MISSION CRITICAL OPERATIONS
Simplified integrated monitoring includes virtual environment

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NEC Corporation,
Cloud Platform Division,
MasterScope Group
NEC brings together and integrates technology and expertise to create the ICT-enabled society of tomorrow.

We collaborate closely with partners and customers around the world, orchestrating each project to ensure all its parts are fine-tuned to local needs.

Every day, our innovative solutions for society contribute to greater safety, security, efficiency and equality, and enable people to live brighter lives.
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1. Changing of IT System Surroundings
2. Introduction / MISSION CRITICAL OPERATIONS
3. Functions and features
4. Market Voice and Case Study
1. Changing of IT System Surroundings
Changes of the environment for IT system management

Demands for not only comparable service quality, but response to compliance needs and complexity of IT environment making load of operator bigger.

Farm enterprise
- Cost reduction
- Response to Compliance

User
- Demands for higher comparable services

IT system operator

Rapid changes on IT environment
- Legacy system to open system
- Multivendor products
- Complexity of system linkage
- Increasing servers and client PCs
- Complexity of network environment
- Rapidly evolving IT technology

Load growth by responding problems occurred one after another

- Difficulty in grasp of distributed system configuration
- Cannot manage multivendor mgmt method
- Expand system More PCs / large networks
- Shortage of employee for open system
- Extent of the impact is ambiguous
The core software of Integrated system management

**Simple Decision Making**

Appropriate decision making with the help of system management information

**Simple View**

Easy view of the system and associated risks. User-friendly GUI for various functionality

**Simple Optimization**

Optimization by autonomic operation leading to easy management. Automatic resource optimization in various scenarios

**Entire Integration**

Corporate Management
- Integrated Management
- Service Level Management
- Asset Management
- IT Overall Control Support

System Management
- Server Management
- Storage Management
- Network Management
- Application Management

Operation Management
- Batch Job Management
- Backup Archive
- Software Delivery
- Platform Management

Optimization

MasterScope MISSION CRITICAL OPERATIONS
Realizing entire control with simplified operations

By going back to basics of operation management, we pursue "simple". There are 3 keywords to efficiently realize the entire control.

**Simple View**
- View system risks and current status easily
- Easy to use and understand GUI for highly multiple functions

**Simple Decision Making**
- Navigates appropriate Decision
- Supports by knowledge consolidated system operation know-how

**Simple Optimization**
- Optimization to the comfort operation by autonomic operation
- Automates optimization of entire resources by the various scenario operations
MasterScope is a series of Integrated System Management Software products which enables simple operation and supports controlling whole IT system.

### Corporate Management

<table>
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<tr>
<th>Integrated Management</th>
<th>Cloud Management</th>
<th>Asset Management</th>
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<tr>
<td><strong>MISSION CRITICAL OPERATIONS</strong></td>
<td>Virtual DataCenter Automation Cloud Manager</td>
<td>AssetSuite</td>
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### Operations Management

<table>
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<tr>
<th>Job Management</th>
<th>Software Deployment</th>
<th>Platform Management</th>
<th>Backup</th>
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<tbody>
<tr>
<td>JobCenter PrintCenter V</td>
<td>DeploymentManager</td>
<td>NEC SigmaSystemCenter</td>
<td>NetBackUp NetWorker Symantec Enterprise Vault</td>
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</table>

### System Management

<table>
<thead>
<tr>
<th>Server Management</th>
<th>Network Management</th>
<th>Storage Management</th>
<th>Application Management</th>
</tr>
</thead>
<tbody>
<tr>
<td>SystemManager</td>
<td>Network Manager</td>
<td>iStorageManager Performance Monitor Suite</td>
<td>Application Navigator</td>
</tr>
</tbody>
</table>

*SystemManager is included in MISSION CRITICAL OPERATIONS*
MasterScope Products Monitoring Layer

MasterScope offers integrated system management for Network, Hardware, and Application layer.

