices and Exchange ActiveSync wireless e-mail

synchronization. Some organizations have a mixed Windows Mobile and BlackBerry environment.

Communicator Mobile instant messaging client for OCS can be installed on Windows Mobile devices. This client software provides basic corporate instant messaging services to the mobile device.

Unified Communications Dependencies

The unified messaging environment is a complex, multi-component environment. Aside from the core components (Exchange, OCS, and BlackBerry Enterprise Server), it relies on other infrastructure services. The key dependencies of your UC environment are Active Directory, Domain Name System (DNS), public key infrastructure (PKI), firewalls, and core network infrastructure like routers and switches. Outages of these services will shut down your unified messaging environment.

Avoiding Downtime

Users increasingly rely on unified communications technologies for vital everyday tasks, and outages disrupt both internal and external communications. The cost of downtime includes lost sales and business opportunities, decreased customer satisfaction and distressed end users.

E-mail and phone services are critical, and any lengthy loss is seldom tolerated. But outages of services that may seem less important, like web conferencing, can also have a great impact. Imagine the frustration caused by the inability to hold an online meeting at a chosen time, or an interruption to an important video conference.

Unfortunately, as users are demanding more from communications technology, it is becoming more complex to operate and manage. Maintaining and monitoring one communications system can be a full-time job, while monitoring a large enterprise environment comprised of many interdependent systems is virtually impossible without specialized tools.

The next chapter will explain the recommended approaches to monitoring your entire unified communications system.

Integrated Preventative Monitoring

Keys to Reducing Downtime

Three key strategies can keep downtime to an absolute minimum:

1. Invest in very high quality, redundant hardware. This includes redundant servers, network components, and clustered solutions. However, few organizations are willing and able to make the substantial investment required.

2. Avoid downtime caused by misconfiguration. Because of the complexity of unified communications systems, a significant share of downtime results from misconfiguration. To reduce this risk, invest in qualified people, ongoing training and keep accurate up-to-date documentation for all systems.

3. Use tools to conduct ongoing preventative monitoring and diagnostics. This cost-effective approach enables you to resolve bottlenecks and identify many issues before they cause downtime. When an outage does occur, you will be notified immediately so you can deal with the problem quickly, minimizing downtime.

Choosing the Right Tools

A unified communications environment consists of many servers and interdependent components, including Exchange, OCS, and BES servers. Configuring effective multi-server monitoring using built-in tools like Windows Performance Monitor, Exchange Management Console, and OCS Management Console can be difficult. In fact, it is virtually impossible to consolidate topology, configuration, availability, and performance data across the systems within your unified communications environment.

Quest Spotlight on Messaging enables smart monitoring and diagnostics across the entire UC environment from a single monitoring console. By consolidating topology and monitoring data from heterogeneous systems into a single, meaningful representation, Spotlight on Messaging can help you accurately document your unified communications infrastructure, quickly detect problems and prevent issues from ever affecting your users.

Service Level Agreements

Every organization wants its unified communications environment to be available 100% of the time. However, this is seldom possible. Achieving very high availability (99.9% plus) involves substantial investment in redundant hardware and infrastructure. Organizations must recognize the trade-off between high availability and the cost of resources needed to achieve it.

A service level agreement (SLA) is an agreement between the consumers of your system, often referred to as "customers," and the IT department. The SLA defines standards for the availability and performance of each component of the unified communications system. Measuring actual availability and performance against the standards set in the SLA determines whether your unified communications environment is meeting expectations.

Include the following categories in your SLA for each component of the unified messaging system.

- Services provided
- Expected availability of each service
- Expected hours of operation of each service
- Planned downtime windows
- Expected performance and maximum load and throughput
- Support provided to end users

Unified Communications Monitoring Tools

Many administrators want to automate ongoing system monitoring and operations, but this can be a difficult task, especially for a complex environment like a unified communications system. The key questions administrators have about monitoring are:

- What performance counters should I check?
- How often should I perform checks?
- How can I detect a bottleneck or a potential problem in what seems to be an overwhelming amount of gathered data?
- How can I consolidate information from multiple monitoring tools?

Built-in management tools that ship with Exchange, OCS, and BES include some monitoring capabilities. However, implementing effective monitoring using these tools requires effort and expertise in many areas. For example, the built-in Performance Monitor allows you to monitor hundreds of objects and performance counters, but which ones are important? Queue Viewer built in with Exchange 2007 is a great tool to view

queues on a single Exchange server at a given point in time, but how can you save the gathered data to analyze trends and diagnose possible congestion?

