

THG CASE STUDY



Maersk Container Industry Group a Division of A.P. Moller-Maersk Group

Microsoft System Center Operations Manager 2007 Deployment

"This project was significant in that it not only marked an ambitious early adoption of Microsoft's server monitoring technology, but a deployment that from the outset was envisioned to scale to manage the robust environment of a major, dynamic shipping enterprise. This is about as exciting as it gets for a systems management consultant!"



Michael J. Baiano
Principal Consultant & Project Lead
The Henson Group, Inc. (THG)



Microsoft Gold Certified Partner The Henson Group, Inc. (THG) designed and implemented a highly customized server monitoring solution based on System Center Operations Manager 2007 to centralize monitoring functions for this major international shipping company.

BUSINESS SITUATION

Maersk Container Industry Group ("MCI Group") is a strong global supplier of Cargo Transportation Equipment to a large group of leading shipping lines and leasing companies. All efforts are targeted at supplying equipment with the lowest Total Cost of Ownership (TCO) possible, without compromising safety, quality or efficiency. Head office of the MCI Group is situated in Denmark, while manufacturing of its unique products – reefer containers, dry containers, and Star Cool reefer machines – are situated in Qingdao and Dongguan, China.

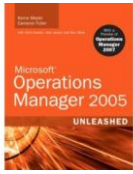


MCI Group is a business unit of A.P. Moller – Maersk, a global Group involved in a diverse range of business industries such as transportation, oil production and shipbuilding.

(For further information about this client, visit the company's web site at www.maersk.com.)

MCI Group has historically exhibited its vision in leveraging the latest innovations in systems management technology. For instance, MCI Group deployed Microsoft Operations Manager 2005 (MOM 2005) as an early adopter, to manage the Microsoft server-based components of its massive global environment, encompassing Active Directory, SQL, and Exchange servers.

MOM 2005—a key component of the Dynamic Systems Initiative—provides manageability as part of the design and implementation of Windows Server System technologies. With MOM 2005 and the SQL Server 2000 Management Pack, MCI Group was able to discover potential database issues quickly, allowing administrators to fix the issue before the user encounters a problem.



With MOM 2005 and the Exchange Server 2003 Management Pack, MCI Group leveraged synthetic transactions to monitor the latency experienced by Outlook, Outlook Web Access, Outlook Mobile Access, and Exchange ActiveSync technology. And, MCI Group generated warning alerts when the latency was over a predetermined threshold, allowing administrators to address potential issues before they became reality.

And, with MOM 2005 and the Active Directory Management Pack, MCI Group was able to monitor each Active Directory Domain Controller to help ensure that tasks were configured correctly, site replication was occurring within reasonable thresholds, and end-to-end replication was occurring within service level agreements, reducing the number of logon failures.

However, MOM 2005, as deployed by MCI Group, represented a relatively modest component of a larger monitoring environment that was managed by IBM Service Management and was centralized based on IBM's Tivoli Management Framework (TMF), a systems management platform from IBM (previously Tivoli Systems, Inc., acquired by IBM in 1996 and moved into IBM's Software Group division). The Framework is a CORBA-based architecture that allows the platform to manage large numbers of remote locations or devices.

Specifically, MOM 2005 was drawn under a monitoring structure built upon IBM Tivoli Monitoring - an enterprise-class solution that optimizes IT infrastructure performance and availability. MCI Group also leveraged IBM Tivoli NetView for network management, which utilizes SNMP.

Still, the potential of the MOM 2005 solution for monitoring MCI Group's Microsoft environment was never fully realized and the overall monitoring approach was rife with issues. At some point, frustrated with a range of inconsistencies and issues, MCI Group's IT leadership decided to explore ousting Tivoli and IBM Services and develop a new global monitoring framework.



