Networking Strategy and Optimization Services (NSOS)
Agenda

Network Strategy and Optimization Services (NSOS) Overview
IBM NSOS NAO Offerings Model
IBM NSOS NIO Offerings Model
Why IBM
Where is the Root Cause ???

Lot of specialist opinion … … but no „End-to-end“ statements

user complain:
„the application XY response is bad“  
- or -  
„The network performance is slow!“

Client LAN: „OK“

WAN Provider: „no bad impression“

„Host transactionen below 1 sec."

„Middleware ? low load“

„no issue in Server LAN environment“
Networking Strategy & Optimization Services (NSOS)

- Application Performance Assessment
  - Application Profiling
  - Application Baseline and Flow Analysis
  - Deployment Readiness
- WAN Application Optimization*
  - ROI
  - Planning
  - Sizing
  - Point of Concept

- Network Infrastructure Assessment
  - Discovery
  - Asset Inventory
  - Design & Device Review
  - SLAs
  - Readiness
- Network Performance Analysis & Capacity Planning
  - Bandwidth and Response Time Analysis
  - Modeling*
- Network Diagnostic
  - PD/PSI
  - Root Cause Analysis
Agenda

Network Strategy and Optimization Services (NSOS) Overview
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IBM Networking Strategy and Optimization Services – network application optimization (NAO)

Improving application performance across the network

Features

- Identification of **performance inhibitors** to applications, servers and clients, and the network
- Prediction of **new application performance** to help avoid costly trial-and-error and delay
- Profiling of **application transaction behavior** early in the development cycle to help streamline later development steps
- Recommendations for **optimizing application transactions** and the networking environment
- Proactive planning to **help prepare for the deployment of new applications** or migration of existing applications during server or data center consolidations or relocations

Potential benefits

- Reduce risk of poor application performance
- Enhance employee productivity and customer experience
- Protect Web-based revenue streams
- Increase reliability of automated supply chains
- Mitigate risk associated with application deployments and migrations while controlling costs

*Realize your investment in business applications now and in the future*
Application profiling discover bottlenecks

Response Time Prediction Example

- Client was relocating servers to a centralized data center
- Concerned about performance
- Did prediction and analysis to point to application issues that additional bandwidth won’t solve
- Avoided major network hardware upgrades

27 turns times the 300 ms latency puts the end user link time to be 8100 ms

Network Bytes

Application Turns
Application baseline and flow analysis helps to understand how different applications use the network and provide a baseline for future comparisons.

- Client was concerned that their business critical application did not have the necessary bandwidth.
- Found that an engineering application was using 28% of their resources.
- Recommended changing the ‘replication of data’ to be before the engineering application run to smooth out the peaks and made improvements in the window sizing.
- Resulted in reducing the peak demands and postponed WAN upgrades.
This service can be applied to identify performance inhibitors to applications, servers, clients and the network at any point in an development lifecycle of an application.

<table>
<thead>
<tr>
<th>For:</th>
<th>IBM can provide recommendations to:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Production applications</td>
<td>▪ Optimize application transactions and the current networking environment</td>
</tr>
<tr>
<td>Applications early in the development cycle</td>
<td>▪ Optimize the application design to help streamline downstream development steps and reduce the risk of performance issues</td>
</tr>
<tr>
<td>Applications close to deployment</td>
<td>▪ Optimize the application and network environment based on an understanding of how the new or updated application will behave in the infrastructure</td>
</tr>
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</table>
### NAO addresses the client’s pain points

<table>
<thead>
<tr>
<th>Pain Point: Poor performance of existing applications</th>
<th>NAO can help improve application performance</th>
</tr>
</thead>
<tbody>
<tr>
<td>- Client and partner dissatisfaction that is jeopardizing important business relationships</td>
<td>- Identifies performance inhibitors to applications, servers, clients and the network, providing advice on how to remove them</td>
</tr>
<tr>
<td>- Reduced employee productivity</td>
<td>- Helps improve customer satisfaction</td>
</tr>
<tr>
<td>- Disruption of Web-based revenue streams and automated supply chains</td>
<td>- Supports smoother and more efficient relationships with suppliers and partners</td>
</tr>
<tr>
<td></td>
<td>- Helps increase productivity of in-house staff</td>
</tr>
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<td></td>
<td>- Supports improved performance of Web-based applications</td>
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<table>
<thead>
<tr>
<th>Pain Point: Risk of poor performance of a new application</th>
<th>NAO can help ensure optimal performance of a new application</th>
</tr>
</thead>
<tbody>
<tr>
<td>- Productivity losses</td>
<td>- Predicts new application performance to help avoid costly trial-and-error and delays</td>
</tr>
<tr>
<td>- Unplanned expenditures and delays to correct performance problems</td>
<td>- Profiles application transaction behavior early in the development cycle to help streamline later development steps</td>
</tr>
<tr>
<td>- Loss of credibility when expected results are not delivered</td>
<td>- Provides an assessment of networking infrastructure requirements</td>
</tr>
<tr>
<td></td>
<td>- Helps mitigate the risk of operational issues such as bandwidth limitations and poorly set service levels</td>
</tr>
<tr>
<td></td>
<td>- Helps enable smoother and more successful changes</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Pain Point: Adverse effect on the end-user experience resulting from server and data center consolidation or relocation</th>
<th>NAO can help ensure optimal end-user experience</th>
</tr>
</thead>
<tbody>
<tr>
<td>- Need to make unexpected and significant changes to applications selected for consolidation or relocation in order to provide acceptable performance for remote users</td>
<td>- Identification of interdependencies between multi-tiered servers and between end users and servers</td>
</tr>
<tr>
<td>- Unanticipated downtime or performance degradation</td>
<td>- Understanding of the requirements for readying applications for remote-user access</td>
</tr>
<tr>
<td>- Inability to control costs</td>
<td>- Prediction of the application flows that the WAN will need to support</td>
</tr>
</tbody>
</table>
Large non-food retailer reduces WAN bandwidth by 90% and rolls out a new online shopping web site - network application optimization.