Many administrators turn to Spotlight on Messaging to address these issues and configure comprehensive centralized monitoring with minimal administrative effort. Right out of the box, Spotlight on Messaging delivers the ability to monitor performance, availability, and statistics on your unified communications servers.

This tool also includes automated bottleneck and configuration issue detection, and provides easy to follow guidance on suggested problem resolution. Spotlight on Messaging is an invaluable tool for IT professionals that maintain complex unified communications environments and who want to minimize administrative effort while maximizing availability.

Availability and Performance Monitoring – Counters, Baselines and Trends

Monitoring the health of the unified communications system involves monitoring both availability and performance.

Availability Trend and Timelines

Availability monitoring refers to recording uptime and downtime of a server or service. Use the results of availability monitoring to measure the actual events against the expected availability defined in your SLA.

Spotlight on Messaging provides easy-to-interpret availability reports that show uptime trends of the entire system. These reports can easily be broken down by component (such as OCS or BlackBerry Enterprise Server). Spotlight on Messaging can also show availability timelines and trends. All availability reports provided by Spotlight on Messaging can be readily used for presentations and documentation archives.

Performance Objects and Counters

Performance monitoring refers to monitoring a particular object (such as a disk subsystem, memory, or message queue) against specific performance indicators (such as disk queue length, disk operations per second, available memory, or message queue length). If the current values are out of the ordinary, it is possible that a bottleneck is forming, creating a potential problem.

How do you know when values are out of the ordinary? You must compare the actual values with the performance baseline.

Establishing a Baseline

The *performance baseline* is the values of relevant performance counters recorded when the workload and performance of your UC system is ordinary and the system is operating well. The baseline allows you to identify bottlenecks and potential problems. It also helps you establish trends over time.

By comparing the results of regular monitoring with the baseline values, you can detect deviations and bottlenecks. Without the baseline, it would be impossible to know whether the counters you are viewing are normal or abnormal. For example, 80% processor time may be normal for one server, while for another server it may indicate an imminent component failure.

Reporting and Documentation

It is critical that you document your unified communications environment and keep the information up to date. The documentation provides a consolidated view of your entire unified communications environment and acts as a support mechanism for decision making.

This documentation is a valuable resource for every operational task, from disaster recovery to capacity management to new team member training. Many organizations overlook the task of creating documentation, often with costly consequences. For example, if you lose an important team member and have to hire a contractor, it is virtually impossible to quickly brief this new person about the system without proper documentation.

Use Spotlight on Messaging's Topology Viewer to automate the effort-intensive task of creating accurate documentation about your complex unified communications environment. Examples of Spotlight on Messaging's built-in topology views are provided in *Appendix – Examples and Screenshots*; see Example 1 – Spotlight on Messaging Management Console Topology View – Exchange and BlackBerry Enterprise Servers and Example 2 – Spotlight on Messaging Management Console Topology View – Office Communications Server. These topology views are very easy to produce, and they can be used as part of system documentation.

Troubleshooting and Diagnostics

One of the most effective ways to improve the availability of your unified communications environment is to enable your IT professionals to diagnose, troubleshoot and resolve issues quickly. Spotlight on Messaging provides detailed, meaningful reports on the system state that graphically identify servers and components experiencing problems. Example 3 – BlackBerry Diagnostic Console in *Appendix – Examples and Screenshots* shows how Spotlight on Messaging identifies failed servers, the source of problems (in this example, overflowing processor queue) and critical events.

With Spotlight on Messaging, it is possible to drill down further to locate more information about the problem that has been identified.

Performance Troubleshooting - Isolating Bottlenecks

Prior to unified messaging, messaging system performance was not a high priority for many organizations, particularly for asynchronous systems like e-mail. Users rarely noticed a one-second delay in the arrival of an e-mail message. With the introduction of unified communications technologies, however, performance bottlenecks are far more noticeable. Users routinely express aggravation with lag time, poor quality of voice and video calls, delays, and poorly rendered graphics in web conferencing.

Use the following guidelines to ensure optimum system performance:

- Size the system for the load it will carry. Take into account the number of concurrent users, server hardware, bandwidth requirements, and latency.

- Continuously monitor the system to ensure servers are operating normally, without bottlenecks. Use tools like Spotlight on Messaging to automatically alert the responsible IT professionals of potential issues.

