



Microsoft®

System Center

User Group **Netherlands**

**Oskar Landman**

System Center Operations Manager MVP



**inovativ** 

The logo for inovativ, consisting of the word 'inovativ' in a bold, blue, sans-serif font, followed by a red asterisk-like symbol with six points.

- ❖ **Overview OpsMgr 2012**
- ❖ **New topology**
- ❖ **Upgrade paths**
- ❖ **Network Monitoring**
- ❖ **Application Monitoring**
- ❖ **Dashboards**

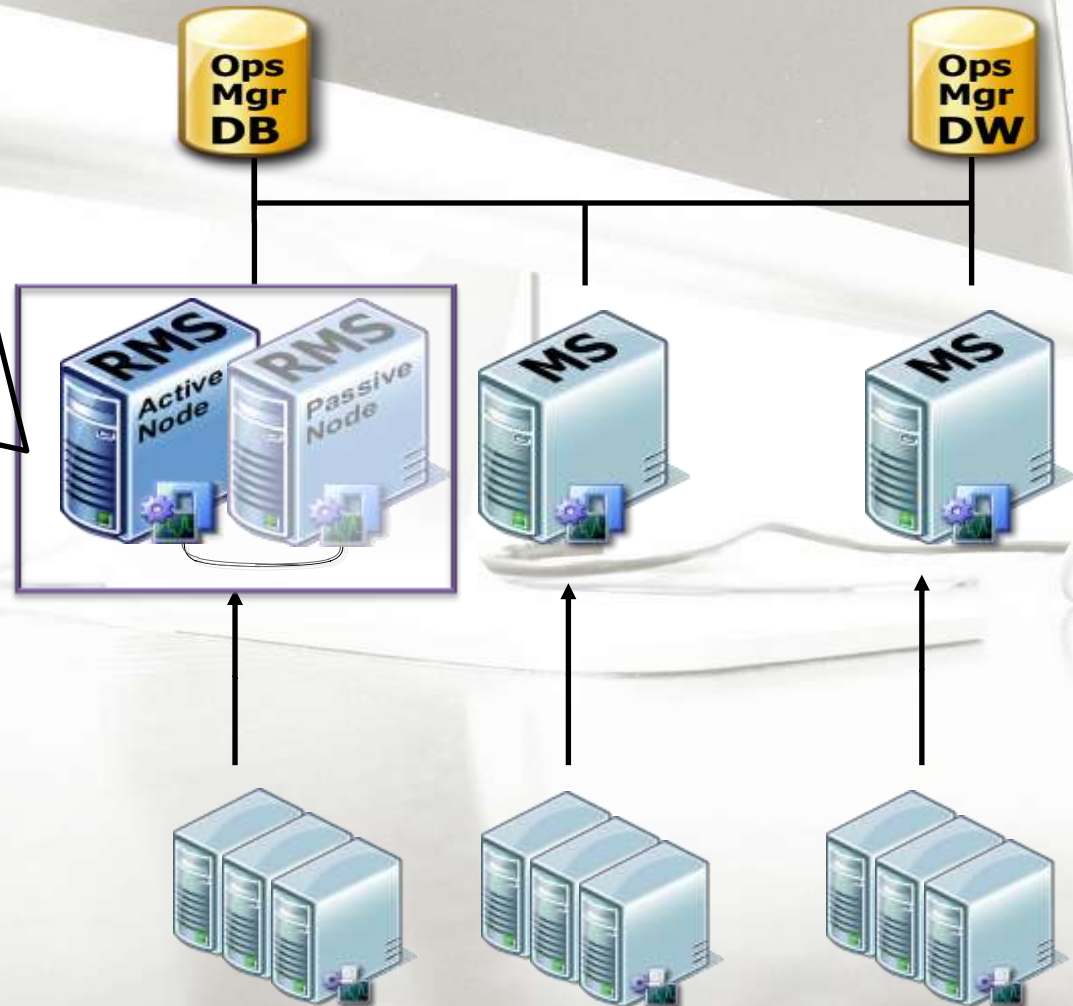
- ❖ **“Bye, Bye!!!!” to your Root Management Server (RMS)**
- ❖ **Network Monitoring**
- ❖ **Application Monitoring (.Net, J2e)**
- ❖ **Dashboards**
- ❖ **Other improvements**

## Services

- Console access
- Role based access control
- Distribution of configurations to agents
- Connectors to other mgmt systems
- Alert notifications
- Health aggregation
- Group Calculations
- Availability
- Dependency Monitor
- DB Grooming
- Enables model based mgmt

## Challenges

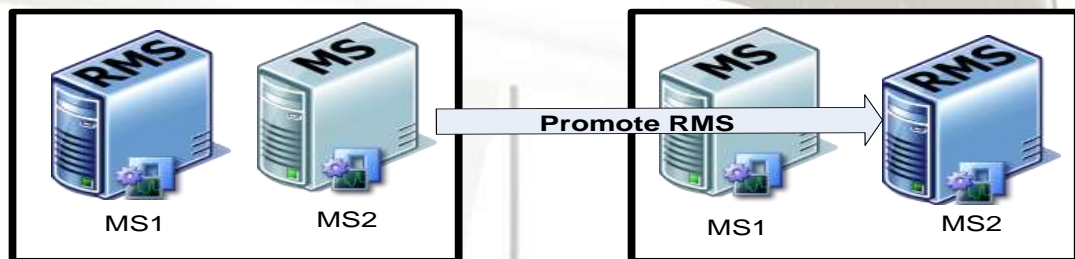
- Performance and scalability bottleneck
- Single point of failure (for RMS workloads)
- High availability requires clustering