At the time, as the situation escalated through 2007, Microsoft was planning to debut Microsoft System Center near the end of the year, which plays a central role in the Microsoft vision to help IT organizations benefit from self-managing, dynamic systems. System Center solutions capture and aggregate knowledge about your infrastructure, policies, processes, and best practices so your IT staff can build manageable systems and automate operations in order to reduce costs, improve application availability, and enhance service delivery.

System Center solutions are tuned to simplify management of the systems and applications your company already has implemented, including Microsoft SQL Server, Microsoft Exchange Server, the Microsoft Office system, and the Microsoft .NET Framework.

In addition, System Center solutions interoperate with third-party management tools so you can make the most of your existing investments and build on the System Center foundation with confidence. Already used by the majority of Fortune 500 companies, System Center solutions provide the reliability, scalability, and security required to manage the most mission-critical IT systems, applications, and services.

Microsoft System Center Operations Manager 2007 (formerly known as Microsoft Operations Manager), affords you a comprehensive, overall view of the health of your IT environment. Track

thousands of event and performance monitors across hundreds of operating systems and applications. In addition, get best-of-breed, end-to-end service management for the Windows platform and access to more than 50 management packs for various Microsoft software applications. Finally, automate routine, redundant tasks to increase efficiency and enable greater control of your IT environment.

(For further information about this technology, visit Microsoft's web site at <http://www.microsoft.com/systemcenter/>.)

Considering the scope of MCI Group's operations, the organization realized it could benefit greatly from exploring implementing a customized solution for centralized monitoring of its server infrastructure leveraging Systems Center Operations Manager. Such a move would also afford MCI Group's systems management administrators to leverage the lessons learned through the earlier MOM 2005 deployment.



Therefore, MCI Group approached Microsoft to explore the potential implementation of OpsMgr 2007. To design and deploy a solution to monitor MCI Group's unique server environment, Microsoft tapped The Henson Group.

A [Microsoft 2007 Partner of the Year](#), The Henson Group is a "Gold Certified Partner" founded by former Microsoft engineers in 2002, specializing in enterprise deployments and .NET development of Microsoft products that overcome today's business challenges.

The preferred solution provider for many US and international corporations, The Henson Group leverages direct ties to the Microsoft product groups, is a preferred sub-contractor of Microsoft Consulting Services, holds a seat on the national Microsoft Partner Advisory Council, and is recognized among the top US consultancies in Microsoft's partner community ([Microsoft's "Solution Finder"](#)).

The Henson Group offers a full-service Systems Management unit staffed by experienced Microsoft Certified consultants, usually specializing in multiple technologies. (The Henson Group leverages this unit as a preferred sub-contractor for Microsoft in its highly competitive New York Metro District and a member of the exclusive MCS Connect Program, where THG is assigned project roles by Microsoft Consulting Services.)

The Henson Group achieved Microsoft's official Advanced Infrastructure Solutions competency for proven experience deploying the Microsoft systems management software family of products, including Systems Center.

What this meant for MCI Group was that The Henson Group had the resources, project experience, industry knowledge, and proven technical ability to achieve its objectives.

SOLUTION

After intensive evaluations and comparative review, pitting Systems Center Operations Manager alongside its formidable competitors, Microsoft distanced itself from competing products early and ultimately received the nod from MCI Group's senior IT leadership.

To explore whether or not System Center Operations Manager would be a good fit for monitoring its global environment — which encompasses 8,000 servers worldwide — MCI Group initially planned a preliminary deployment of 400 servers that support operations in the Northeastern U.S.

MCI Group deployment strategy ultimately incorporates the consolidation of the server environment, while extending monitoring executed by System Center on a global scale. Therefore, as a starting point for engagement, the OpsMgr 2007 solution was designed to replace

the MOM 2005 solution and simultaneously assume the role of the IBM solution to manage the parameters of the current environment and also easily facilitate growth.