- Respond to bottlenecks and resolve potential problems quickly. Never expect a problem to resolve itself. Small ones frequently escalate into full-scale disasters if left unattended.

Monitoring Unified Messaging Components

Organizations with unified messaging implementations should consider investing in a centralized monitoring and troubleshooting tool like Quest Spotlight on Messaging. This tool is able to schedule various health tests and produce reports across the entire

unified communications environment. These reports provide a consolidated view of Exchange, OCS, and BlackBerry Enterprise Servers. Consolidated reports give you an understanding of the entire environment and help you make better operational decisions.

As a minimum, for all Exchange, OCS, and BES servers, monitor the following components:

- **CPU utilization** – Focus on overloaded CPU.
- **Memory utilization** – Sufficient memory must be available to services. Memory usage that increases over time indicates a higher load or a potential memory leak.
- **Disk utilization** – A non-zero disk queue length over a significant period of time indicates a disk bottleneck, and possibly an undersized disk subsystem.

You should also monitor components specific to each system. For example, for Exchange Server, you need to monitor internal and external message queues; for OCS, you should monitor database throughput, active client connection, and bandwidth consumption.

Spotlight on Messaging provides a library of targeted, useful reports and performance counters that are specifically relevant to any unified communications system. For an example and a list of some of the available reports, see Example 5 – Spotlight on Messaging Built-In Reports in *Appendix – Examples and Screenshots*.

Conducting Regular Tests

Mature communication technologies like Exchange Server and BlackBerry enable administrators to conduct simple, effective, semi-automated functionality tests, such as connectivity tests, logon tests, and service health tests. Seeing the results of many operations enables you to isolate potential problems more easily. Manually testing these parameters would be time-consuming and nearly impossible.

Although Exchange Management Shell includes health testing cmdlets and OCS administration tools provide functionality verification wizards, only Spotlight on Messaging allows you to run all relevant tests across all unified messaging components with virtually zero configuration.

For an example of a test result report from Spotlight on Messaging see Example 4 – Exchange Server Message Delivery Health Test in *Appendix – Examples and Screenshots*.

Resolving Problems in Your UC Environment

In the earlier chapters we discussed the importance of preventative monitoring and how intelligent monitoring tools can help you diagnose and isolate potential problems and bottlenecks.

It is important to repeat the following guidance for best availability and smooth operations:

⇒ Resolve bottlenecks and attend to other potential problems quickly. Rarely does a problem resolve itself. Small problems frequently escalate into full-scale disasters if left unattended.

To ensure that the IT department addresses issues as quickly as possible, some organizations include maximum problem resolution windows in their SLA.

Resolution Methodologies

Most performance and availability problems are resolved in one of two ways:

- **By replacing a failed, failing, or inadequate component**
  For example, if the disk subsystem is constantly a bottleneck, as indicated by high disk queue lengths, the inadequate disk must be replaced with a better performing disk. Sometimes you need to add a new server or component to distribute the load.

- **By re-configuring the system**
  For problems arising from suboptimal system configuration, you need to re-configure the system in an optimal way.

The success of IT professionals is often directly related to their ability to choose the correct resolution strategy for each issue. They can draw upon a great wealth of knowledge about unified communications environment issues and specific resolutions in product documentation, online knowledge bases, articles, forums, and weblogs.

Using Spotlight on Messaging for Issue Resolution Guidance

When you are alerted to an issue, especially one that may cause downtime, quickly locating reliable resolution information can be difficult. Spotlight on Messaging presents comprehensive, reliable suggestions on how to resolve a specific problem.

Using Spotlight on Messaging can greatly reduce issue resolution time, thereby reducing downtime to the unified messaging system. You can also avoid the costs of hiring outside consultants or providing specialized training in troubleshooting.

Conclusion

Unified communications systems deliver key services to your business. Users rely on e-mail, phone, instant messaging, and conferencing to communicate amongst themselves and with the wider community of prospects, customers, and partners. Users expect these systems to be available on demand.

Your goal as an IT professional is to ensure the best possible availability for the systems your users rely on. The service level agreement documents the availability you commit to deliver.

Integrated monitoring across the entire UC infrastructure allows you to better understand the actual state of your environment. This enables you to detect and resolve potential issues before they become problems that affect your users.