## Clustering



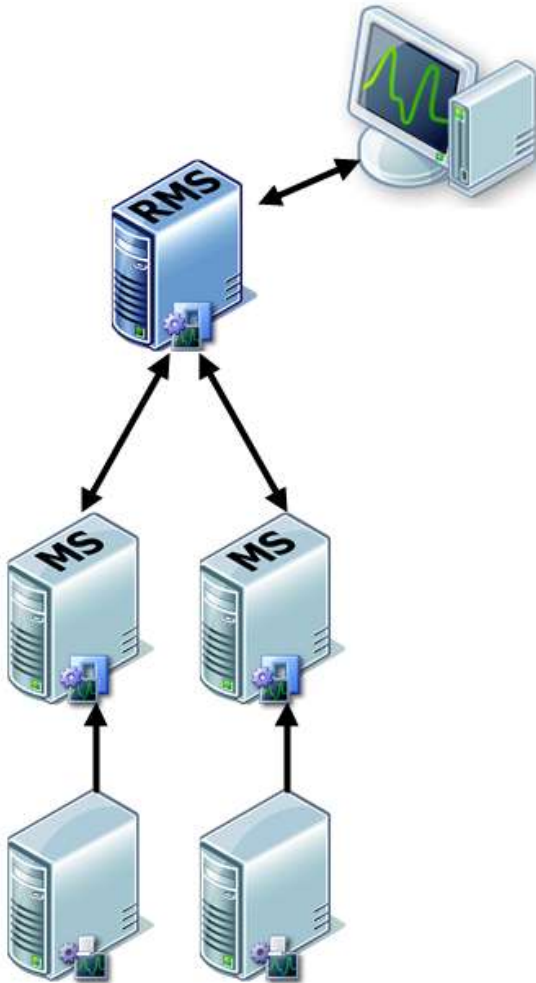
## Promotion



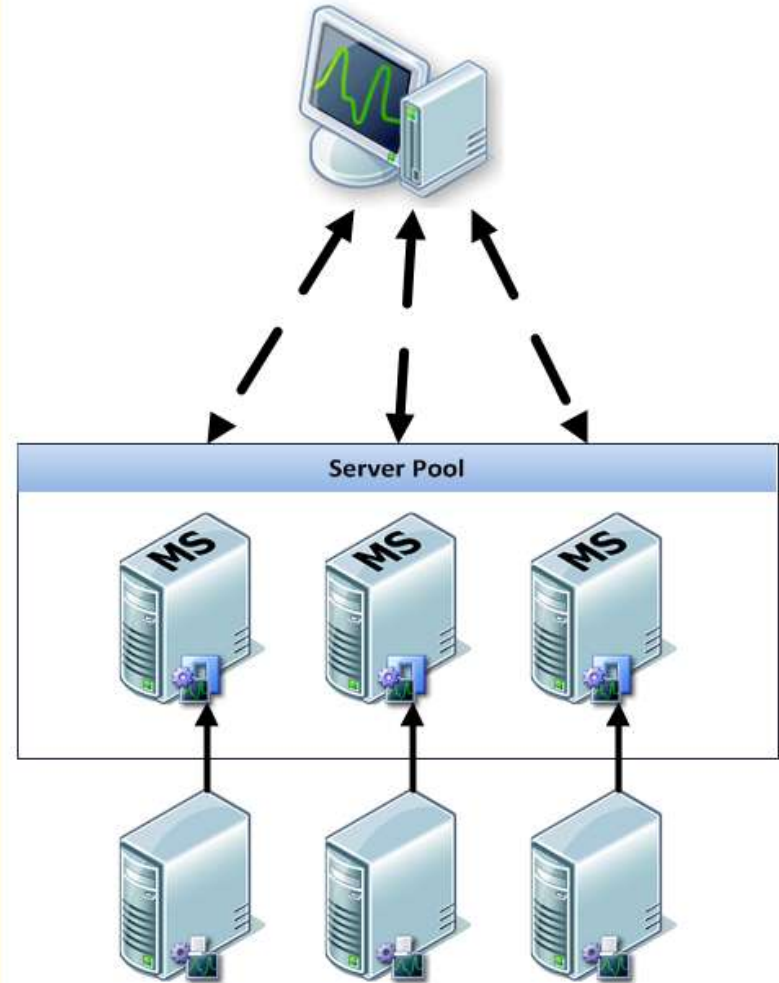
- ❖ Solves single-point of failure
- ❖ Complex to setup
- ❖ Difficult to patch \ upgrade

- ❖ Provides Flexibility
- ❖ Disaster Recovery
- ❖ Requires Manual steps

OpsMgr2007 R2  
Parent Child Topology



OpsMgr 2012  
Peer to Peer Topology



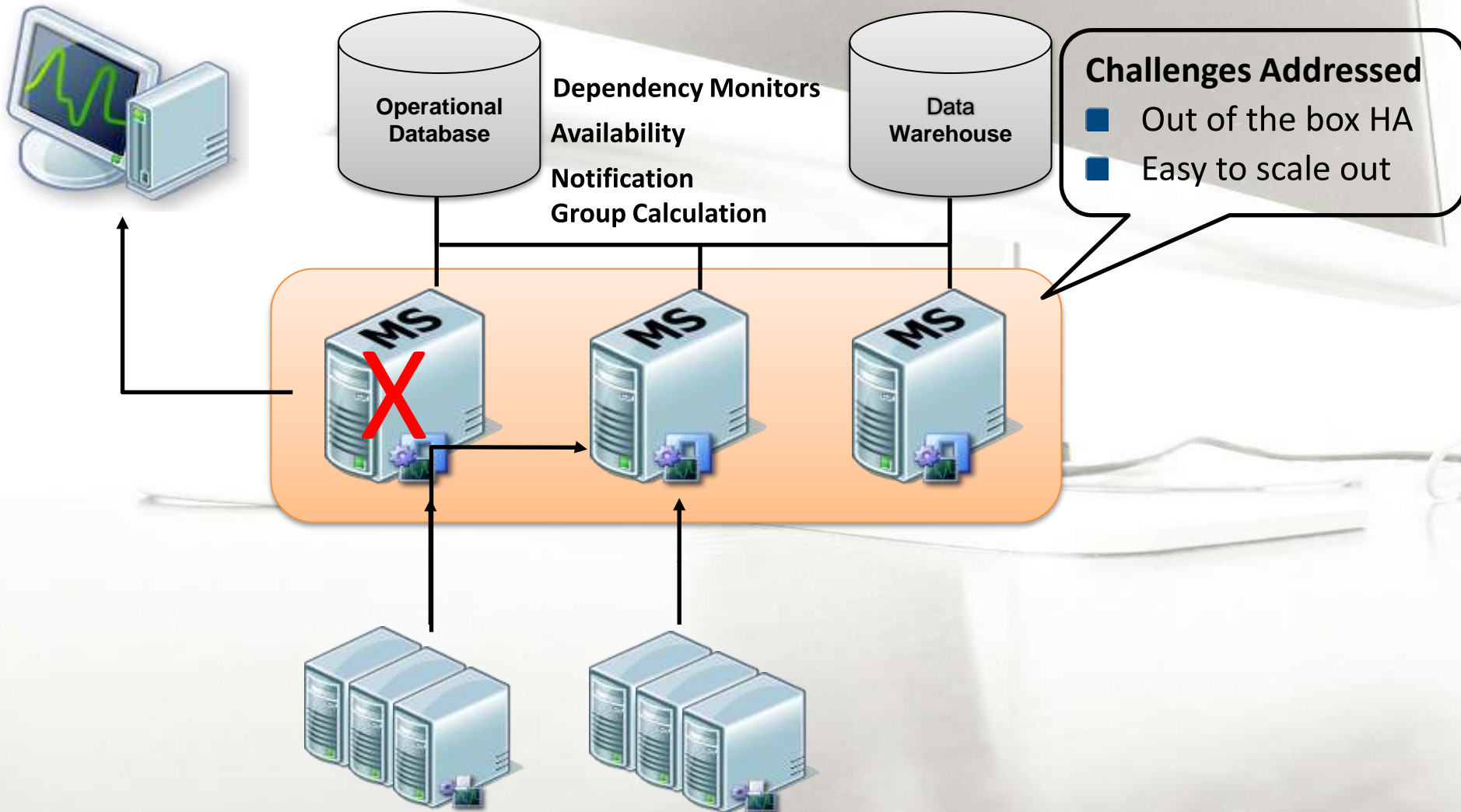
- ❖ **Server Pool – Management Server Resource Pool**
  - ❖ Group Calculation
  - ❖ Availability
  - ❖ Distributed Monitor Health Roll up
  - ❖ DB Grooming
  - ❖ Notifications
- ❖ **Config and SDK Service**