This engagement was initiated with a thorough Discovery Phase, during which key IT executives at MCI Group were interviewed to explore what their expectations from this deployment. This phase was crucial for The Henson Group's team to identify the size and complexity of the network and how it was distributed, as well as itemize key IT pain points.

Subsequently, The Henson Group customized the solution design to accommodate the existing hardware, while also providing recommendations as to what the optimal deployment scenario was before ultimately achieving approval to gain a clear path for implementation.

With discovery completed, The Henson Group's team then installed the core components for Ops Manager 2007. This phase also required The Henson Group to assist MCI Group in the installation of SQL Server and SQL Reporting Services.

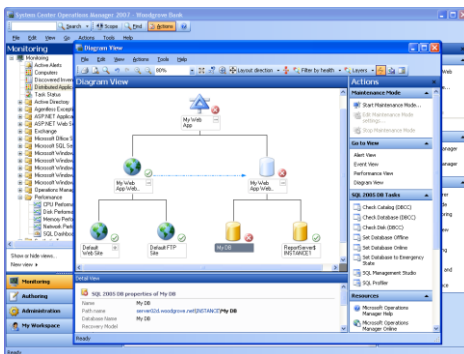
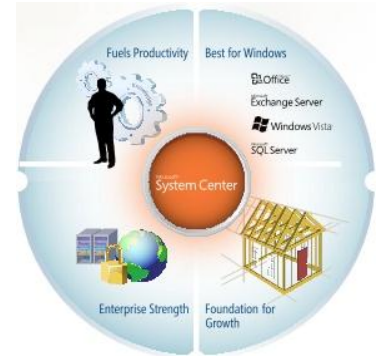
The OpsMgr deployment at Maersk is based on a single management group, multiple server solution that leverages virtually all of the latest features of the product.

The Phase One deployment is focused on monitoring of the Americas network services infrastructure proactively monitoring the health state of server hardware, OS and Clusters, SQL databases, IIS web hosting, SMS, and Citrix provided by over 550 servers.

In addition, a Jalasoft Xian Io infrastructure provides monitoring of hundreds of Cisco switches and routers, firewalls, AIX and Solaris servers, VMware ESX hosts and other SNMP devices on the network integrated directly into the management groups with Alerts and monitoring data available from the OpsMgr console.

The solution consists of a two-node clustered SQL database that host the Operations and Data Warehouse components as well as the Xian database.

It is notable that dedicated SAN arrays are utilized to provide high-end data throughput to allow the solution to scale to up to 8,000 servers that the management group is ultimately intended to support.



The RMS is planned to be hosted on a 64 bit cluster (currently hosted standalone due to the limited availability of hardware) and strictly dedicated to the Root Management Server function. The RMS does not handle any agents directly. Six secondary management servers are incorporated to support the agent load and provide the required scalability and fault tolerance required of an enterprise class monitoring solution. Two Gateway servers are incorporated to facilitate monitoring of DMZ-hosted services such as web servers.

A separate Reporting Service is utilized to host SQL Reporting Services and the Web components.

Additionally, two more servers are utilized to host Jalasoft Xian IO network management servers to monitor SNMP-based services. A product connector is used to forward alerts and monitoring data into OpsMgr for processing by the Jalasoft management packs running in the root health service.

The Operations Center is located in India with the majority of server and services support by the offshore teams. In addition to console-base monitoring of alerts, state, and performance data email-based Notifications are leveraged to notify the appropriate technical resources of open issues under their jurisdiction.

Lastly, during the Handover and Commissioning Phase, The Henson Group delivered one-on-one Knowledge Transfer with key senior stakeholders, who in turn received the training necessary to provide subsequent instruction to other v IT staffers. And, one of the requirements for commissioning phase was the completion of NOC type diagram view, which was completed, tested, and approved.

The Henson Group also deployed a variety of optional components (such as Web Console, Reporting, Gateway Server) and several Microsoft-authored Management Packs. The Henson Group identified and downloaded other Management Packs to accommodate MCI Group's requests for functionality and deployed agents on Windows Servers and network devices (to monitor availability) in both DMZ and non-DMZ networks.