**Business challenge:**
- Prepare to introduce new applications including VoIP and video-based digital signage, which will add significantly to the traffic running over the network that connects stores, distribution centers, and data centers
- Roll out a new virtual store that is quick and easy for end users to access and use

**Solution:**
- Update the network design to accommodate WAN optimization technology and meet the network infrastructure requirements for the virtual store application
- Refresh store and other networking equipment to incorporate router-based WAN optimization technology and the network in the data center
- Perform post-deployment validation of improvements in application performance across the wide area network and online shopping web site

**Benefits:**
- Reduction of about 90% of the traffic on the WAN and ability to add new services and applications with no increase in bandwidth
- Improved end user experience through faster response times in its brick and mortar and virtual stores

**Location:** Brazil  
**Industry:** Retail  
**Profile:** Commercial banking  
**Size:** 500+ stores, 50,000+ employees, 23 million+ customers  
**Solution components:**
- IBM Networking Strategy & Optimization Services – network application optimization  
- IBM Network Integration Services for campus and LAN  
- IBM Network Integration Services for data center networks  
- IBM Network Integration Services for wide area networks – application and network performance optimization
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IBM Networking Strategy and Optimization Services – network infrastructure optimization (NIO)

Improving performance, controlling costs of your networking infrastructure

Features
- Flexibility to choose service options that best fit the needs of your business:
  - **Network infrastructure assessment** services to evaluate existing components and assess the ability of the network to support your current business and plans
  - **Network performance analysis and capacity planning services** to understand how network performance is affected by applications and background traffic and to determine network sizing requirements
  - **Network diagnostic assessment** services to identify problems, pinpoint sources and determine the root causes of network performance issues

Potential benefits
- Avoid unnecessary networking expenditures
- Boost customer satisfaction and employee productivity
- Reduce the risks associated with networking technology implementations and upgrades
- Speed time to market with differentiating technologies

*Building an optimized infrastructure to support business goals*
Network infrastructure assessment compares your current position with your desired destination.

Collect data about your current networking infrastructure environment using baseline and trending techniques.

Understand your requirements based on your current environment and plans – business, people, processes, technology and tools.

Evaluate the maturity characteristics of your current networking environment.

Determine options for meeting your requirements.

Define the plan to close the gap between current state and target state.
Network performance analysis and capacity planning (modeling) provides the capability to answer business questions without building the real network.

- Client wanted to know impact of end user growth on their network
- Modeled and predicted the needed bandwidth
- Enable business growth faster than thought
Network diagnostic assessment can drill down to the root cause of a problem.

Client network monitoring tools were not showing issues with key router.

However, detailed analysis indicated packet loss (retransmissions) along the path.
NIO addresses the client’s pain points

<table>
<thead>
<tr>
<th>Pain Points: Poor network performance that puts critical business relationships at risk</th>
<th>NIO can improve network performance</th>
</tr>
</thead>
<tbody>
<tr>
<td>- Customer and partner dissatisfaction&lt;br&gt;- Diminished employee productivity&lt;br&gt;- Inability to perform in-depth network analysis&lt;br&gt;- Difficulty taking appropriate actions to optimize costs and performance</td>
<td>- Network assessment, analysis and diagnostics can pinpoint problem areas and provide concrete recommendations to boost performance, increase customer satisfaction and improve employee productivity.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Pain Points: Problems assessing planned expenditures and justifying current costs</th>
<th>NIO can help target IT infrastructure investments</th>
</tr>
</thead>
<tbody>
<tr>
<td>- Difficulty predicting capacity requirements&lt;br&gt;- High costs for insufficient results&lt;br&gt;- Wasting money on unnecessary technology and capacity</td>
<td>- Pinpointed analysis of performance issues and concrete recommendations that can help target investments to support business-critical applications and technologies, potentially enabling IT to do more with less</td>
</tr>
</tbody>
</table>
IBM enabled a global consumer products company to cut costs by simplifying and standardizing data center services

**Business challenge:**
Globalize and simplify data center services to enable the sharing of skills and resources across regions for their global distribution centers, factories, sales offices, other facilities and external business partners. With a focus on controlling costs, this company also wanted to reduce the number of technologies and global suppliers and interconnect and operate the networks from four regional data centers.