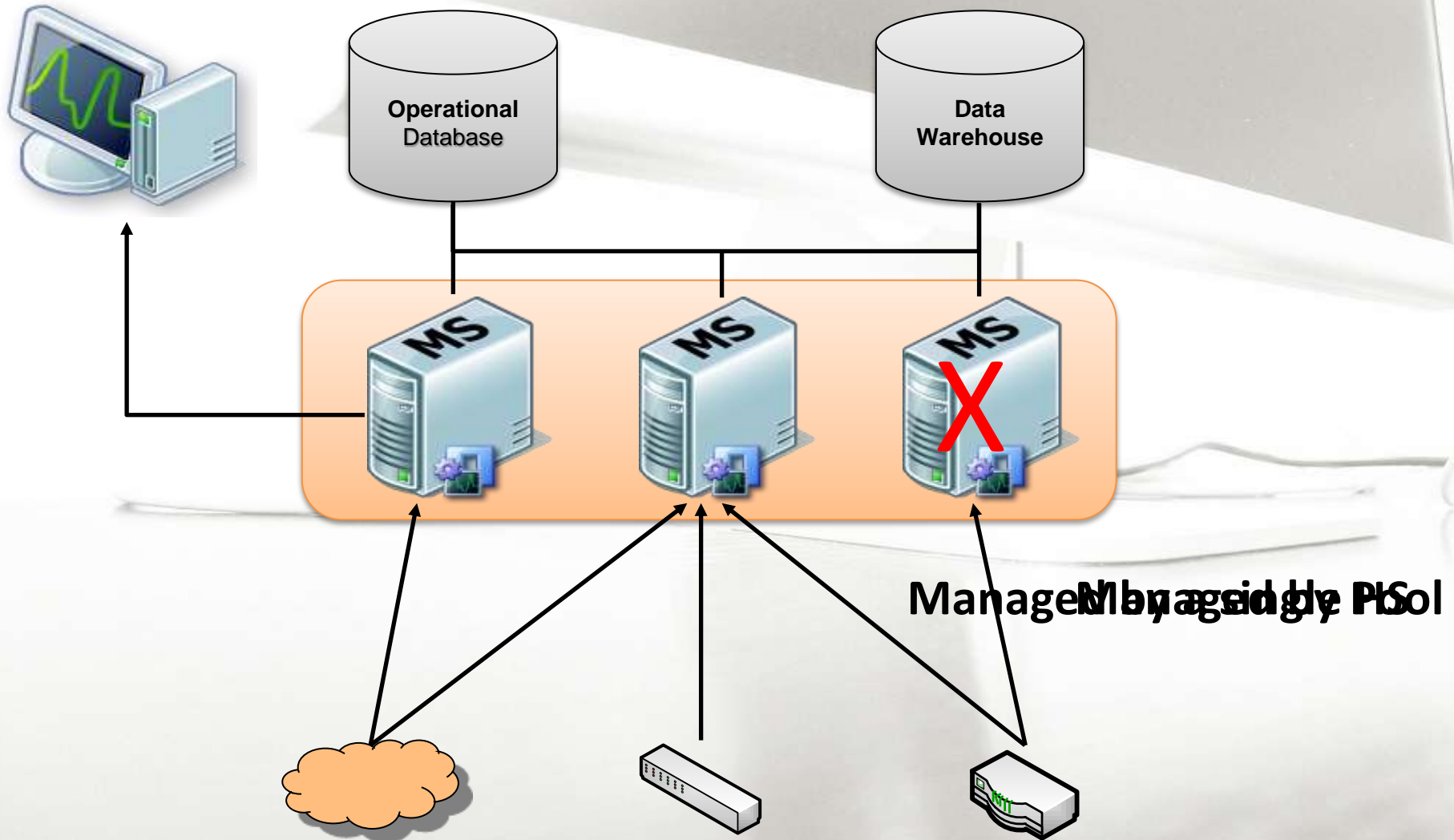
## ❖ **Config Service**

- ❖ Runs on All Management Servers
- ❖ Store Config data in DB instead of Memory
- ❖ Faster Startup
- ❖ Smaller demand on local resources

## ❖ **SDK Service**

- ❖ Runs on All Management Servers
- ❖ Console can use any!







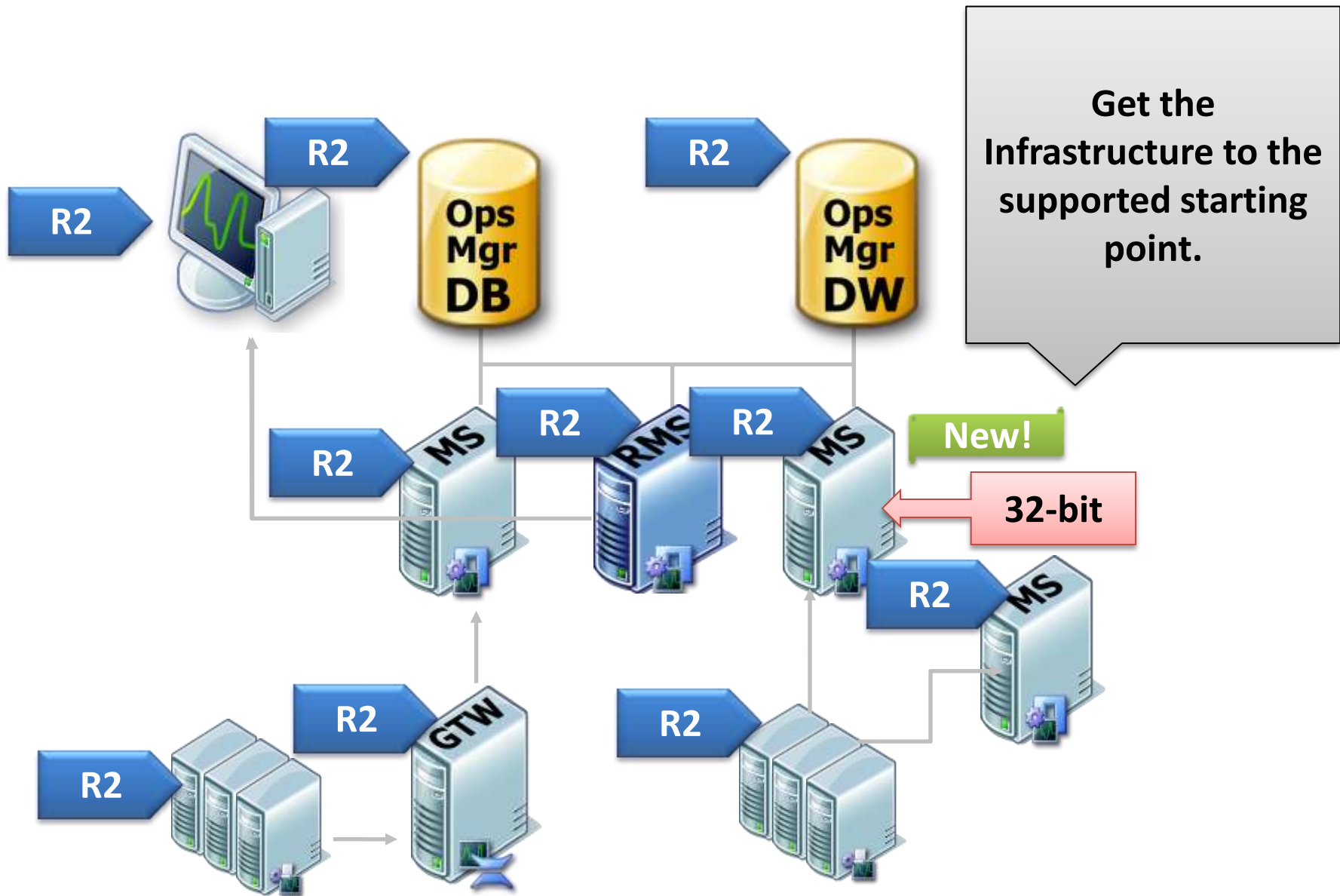
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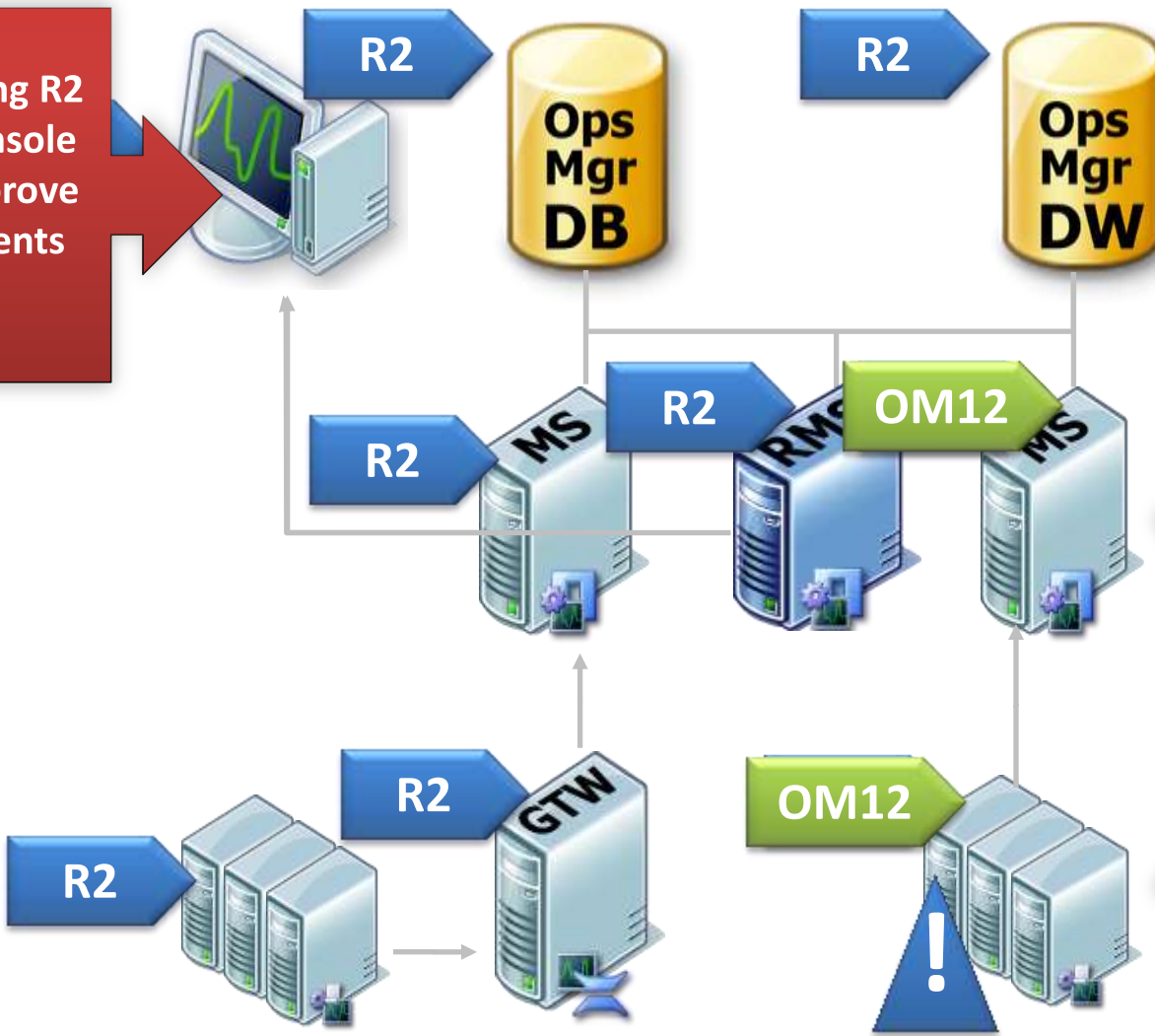
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## Supported upgrade paths