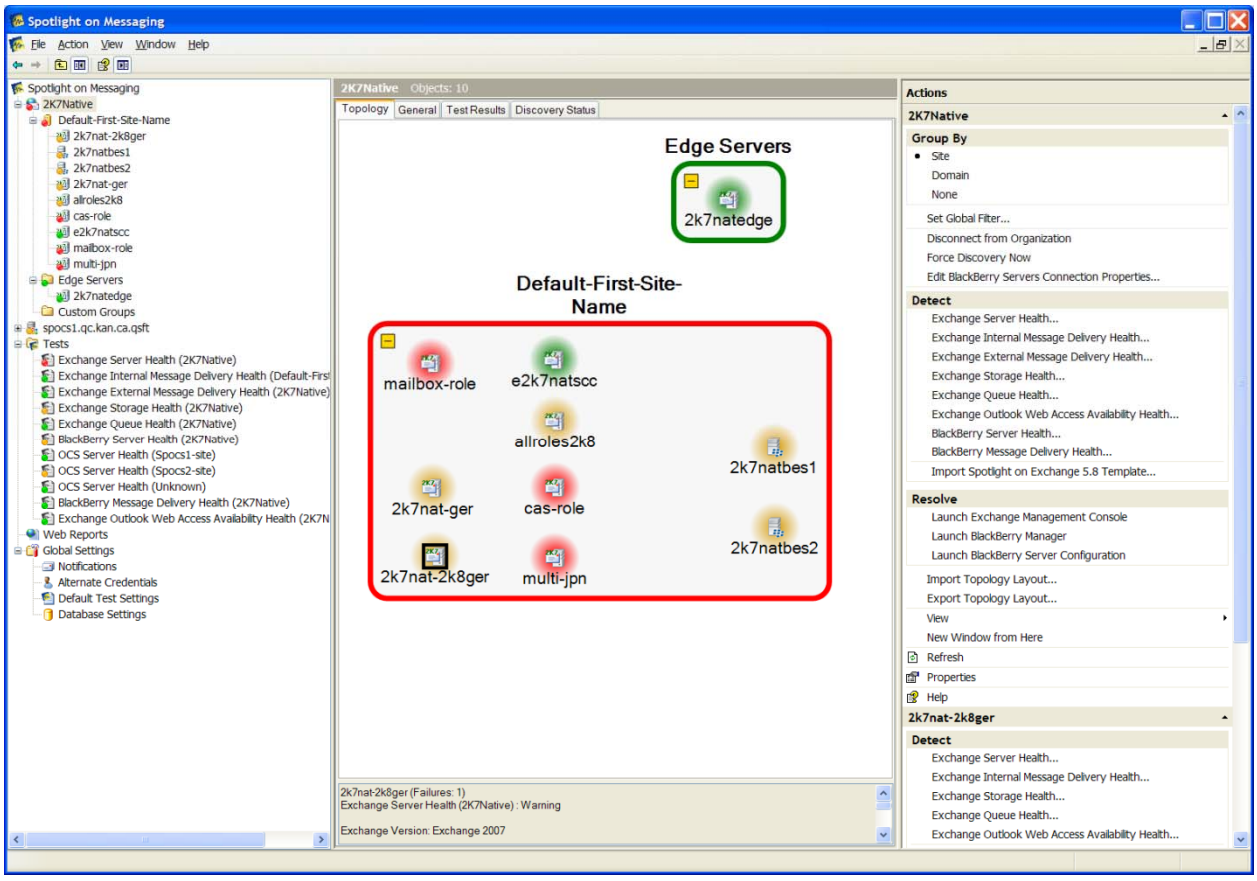
Spotlight on Messaging is an excellent platform for centralized monitoring, diagnostics, and resolution across the entire unified communications environment. Implementing Spotlight on Messaging will increase unified communications system availability through preventative troubleshooting and speedy resolution.

Appendix – Examples and Screenshots

This appendix provides sample screenshots that illustrate how Spotlight on Messaging provides integrated monitoring of the unified communications environment.