**Solution:**
IBM helped to define the requirements, and designed and implemented the network inside and between the four main data centers, supporting over 4,000 servers. IBM considered network connectivity and the impacts of server virtualization, server clustering and load balancing technologies on the network design.

**Benefits:**
Controlled costs through a newly-designed and dual-site data center networking infrastructure architecture and design.
Met requirements for availability, security, scalability and modularity to support current consolidation plans and future needs.

**Company profile:**
- More than 300 factories
- Over 200,000 employees
- Operations or partnerships in Europe, the Americas, Asia, Africa and Australia
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IBM stands out in the marketplace

- Industry-leading global delivery capabilities
- Real-world experience deploying and managing complex networks
- Experience with IBM products and products from a wide variety of other IT companies, network equipment providers and telecommunications carriers
- Formal relationships with third-party suppliers of specialized software tools
- Dynamic understanding of the relationships among applications, end users and the entire IT infrastructure – not just the network
- Vendor-independent approach to analyzing the root causes of networking infrastructure issues
- Structured methodology for network assessment
- Actionable recommendations, with implementation assistance available
### Market Share: Network IT Services, Worldwide, 2006-2008

**Unit: US$ millions**

<table>
<thead>
<tr>
<th>Vendor</th>
<th>Sum of Revenue 2006</th>
<th>Share 2006</th>
</tr>
</thead>
<tbody>
<tr>
<td>IBM</td>
<td>3,392</td>
<td>5.9%</td>
</tr>
<tr>
<td>Accenture</td>
<td>2,422</td>
<td>4.3%</td>
</tr>
<tr>
<td>Northrop Grumman</td>
<td>1,752</td>
<td>3.1%</td>
</tr>
<tr>
<td>Fujitsu</td>
<td>1,475</td>
<td>2.6%</td>
</tr>
<tr>
<td>Capgemini</td>
<td>1,346</td>
<td>2.4%</td>
</tr>
<tr>
<td>Lockheed Martin</td>
<td>1,205</td>
<td>2.1%</td>
</tr>
<tr>
<td>BT</td>
<td>1,195</td>
<td>2.1%</td>
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<tr>
<td>EDS</td>
<td>1,122</td>
<td>2.0%</td>
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<tr>
<td>T-Systems</td>
<td>1,104</td>
<td>1.9%</td>
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<tr>
<td>Nokia Siemens Networks</td>
<td>981</td>
<td>1.7%</td>
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</table>

<table>
<thead>
<tr>
<th>Vendor</th>
<th>Sum of Revenue 2007</th>
<th>Share 2007</th>
</tr>
</thead>
<tbody>
<tr>
<td>IBM</td>
<td>3,783</td>
<td>5.8%</td>
</tr>
<tr>
<td>Accenture</td>
<td>3,040</td>
<td>4.6%</td>
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<tr>
<td>Northrop Grumman</td>
<td>1,966</td>
<td>3.0%</td>
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<tr>
<td>Hewlett-Packard</td>
<td>1,960</td>
<td>3.0%</td>
</tr>
<tr>
<td>BT</td>
<td>1,576</td>
<td>2.4%</td>
</tr>
<tr>
<td>Fujitsu</td>
<td>1,533</td>
<td>2.3%</td>
</tr>
<tr>
<td>Capgemini</td>
<td>1,529</td>
<td>2.3%</td>
</tr>
<tr>
<td>Lockheed Martin</td>
<td>1,361</td>
<td>2.1%</td>
</tr>
<tr>
<td>T-Systems</td>
<td>1,249</td>
<td>1.9%</td>
</tr>
<tr>
<td>Atos Origin</td>
<td>1,249</td>
<td>1.9%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Vendor</th>
<th>Sum of Revenue 2008</th>
<th>Share 2008</th>
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</thead>
<tbody>
<tr>
<td>IBM</td>
<td>4,101</td>
<td>5.8%</td>
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<tr>
<td>Accenture</td>
<td>3,469</td>
<td>4.9%</td>
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<tr>
<td>Northrop Grumman</td>
<td>2,098</td>
<td>3.0%</td>
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<tr>
<td>Hewlett-Packard</td>
<td>1,982</td>
<td>2.8%</td>
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<tr>
<td>Capgemini</td>
<td>1,679</td>
<td>2.4%</td>
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<tr>
<td>Fujitsu</td>
<td>1,679</td>
<td>2.4%</td>
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<tr>
<td>Lockheed Martin</td>
<td>1,500</td>
<td>2.1%</td>
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<tr>
<td>BT</td>
<td>1,453</td>
<td>2.1%</td>
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<tr>
<td>Atos Origin</td>
<td>1,374</td>
<td>1.9%</td>
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<tr>
<td>T-Systems</td>
<td>1,286</td>
<td>1.8%</td>
</tr>
</tbody>
</table>

**Data scope:**
- enterprise network
  - Consulting
  - Development and integration

Questions?
Thank You