- ❖ **Management Server and Ops DB server**
  - ❖ Windows 2008 R2 (64bits)
  - ❖ SQL 2008 Sp2 and above
  - ❖ .NET 4.0



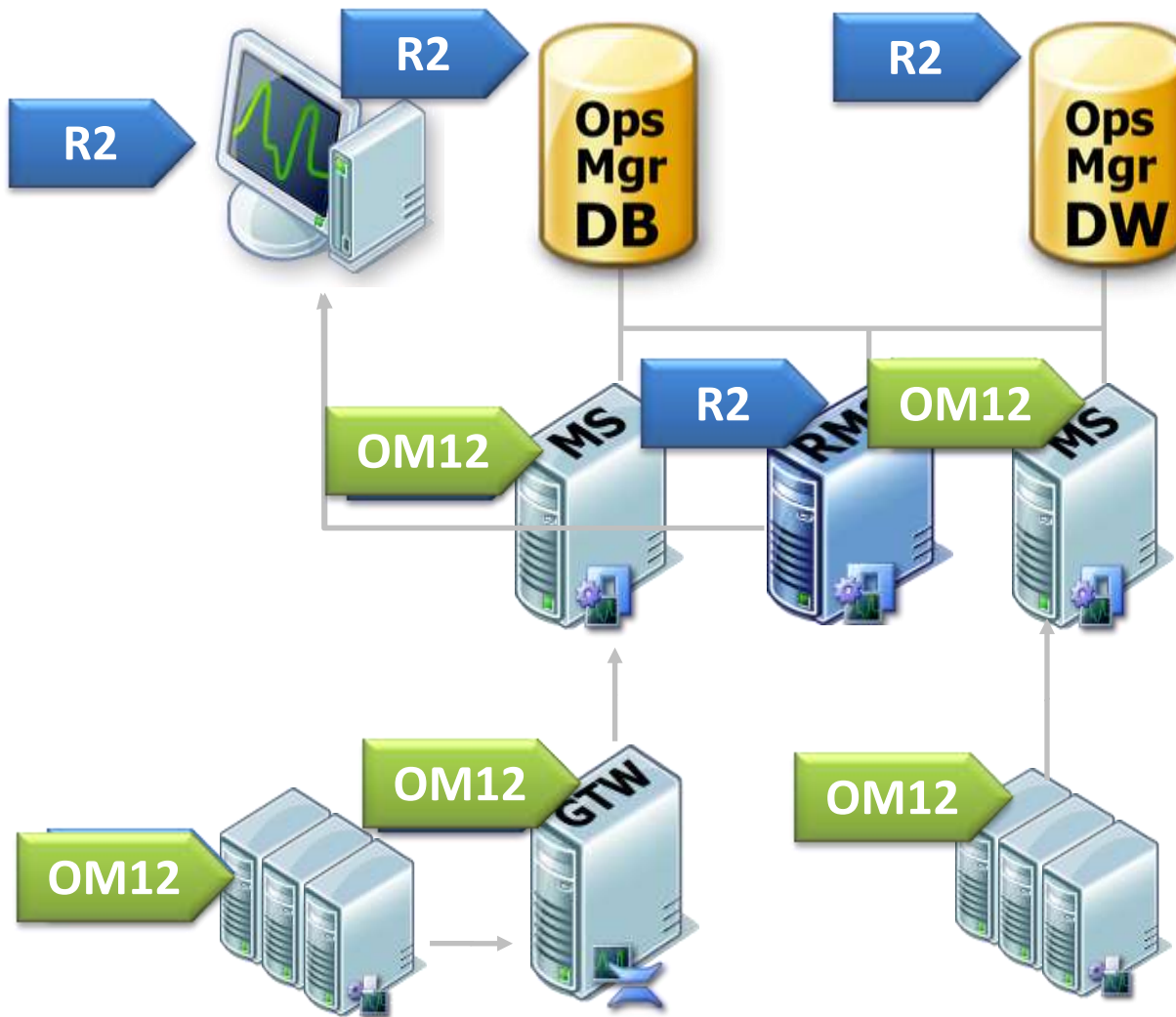
Using R2 Console approve agents



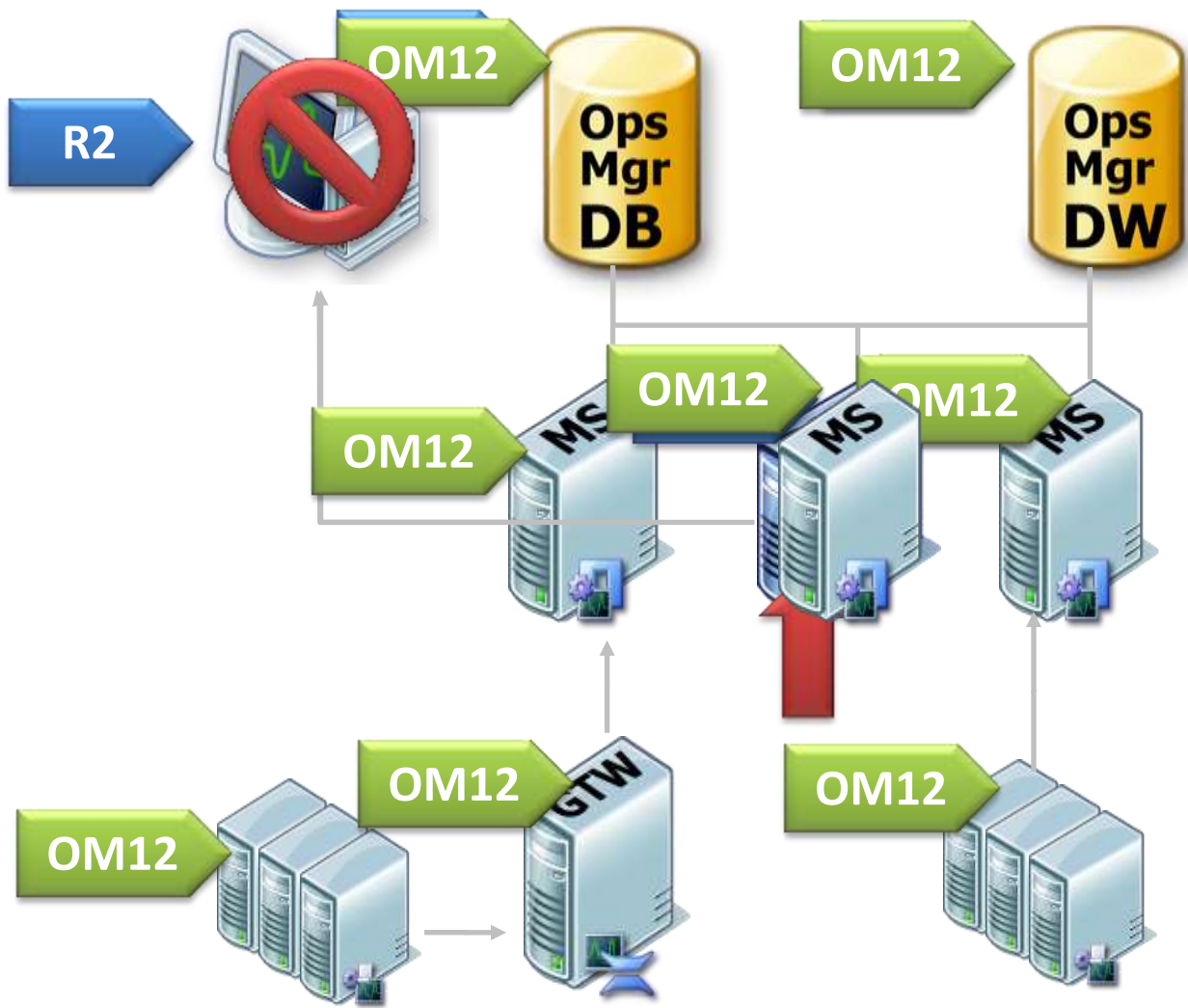
Upgrade a management server to OM12

Upgrade Here

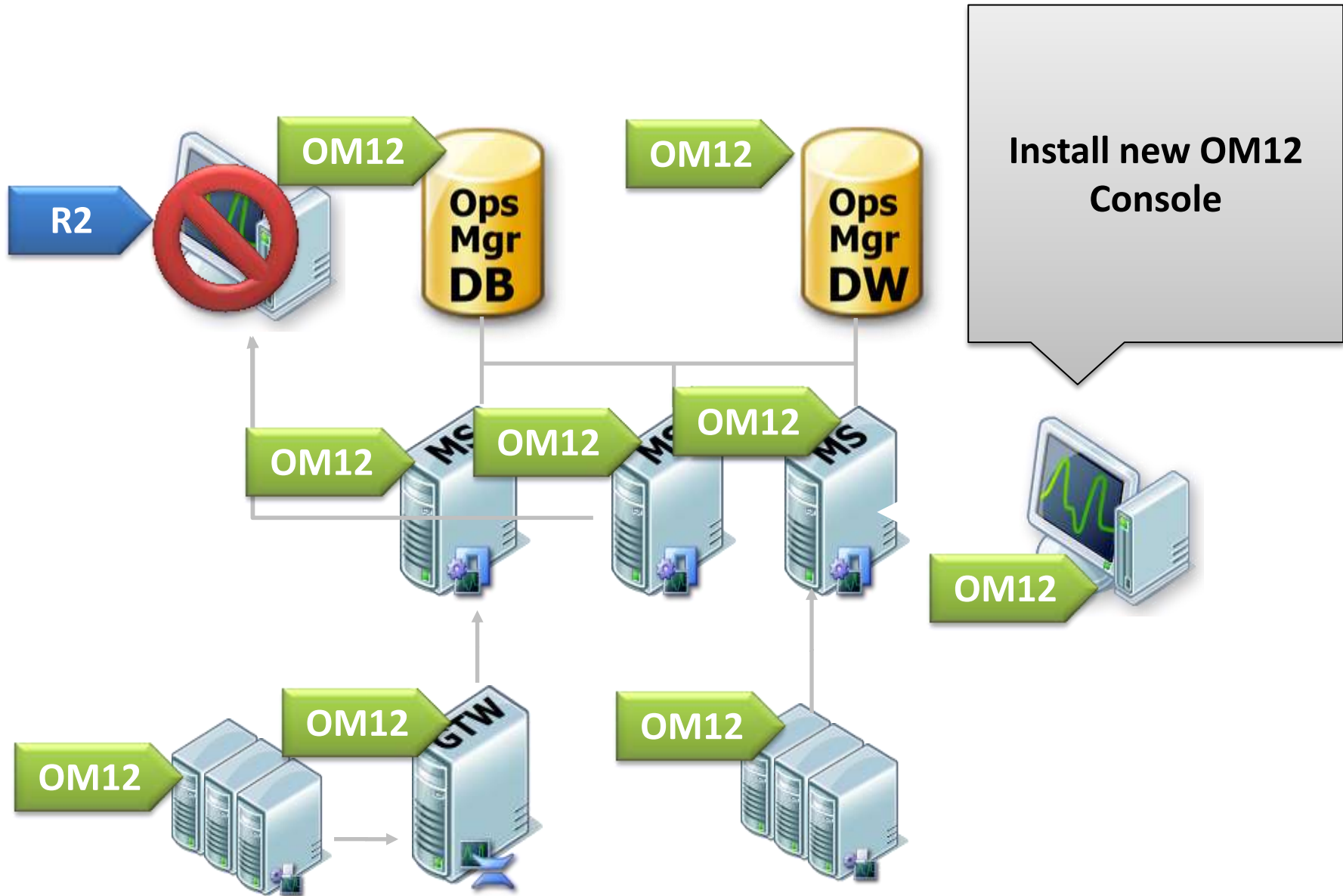
Agents move to pending

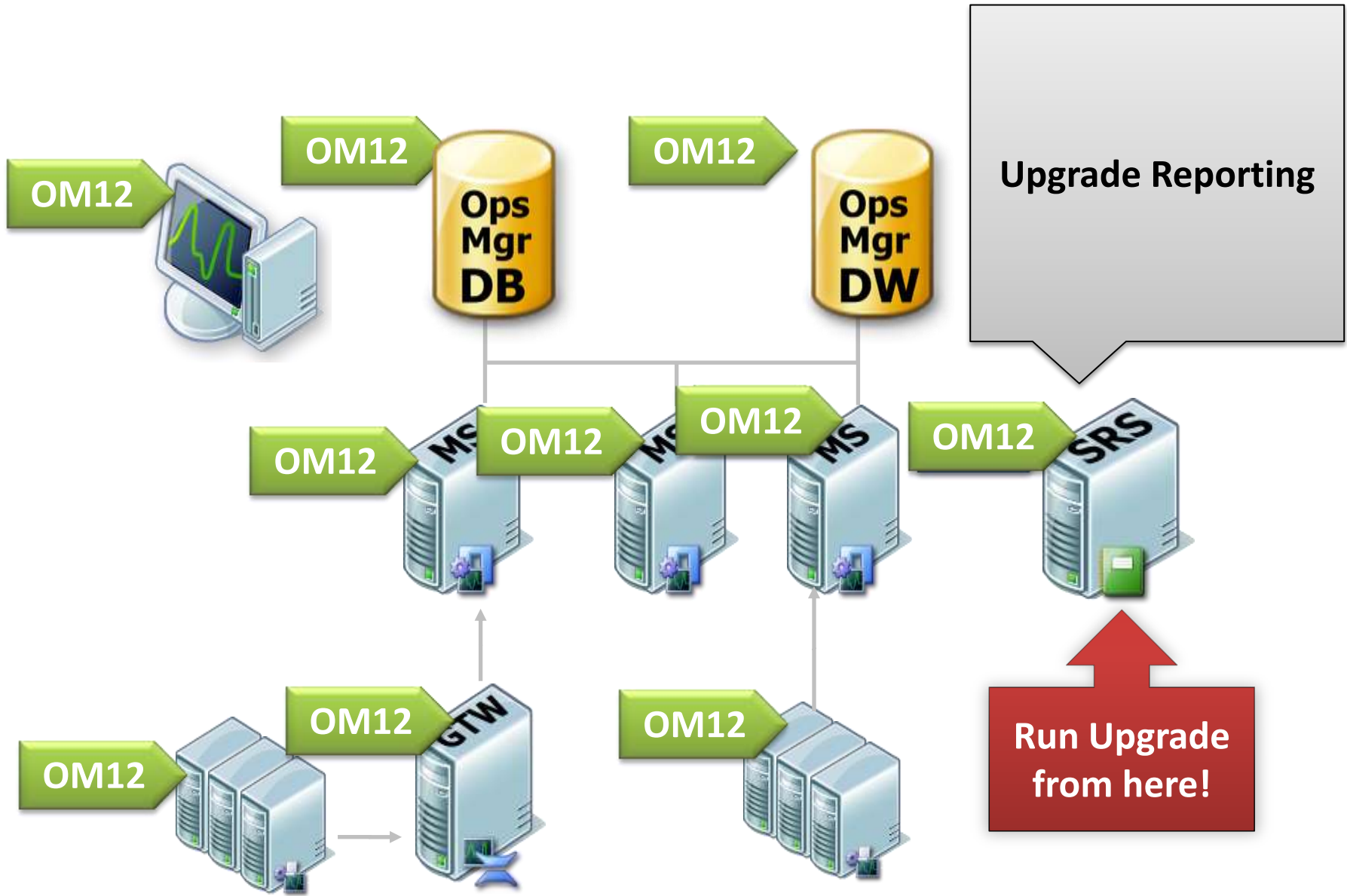


Upgrade the rest of the mgmt server, gateways and agents except the RMS



**Option 1:**  
Run upgrade from  
the RMS





Upgrade Reporting

Run Upgrade from here!



- ❖ **In-Place Upgrade R2 management Servers / Gateways to support OpsMgr 2012**
- ❖ **Approve update to agents**
- ❖ **Upgrade second MS to OpsMgr 2012**
- ❖ **Approve Agents**
- ❖ **Upgrade OpsDB to SCOM 2012**
  - ❖ From RMS(if prerequisites are met)
    - ❖ Setup detects 2007 R2 is RMS
    - ❖ Setup Upgrades OpsDB + DW + install CS Store DB
    - ❖ In-Place Upgrade RMS
  - ❖ From SCOM 2012 Management Server
    - ❖ Upgrade Ops DB + DW +install CS Store DB
    - ❖ Removes old RMS from OpsDB and attempts to disable old RMS services

- ❖ **RMS with prerequisites just do an in-place upgrade**
- ❖ **Agents will not be monitored until they have been updated to SCOM 2012!!!**
- ❖ **RMS not met prerequisites need to install additional 2007 R2 Management server and do the upgrade from the new management server.**