<table>
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<tr>
<th>Target Monitoring layer</th>
<th>Details</th>
<th>Product lineup in MasterScope</th>
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<tr>
<td>Application Performance / Service Level</td>
<td>Performance or service level (mail, Web, DNS etc)</td>
<td>Application management “Application Navigator”</td>
</tr>
<tr>
<td>Log</td>
<td>Logs from OS or applications</td>
<td>Server management “SystemManager”</td>
</tr>
<tr>
<td>Service and process</td>
<td>Windows service, process activation and/or alive status</td>
<td>Network management “Network Manager”</td>
</tr>
<tr>
<td>Resource</td>
<td>OS level performance, (CPU, memory, disk capacity etc).</td>
<td>Each HW vendor’s tool (ESMPRO for EXPRESS Server)</td>
</tr>
<tr>
<td>Network</td>
<td>Alive status of servers by ICMP (plus SNMP trap monitoring)</td>
<td></td>
</tr>
<tr>
<td>Hardware failure</td>
<td>Hardware failures (HDD, fan, temperature etc)</td>
<td>Storage management “iStorageManager”</td>
</tr>
<tr>
<td>Storage</td>
<td>Storage operation status or configuration management</td>
<td></td>
</tr>
</tbody>
</table>

*SystemManager is included in MISSION CRITICAL OPERATIONS*
MasterScope Operation Image

Realizes simple operation with high expandability by utilizing MasterScope Framework and applying to large scale and complex IT platform environment.

**Business Management**
- Failure monitoring from business view
- Immediately specifies failure occurrence point and extent of the impact

**Integrated operation management**
- Operation efficiency on multiple server environment
- Realizes integrated monitoring

**Knowledge Management**
- Advanced operability by knowledge
- Accumulating knowledge
- Recovery
- Displays guide and message about What’s happen.
- Displays guide message about What should be done.

**Integrated management and monitoring** (Integrated Viewer)
- Integrated operation without regard to platforms

**MasterScope Framework**
- Windows Server mgmt
- Linux Server mgmt
- Knowledge mgmt
- Application mgmt
- Network mgmt
- Batch job mgmt
MISSION CRITICAL OPERATIONS 3 Benefits

MCO helps you achieve stable and optimized operations

Challenges
1. Know entire system state at a glance.
2. Achieve non-stop and stable operations.
3. Achieve efficient operation Management.

Key Features of MCO
① Displays entire system state in one simple GUI based on ergonomics.
② Prevents system failure. Minimizes business impact due to failures.
③ Automated operations and resource optimization.
3. Functions and features
Simple and Integrated GUI

Integrates Server, Application and Network into one simple GUI. You can easily manage system monitoring and audit configuration.

Server monitoring
- Service
- Process
- Log
- Performance
- Configuration
- Management

Application Monitoring*
- Oracle
- SQL server
- Exchange
- Tomcat
- WebLogic
- Apache
- IIS

Network monitoring**
- Up down
- Performance
- SNMP monitoring
- Configuration management

Enable to grasp whole system condition from one console efficiently.

* For AP monitoring, Applications Navigator is needed.
** For NW monitoring, Network Manager is needed.
Visualize Virtualized Environment

Linking operation with each virtual OS and each physical / virtual servers allows you to grasp failure impact.

Integrated mgmt
MISSION CRITICAL OPERATIONS

Visualize virtual environment in integrated console by connecting operation AP and virtualized layers managed by SSC.

1. Monitor operation

2. Check the config info

*For virtualized environment, NEC SigmaSystemCenter is needed.

- Manage IT resource
-- Provisioning (Allocate IT resource)
Easy Process of Identifying Failure

1. Confirm which server has trouble visually.

2. Check message index. Detailed message by double crick.

3. Refer to message detail

Messages from all servers

Report by email and flasher
Prevent Failure / Performance Monitor

Monitor by the threshold for more accurate prediction

Failure can be predicted by monitoring the performance of servers. Detect & solve the problem before it grows into an actual "trouble".

- Monitor CPU, memory and disk remains etc and show it in real time

- Linkage with Application Navigator allows to monitor the performance of operations AP

- Detect performance error using threshold and change icon color

- Monitor threshold level and report in case of detecting failure sign

- Accumulate performance information for analysis
MCO offers the **optimized performance management** through the fastest failure resolution.