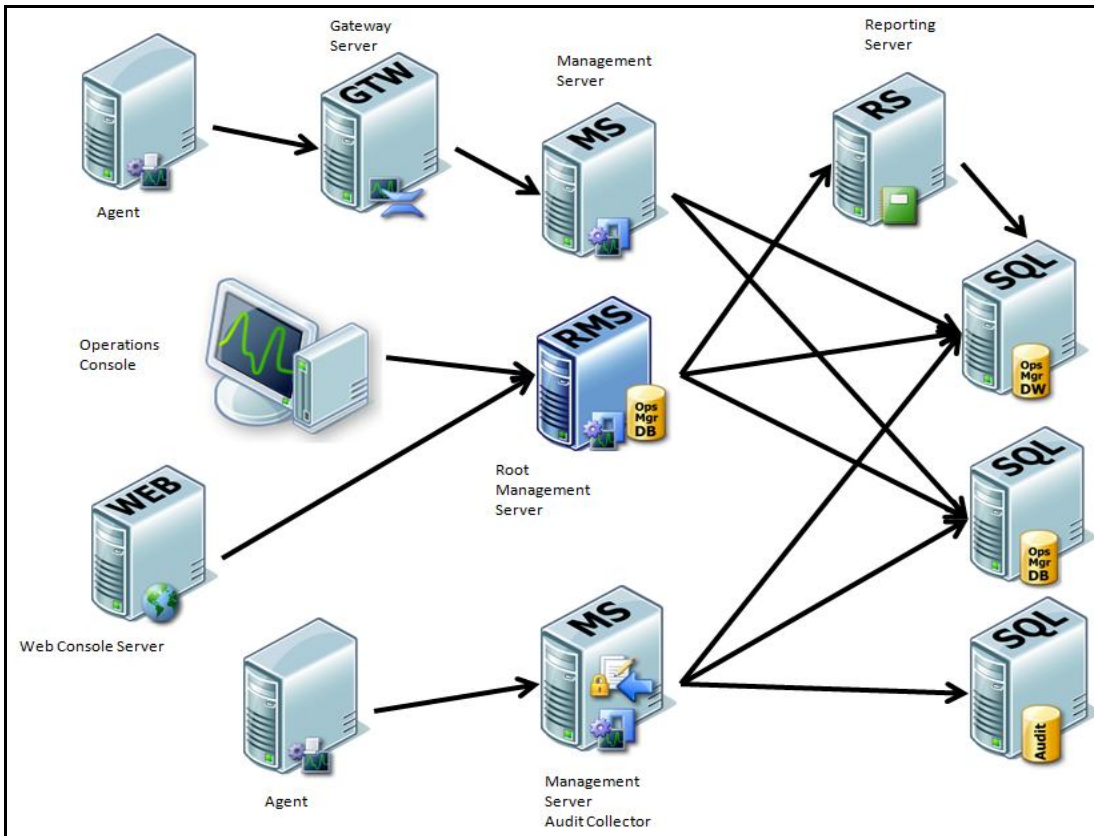


Figure 3 - Operations Manager 2007 Server Roles

And, The Henson Group delivered extensive documentation, including a network diagram for the purpose of mapping the health of the entire MCI Group servers and network devices

With OpsMgr 2007, a piece of software, known as an agent, is situated on the computer to be monitored. The agent watches several sources on that computer, including the Windows Event Log, for specific events or alerts generated by the applications executing on the monitored computer.

Upon alert occurrence and detection, the agent forwards the alert to a central OpsMgr 2007 server. This OpsMgr 2007 server application maintains a database that includes a history of alerts. The OpsMgr 2007 server applies filtering rules to alerts as they arrive; a rule can trigger some notification to a human, such as an e-mail or a pager message, generate a network support ticket, or trigger some other workflow intended to correct the cause of the alert in an appropriate manner.