- ❖ **Install SCOM 2012 console prior to upgrade?**
  - ❖ Yes but the console will not function until the database is at 2012 and the system libraries are imported!
- ❖ **Will 2007 R2 agents still work?**
  - ❖ Yes till the OpsDB is at 2012. Once at 2012 all 2007 R2 agents are blocked until they are upgraded to 2012.
- ❖ **Multi homed agents?**
  - ❖ 2012 agents are supported on 2007 R2 management servers
  - ❖ 2007 r2 agents are not supported when the MG is at 2012 or OpsDB is at 2012.
- ❖ **Audit Collection Servers?**
  - ❖ Same as Management Server upgrade.
- ❖ **Workflows targeted to RMS?**
  - ❖ Will still work although it will now target the pool instead of 1 RMS.



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# Supported upgrade paths

## ❖ **Management Server and Ops DB server**

- ❖ Windows 2008 R2 (64bits)
- ❖ SQL 2008 Sp2 and above
- ❖ .NET 4.0

## ❖ **Overview of Network Monitoring in SCOM 2012**

- ❖ Network discovery
- ❖ Network Monitoring
- ❖ Visualization
- ❖ Reporting

❖ **Network monitoring will help IT Operations gain visibility into the network.**

- ❖ **Connectivity**
- ❖ **VLAN membership**
- ❖ **HSRP groups (Cisco)**
- ❖ **Switch ports to Switch ports**
- ❖ **Switch ports to server NICs**
- ❖ **Device components**
  - ❖ Port/Interface