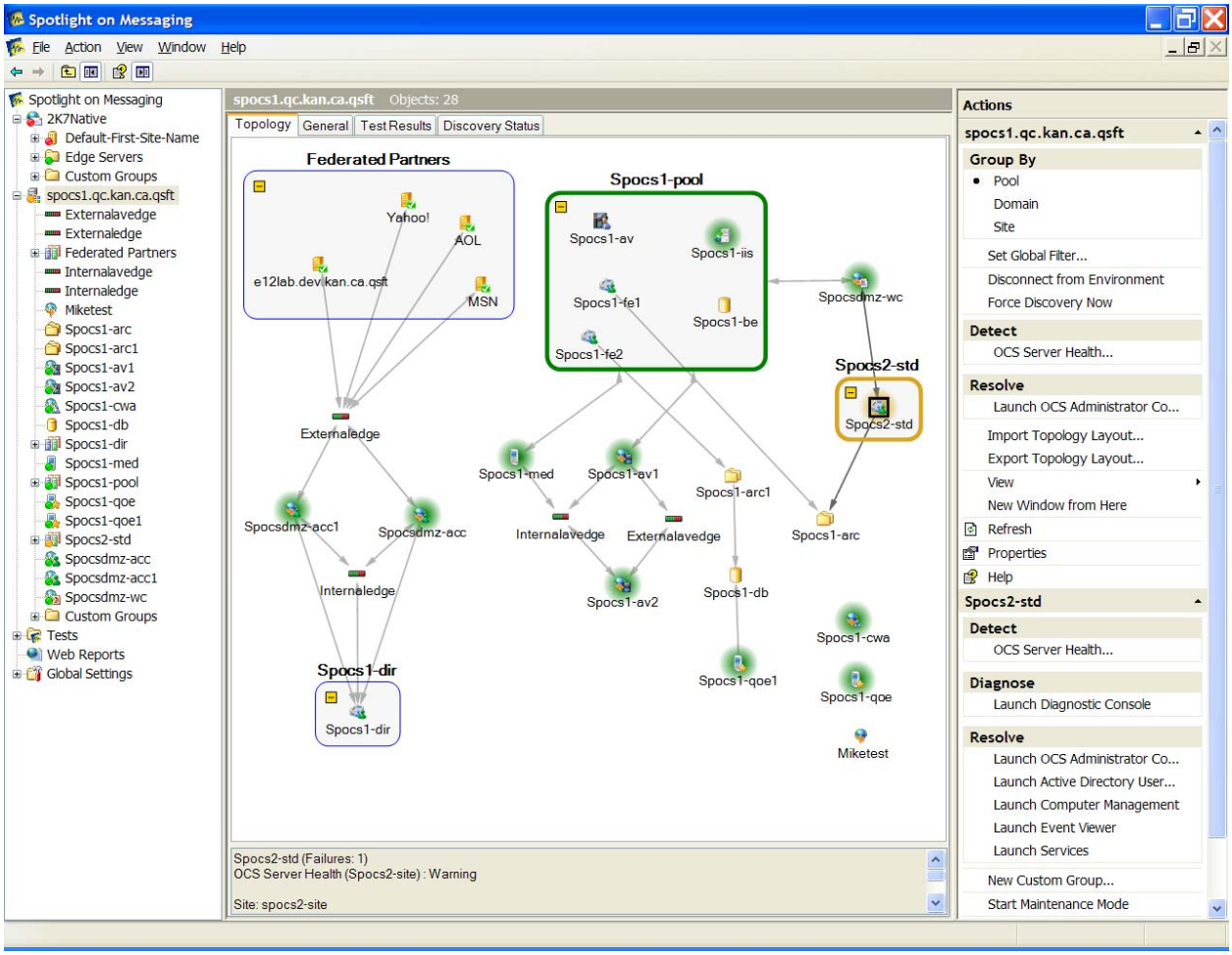
Example 1 – Spotlight on Messaging Management Console Topology View – Exchange Server and BlackBerry Enterprise Server

The Spotlight on Messaging Management Console provides a seamless view of your unified communications topology, including relationships between servers. Topology views are available for the Exchange Server and BlackBerry Enterprise Server environment; and the OCS server environment. At a glance, you can assess which servers are healthy (green), which may pose a potential problem (amber), and those that require attention (red). The topology view can be filtered by a specified criterion or grouped by domain or site.



Example 2 – Spotlight on Messaging Management Console Topology View – Office Communications Server

Office Communications Server implementations consist of many servers and several server roles. Often it is difficult to obtain a clear picture of your OCS topology, especially if your environment has grown organically. The Spotlight on Messaging Management Console instantly presents all servers in your OCS topology by pool, role, site, and domain. It highlights the servers that are currently experiencing problems or that have potential issues so that you can resolve the problems before they negatively impact your business.