**Detect and diagnose Silent Failure / Invariant Analyze**

**Before adoption**
- Period while Silent Failure is being unaware
- Approx. 2 weeks
- Search for solutions
- Trouble-shooting

**After adoption**
- Detect failures
- Localize causes
- Recommend solutions
- Trouble-shooting
- **Eliminated delay by MCO**
- **Up to 90%!!**

**MISSION CRITICAL OPERATIONS**
- Detect Silent Failures
- Localize and visualize root causes
- Accumulate knowledge base
- Trouble-shooting

*Optional license (Invariant Analyzer Linkage) is needed*
The system with multiple servers has to be monitored **physically** (Topology View) and **operationally** (Business View). Available to classify monitoring messages into each operation teams, grasp failure impact toward business etc. Categorizing is easily and flexibly so MCO matches various needs.

**Business View**

Manage the Operations
- each operation
- each application (Oracle etc.)

**Topology View**

Manage the individual servers
Server Capacity / Process / Logs (System Log / AP log) etc.

Figure out which operation is affected as soon as the trouble happens.
Knowledge function enables to share daily operation know-how. Even inexperienced operator can deal with failure. You can register not only countermeasure but also contact address. Knowledge DB realize to **standardize the skill** and **speedy action**.

- **Monitor**: Registers operation manual in advance.
- **Action**: Accumulates history of measures in the daily operation customer found.
- **Decision**: Provides NEC’s know-how
- **Knowledge**: Searching the copying process from knowledge
- **Failure**: Navigates appropriate action
Execute Daily Command / Operation Control Function*

You can execute daily using command from integrated console. Visual command control allows you to reduce human error and simplify the operation.

Useful for routine command execution (delete log file), stop/reboot service and so on.

You don't need to develop remote execution setup any more.

Execute command when you need!

Setup Automatic execution

Enables to reduce operation mistakes by visualized list of defined command

Enable to grasp execution status from integrated console

**For operation control function, optional license is needed**
Automated Operation / Scenario Control Function*

Execute various commands by operation workflow registered in advance. Automatic operation realizes safe and efficient management.

Reduce human error and load by automating to report for daily reboot, planned system off for maintenance, etc.

**Daily Reboot**
- Process: Stop server report (manual)
- Problem: Often forget stopping so alert occurs at reboot
- Action: Reboot
- Automates complicated manual operation by scenario control
- Restart server monitoring (manual)

**With MCO**
- Process: Stop server report (automatic)
- Automates process
- Problem: Frequently forget restarting monitoring and increase human error for operation
- Action: Reboot
- Restart server monitoring (automatic)

**Easy setup for operation workflow using GUI.**

*For scenario control function, option license is needed*
MasterScope MISSION CRITICAL OPERATIONS realizes simple operation for virtualized servers by automation of complex optimized allocation and visualization of configuration of virtualized environment.

General optimized allocation process
- Load status detection
- Failure causes analysis and check coping process
- Setting load balancer's dispatching
- Shutdown batch server
- Delete batch server
- Group addition for Web server
- Starts operation of Web server
- Monitors Web server’s operation
- Application setting of Web server
- Complete node addition, monitoring starts

After MCO implementation
- Load status detection
- Order coping process by knowledge
- Completion of node addition, monitoring starts

Automatic execution with Workflow!
- With one click

Complex provisioning setting is simplified by Workflow.

Map is automatically updated on configuration changes of servers.

* For this function, SigmaSystemCenter is needed
## Function List #1

<table>
<thead>
<tr>
<th>Stable Operations</th>
<th>Functions</th>
<th>About</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Service Process Monitoring</td>
<td>live monitoring of process or service.</td>
</tr>
<tr>
<td></td>
<td>Application Log Monitoring</td>
<td>- Message management by filtering log file output of applications.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Displaying the log file contents.</td>
</tr>
<tr>
<td></td>
<td>Message Monitoring</td>
<td>- Uniform management of messages from multiple servers.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Repressing repeated messages from being sent out multiple times from Agents to prevent message rush.</td>
</tr>
<tr>
<td></td>
<td>Performance Monitoring</td>
<td>- Displaying the workload of each server graphically (CPU/Memory/HDD usage rate etc).</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Monitoring by threshold value and alerting operators.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Storing operation status data to support failure analysis.</td>
</tr>
</tbody>
</table>

<Messages monitored>
- Windows Event log/syslog (Linux) / Application log / SNMP trap
# Function List #2