  - ❖ Processor
  - ❖ Memory

- ❖ **Two Modes**
  - ❖ Explicit
  - ❖ Recursive(ARP,IP, Topology MIB)
- ❖ **Works only on Gateway / Management Server**
- ❖ **Single Rule per Gateway / Management Server**
- ❖ **Discovery runs on a scheduled basis or on demand**
- ❖ **Limited discoveries can be triggered by device traps**

- ❖ **Port/Interface**
  - ❖ Up/Down (operational & Admin Status)
  - ❖ Volumes of inbound/outbound traffic
  - ❖ % Utilization
  - ❖ Drop & Broadcast rates
- ❖ **Processor**
  - ❖ % Utilization
- ❖ **Memory**
  - ❖ In depth memory counters(Cisco Only)
  - ❖ Free Memory
- ❖ **Connection Health**
- ❖ **VLAN Health**
- ❖ **HSRP Group**



## Network Summary Dashboard

### Nodes with Slowest Response

Previous 24 hours

Node State	Node Name	Average Response Time (ms)	
✓	42_2619_Ci4506_01	21.5	
✓	42_2619_Ci3560_01	2.5	
✓	42_2619_Ci2950_02	2.2	
✓	10.193.220.197	1.2	
✓	42_2619_ES48_02	0.8	
✓	42_2619_ESiSX_01	0.7	
✓	42_2619_ES48_01	0.5	
✓	42_2619_Ci3560_02	0.5	
✓	42_2619_EBD6808_01	0	
✓	42_2619_F-NetIron400_01	0	

### Nodes with Highest CPU Usage

Previous 24 hours

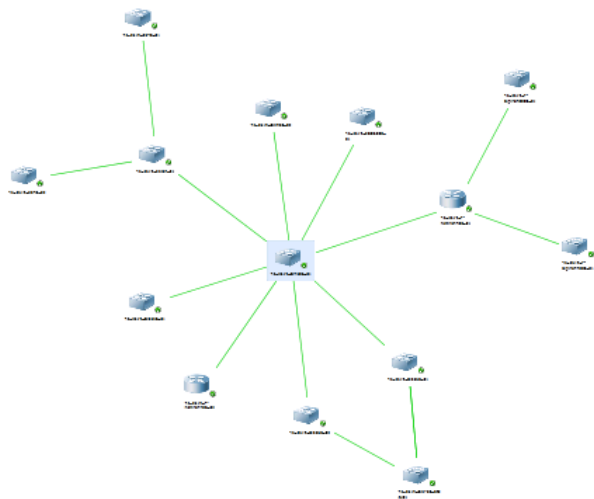
Node State	Node Name	CPU Usage	
✓	42_2619_Ci3560_01	43%	
✓	42_2619_Ci4506_01	7%	
✓	42_2619_Ci2950_02	7%	
✓	42_2619_Ci3560_02	6%	
✓	42_2619_Ci3750_Stack01	6%	
✓	42_2619_Ci3550_01	2%	
✓	10.193.220.197	2%	