OpsMgr 2007 uses the term management pack to refer to a set of filtering rules specific to some monitored application. While Microsoft and other software vendors make management packages available for their products, OpsMgr 2007 also provides for authoring custom management packs. While an administrator role is needed to install agents, configure monitored computers and create management packs, rights to simply view the list of recent alerts can be given to any valid user account.

Several OpsMgr 2007 servers can be aggregated together to monitor multiple networks across logical Windows domain and physical network boundaries. Through a connector framework scheme employing a Web Service, individual OpsMgr 2007 servers can exchange alerts with other network management applications.

RESULTS

The Henson Group achieved MCI Group's expectations for implementing a solution to provide monitoring of all Windows servers and network devices on the intranet, remote sites and DMZ.

The success of this preliminary deployment led to the selection of Operations Manager 2007 as the global monitoring framework replace all others at not only MCI Group, but A.P. Moller-Maersk Group as well.

"In fact, while the initial deployment monitors approximately 400 servers and 200 Cisco switches, we architected the solution to be able to ultimately handle the entire global environment of 8,000 servers and other devices, in a heterogeneous environment that includes Microsoft, Solaris, Linux, VMware ESX, Cisco, and more," Baiano says. "And, this solution will not just monitor the environment for the shipping business, but for the entire global environment."

Architected to facilitate monitoring out of Maersk's personnel in central data site in India.



The fact that Maersk also deployed prior to the November 2007 debut of System Center worked to its advantage.

"We were way ahead of curve, discovering bugs, developing quick fixes, working directly with the product group," Baiano says. "This is a major win for Microsoft, because they were considering the global product HP Open View and we faced a very difficult compete situation."

As a side result, Baiano's experience with this project, as well as his leadership on various other System Center initiatives, resulted in active recruitment by Microsoft Consulting Services, and he ultimately accepted a position with MCS in March 2008.

This solution affords MCI Group, and eventually the overall Maersk global environment, with monitoring of key business critical applications, synthetic transaction capability to add client perspective to the typical server monitoring capabilities, and provide monitoring of all servers with a centralized NOC type diagram that depicts the health of the designated environment.

It provides the rich health knowledge of all Windows based applications as the Management Packs are developed by the application developer

All the monitoring capabilities mentioned above will provide MCI Group administrators to become proactive. Now they will know the problems before a help desk call.

The solution also provides much better management on few of ITIL specific SILOs – Incident Management, Problem Management, Knowledge Management, Configuration Management, Capacity Management, Security Management.

Meanwhile, Another area that OpsMgr 2007 will help in measuring and alerting poor performance of the IT services. This solution will help MCI Group to become more efficient and effective by more effectively uncovering root causes for issues and a path for resolving them.

Lastly, this project was concluded well within time and budget, with THG delivering the goals even though the project duration was cut down to more than half from the original Project Scope.

System Center Operations Manager 2007 offers many enhancements in both features and architecture over its predecessor Microsoft Operations Manager 2005.

Feature	Microsoft Operations Manager	System Center Operations Manager
End-to-End Service Management		
Service Oriented Monitoring		✓
Synthetic Transactions	✓	✓ *
Model-based architecture		✓
Monitoring Templates		✓
WS-Management support		✓
SNMPv2 support	✓	✓ *
Best of Breed for Windows		
Client Monitoring		✓
Audit Collection		✓
XML Management Packs		✓
Reporting	✓	✓ *
Self-Tuning Thresholds		✓
Increased Efficiency and Control		
Server roles	✓	✓ *
High availability	✓	✓ *
Monitoring Engine	✓	✓ *
Notifications	✓	✓ *
Connector Framework	✓	✓ *
Consolidated Console		✓
Role-based security		✓

Active Directory Integration		✓
Windows PowerShell command console		✓

* Improved in Operations Manager 2007

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