<table>
<thead>
<tr>
<th>Stable Running</th>
<th>Functions</th>
<th>About</th>
</tr>
</thead>
<tbody>
<tr>
<td>Knowledge Management</td>
<td>- Sharing the knowledge to be used for troubleshooting etc.</td>
<td></td>
</tr>
<tr>
<td>Report Function</td>
<td>- Reporting function via flasher or e-mail with occurrence of certain message, status change of monitoring process/service, exceeding the resource threshold etc.</td>
<td></td>
</tr>
<tr>
<td>Message Correlation Analysis</td>
<td>- Executes correlation analysis, automatic actions and notification by correlation analysis among multiple events, or specifying conditions A&amp;B or threshold for event occurrence during certain amount of time.</td>
<td></td>
</tr>
<tr>
<td>Failure Analysis (Invariant Analyzer Linkage)</td>
<td>- Analyzing and specifying the location of the failure cause, such as web server, database server or application server etc.</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Efficient Operation</th>
<th>Functions</th>
<th>About</th>
</tr>
</thead>
<tbody>
<tr>
<td>Scheduled Monitoring</td>
<td>- Turning ON / OFF the monitoring by the time period or date set on the calendar.</td>
<td></td>
</tr>
<tr>
<td>Operation Control Function</td>
<td>- Executes command to monitoring servers at the certain timing.</td>
<td></td>
</tr>
<tr>
<td>Scenario Function</td>
<td>- Automatic job execution of the flows for troubleshooting or daily operations by registering scenario in advance. - Easy progression status check by reporting various colors or sounds</td>
<td></td>
</tr>
</tbody>
</table>
# Function List #3

<table>
<thead>
<tr>
<th>Linkage with the other products</th>
<th>Functions</th>
<th>About</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Provisioning Solution</strong> (NEC SigmaSystemCenter Linkage)</td>
<td>Enhanced Option</td>
<td>Independent provisioning of 3 layers system, [Web], [AP], [DB].</td>
</tr>
<tr>
<td><strong>Virtual Environment Monitoring</strong> (NEC SigmaSystemCenter Linkage)</td>
<td>Enhanced Option</td>
<td>Detecting the affected area easily when the failure occurs within the certain construction element, by displaying the relation among physical, logical and virtual layer.</td>
</tr>
</tbody>
</table>
| **Package Monitoring for Clustered System** (logical system monitoring) (Express Cluster Linkage) | | Monitoring the logical system that operates on one of the multiple servers.  
- By specifying the logical system as the target host to be executed the command using scenario control function, operational flow can be configured without being aware that which server is used for certain operation. |
| **ServiceManager Linkage** (MasterScope ServiceManager Linkage) | Enhanced Option | - Prevention of the leak of correspondence to the important incidents by linking with the “MasterScope ServiceManager”, IT service management product. |
4. Market Voice and Case Study
Achieves stable operation in large scale mission critical system! Coupled with **ease of implementation** and **operability**.

**Vendor A’s Integrated operation management product**

- Time consuming implementation. Need **text base setting** from the initial stage.
- **Many GUI to Monitor** depending on target monitoring layer...
- Need to create monitoring setting file **manually**...
- Complaints are coming in from users but there are no error messages?

**“MISSION CRITICAL OPERATIONS”**

- Guide information for OS and MW is **pre-registered and ready to use**. Local know-how is easily accumulated by GUI.
- **Integrated monitoring** with one console. Easy failure analysis.
- All monitoring file settings are **done by GUI**.
- Unique solution to hidden performance bottlenecks.

**Difference!**
Redundant monitoring achieves high reliability for large scale system reduces man-hours and supports quick resolution by extracting necessary messages from huge number of alert.

**Challenges (current problem)**

1. Difficulty in failure analysis
2. Cannot cater to server addition and complicated monitoring requirements
3. Unable to integrate incident information.

**Effect (After MCO Implementation)**

1. **Higher reliability**
   - Self checks its own monitoring capability
   - Operates with primary and secondary system for non-stop monitoring

2. **Higher operability**
   - Able to cater to complicated requirements. Displays only important messages from massive number of alert

3. **Visualize system status**
   - Integrated configuration information management from Configuration Mgmt Data Base (CMDB)
Realize simple and integrated system operation

If you have any questions about MasterScope, please contact below by e-mail

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