### Interfaces with Highest Utilization

Previous 24 hours

Node State	Node Name	Interface State	Interface Name	Interface Usage	
✓	42_2619_Ci3750_Stack01	✓	PORT-42_2619_Ci3750_Stack01/1.28 [Gi0/28] [Link to 42_2619_Ci3560_02 [g0/1]]	2%	
✓	42_2619_Ci3560_02	⚠	PORT-42_2619_Ci3560_02/1.1 [Gi0/1] [Link to 42_2619_Ci3750_Stack01 [g1/0/28]]	1%	
✓	42_2619_Ci3750_Stack01	✓	PORT-42_2619_Ci3750_Stack01/1.27 [Gi1/0/27] [Link to 42_2619_Ci3560_01 [g0/1]]	0%	
✓	42_2619_Ci3560_01	✓	PORT-42_2619_Ci3560_01/1.1 [Gi0/1] [Link to 42_2619_Ci3750_Stack01 [g1/0/27]]	0%	
✓	42_2619_Ci2950_02	✓	PORT-42_2619_Ci2950_02/0.25 [Gi0/1] [802.1q to 42_2619_Ci4506_01]	0%	
✓	42_2619_Ci4506_01	✓	PORT-42_2619_Ci4506_01/8 [Gi2/5] [802.1q to 42_2619_Ci2950_02]	0%	
✓	42_2619_Ci3560_01	✓	IF-42_2619_Ci3560_01/10128 [Gi0/28] [10.193.220.2] [Link to 42_2619_Ci4506_01]	0%	
✓	10.193.220.197	✓	PORT-10.193.220.197/0.25 [Gi0/1] [Link to 42_2619_Ci3750_Stack01 (g1/0/1)]	0%	
✓	42_2619_Ci3750_Stack01	✓	PORT-42_2619_Ci3750_Stack01/1.1 [Gi1/0/1] [Link to 42_2619_Ci2950_04 (g0/1)]	0%	
✓	42_2619_Ci3560_02	✓	IF-42_2619_Ci3560_02/10128 [Gi0/28] [10.193.220.6] [Link to 42_2619_Ci4506_01]	0%	

## Network Node Dashboard



### Today



### Yesterday



### Previous 7 Days



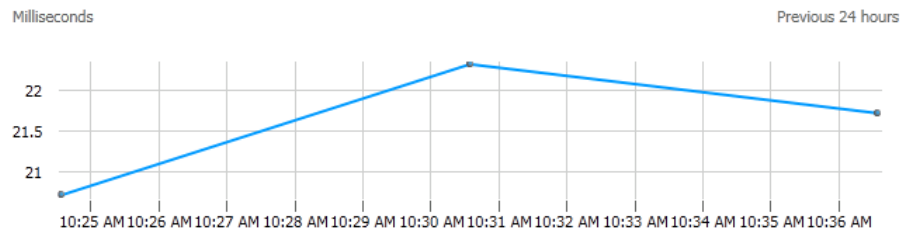
### Previous 30 Days



### Node Properties

DisplayName	42_2619_Ci4506_01
Path Name	
Access Mode	ICMPSNMP
Certification	CERTIFIED
Description	Cisco Internetwork Operating System Software (X0D)\X0AIOS (tm) Catalyst 4000 L3 Switch Software (cat4000-15K915-M), Version 12.2(18)EW, EARLY DEPLOYMENT RELEASE SOFTWARE (fc1)\X0D\X0ATAC Support: <a href="http://www.cisco.com/tac/X0D\X0ACopyright">http://www.cisco.com/tac/X0D\X0ACopyright</a> (c) 1986-2004 by ci
Engine ID	
Location	42/2619
Model	C4506-with-Sup
Port Number	161

### Average Response Time

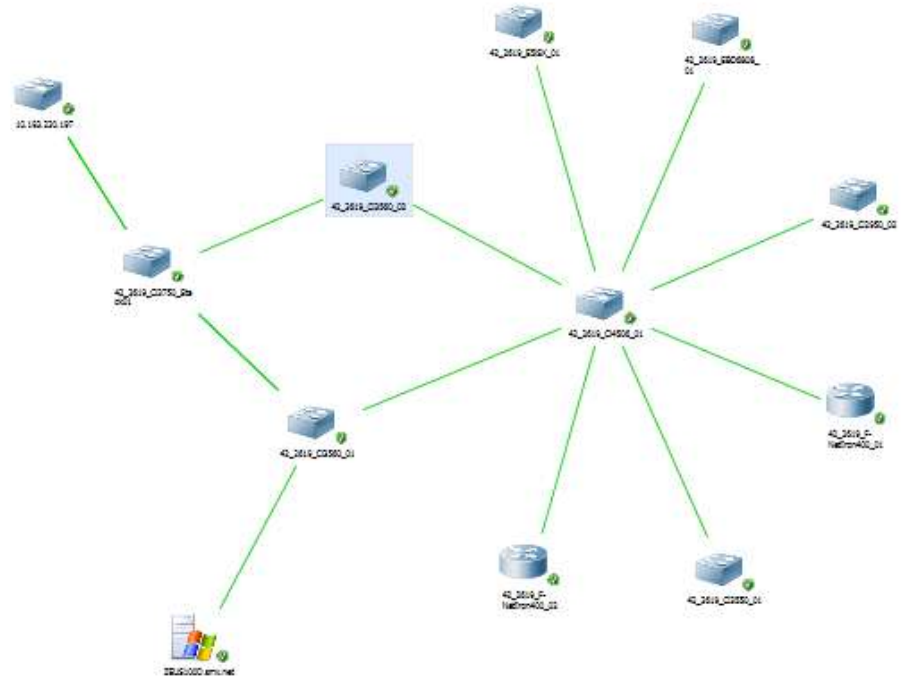


Key	Metric	Last	Average	Minimum	Maximum
—	Response Time (ms)	21.7	21.6	20.7	22.3

## Vicinity Dashboard

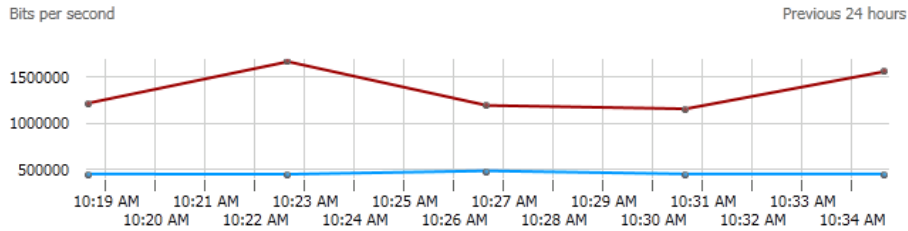
### Vicinity View

Zoom to page    Zoom: 100%    Hops: 2     Show Computers



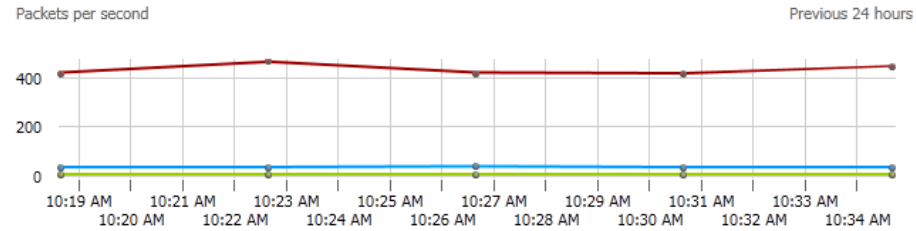
## Network Interface Dashboard

### Bits Sent and Received



Key	Metric	Last	Average	Minimum	Maximum
<span style="color: blue;">■</span>	Inbound bits/sec	429700.9	434690	425344.3	461764.9
<span style="color: red;">■</span>	Outbound bits/sec	1555340.3	1349039.6	1142550.6	1662008.8

### Packets Sent and Received

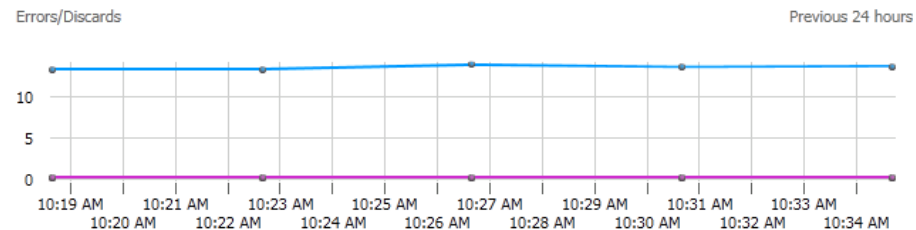


Key	Metric	Last	Average	Minimum	Maximum
<span style="color: blue;">■</span>	Inbound unicast packets/sec	32.4	33.2	32.3	36
<span style="color: red;">■</span>	Outbound unicast packets/sec	442.7	429.1	411.4	462.3
<span style="color: green;">■</span>	Current BroadCastRate	0.1	0.1	0.1	0.1