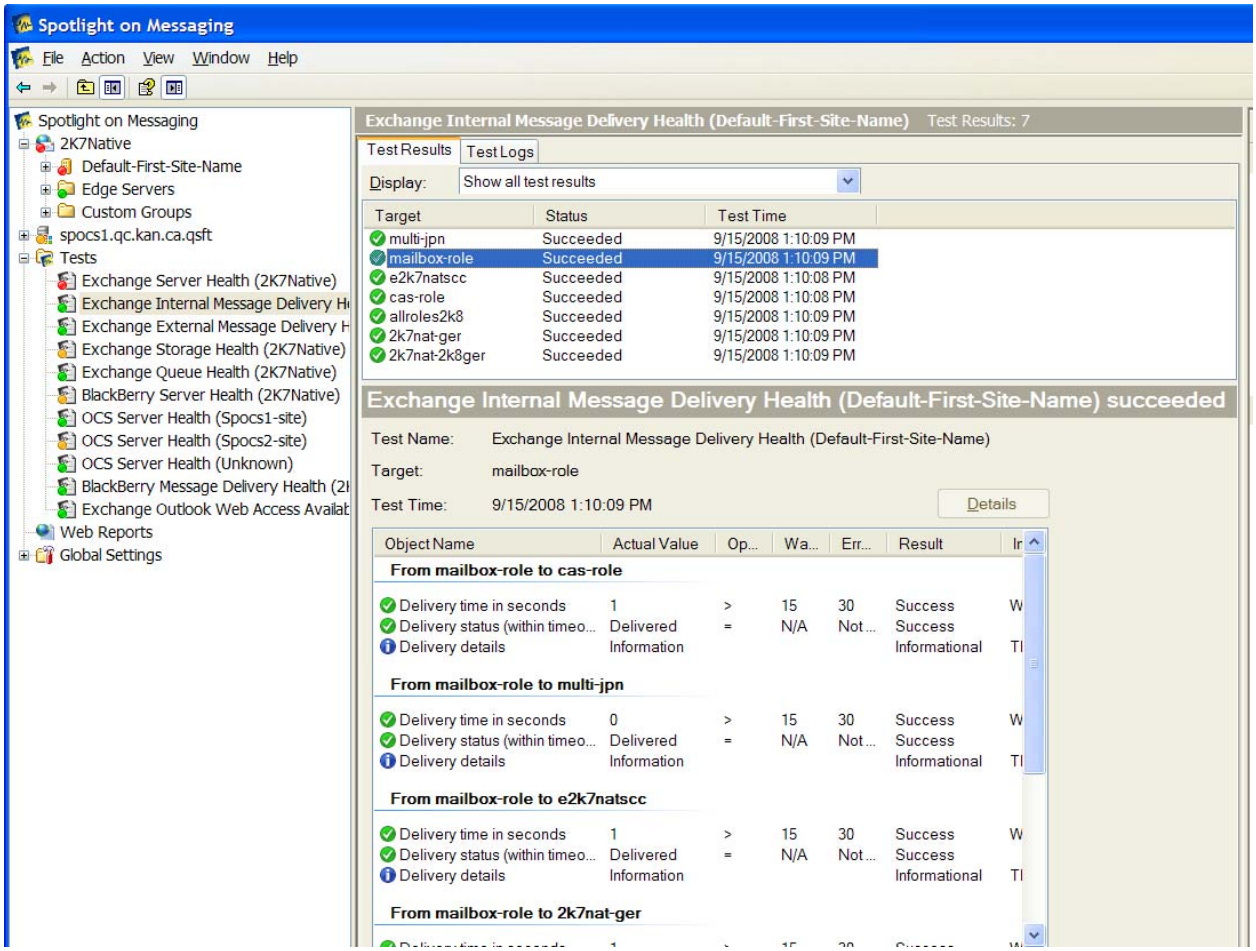


Example 3 – BlackBerry Diagnostic Console

The BlackBerry diagnostic console shows vital information about the health and usage of your BlackBerry Enterprise server.

Example 4 – Exchange Server Message Delivery Health Test

This example shows the Spotlight on Messaging report that is presented after internal message delivery health tests are conducted.



Example 5 – Spotlight on Messaging Built-In Reports

On the left of this screenshot is the list of reports available with Spotlight on Messaging. One report is shown on the right, the Exchange Server Physical Memory Utilization report.