### Interface Properties

DisplayName	PORT-42_2619_Ci3560_02/1.1 [Gi0/1] [Link to 42_2619_Ci3750_Stack01 [g1/0/28]]
Path Name	42_2619_Ci3560_02
Connection Type	RELAYLINK
Description	GigabitEthernet0/1
Duplex Mode	FULLDUPLEX
Duplex Source	ENTERPRISE_MIB
Interface Alias	Link to 42_2619_Ci3750_Stack01 [g1/0/28]
Interface Number	10101
Maximum Speed	100000000
Maximum Transfer Unit	1500
Mib2IfType	6
Mode	NORMAL

### Send/Received Errors and Discards



Key	Metric	Last	Average	Minimum	Maximum
<span style="color: blue;">■</span>	Current InputErrorRate	13.6	13.5	13.2	13.8
<span style="color: red;">■</span>	Current InputDiscardRate	0	0	0	0
<span style="color: green;">■</span>	Current OutputErrorRate	0	0	0	0
<span style="color: purple;">■</span>	Current OutputDiscardRate	0	0	0	0

- ❖ **Out of box App Discovery and Monitoring**
- ❖ **Combination of monitoring and dashboards**
  
- ❖ **Avicode**
- ❖ **.Net – J2EE**



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# J2E Monitoring

## ❖ **Supported Platforms in SCOM 2012**

- ❖ Windows

## ❖ **JAVA EE Application Servers**

- ❖ WebSphere 6.1 & 7.0

- ❖ WebLogix 10gRel3 & 11gRel1

- ❖ JBOSS 4.2 & 5.1 (JVM 1.5+), JBOSS 6 (TBD)

- ❖ Tomcat 5.5 & 6.0 (JVM 1.5+), Tomcat 7 (TBD)

## ❖ **JEE Application Servers**

- ❖ Automatic Discovery
- ❖ Availability monitoring
- ❖ Performance monitoring
  - ❖ Memory
  - ❖ Garbage Collection
  - ❖ Threads
  - ❖ Class Loader
  - ❖ JIT Compiler

## ❖ **JEE Applications**

- ❖ Automatic Discovery
- ❖ Application module discovery
- ❖ Availability monitoring
- ❖ Template based custom monitoring



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# Dashboards

- ❖ **Dashboards delivered by Microsoft in Management Packs**
- ❖ **Template & Widgets**
- ❖ **Each user can personalize**

The screenshot displays the Microsoft System Center Operations Manager 2012 interface. The left-hand navigation pane shows a tree view under 'Monitoring' with categories like Active Alerts, Discovered Inventory, and Network Management. The main content area is divided into several sections:

### Active Alerts: Orders Application

Path	Source	Name	Resolution State	Created	Age
TestServer.contoso.com	MSQLSERVER	Cannot start SQL Server Service Broker o	New	12/25/2010	1 hour
DanRogers.woodgrove.com	TestDB	Log backup failed to complete	New	12/25/2010	2 hours
Bldg41Bwer.contoso.com	MSQLSERVER	The log shipping destination is out of sync	New	12/25/2010	3 hours

**Alert Details:**

- Source:** MSQLServer
- Path:** Bldg41Bwer.contoso.com
- Alert Rule:** The log shipping destination is out of sync
- Created:** 12/25/2010 12:33
- Alert Description:** Error: 14421, Severity 16, State: 1 the log shipping destination is out of sync by 5580 minutes
- Cause:** Network Connectivity
- Resolution:** Contact BrianJK the SQL DBA

SQLServer.contoso.com	MSQLSERVER	Could not allocate space for object in d	New	12/25/2010	1 hour
-----------------------	------------	--	-----	------------	--------

### FE Transactions Per Second

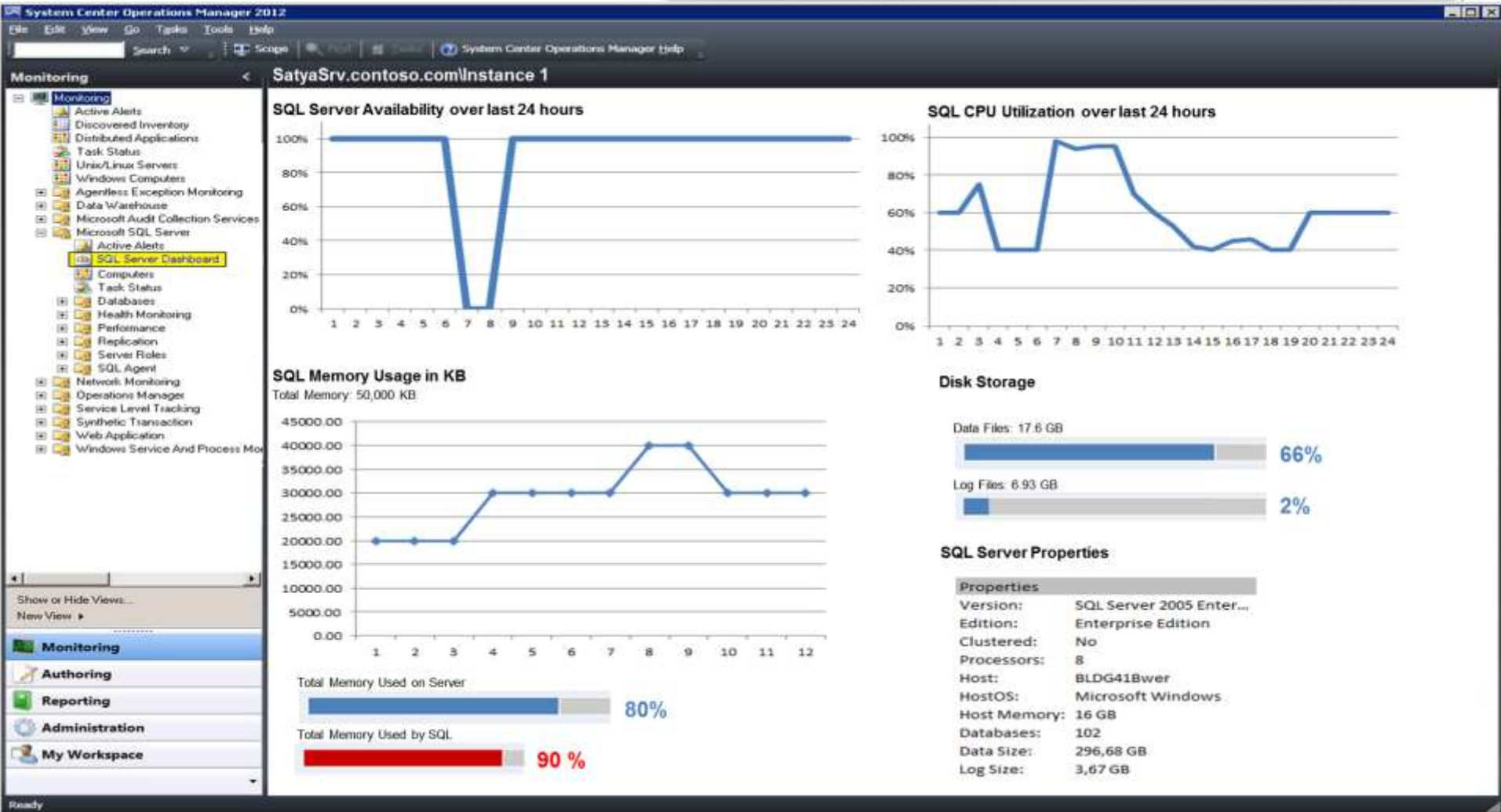
### Top Web Server CPU

15 minute average














Name	CPU
RED-FE-016	99%
RED-FE-008	62%
RED-FE-006	55%
RED-FE-021	54%
RED-FE-001	48%
RED-FE-017	46%
RED-FE-003	45%
RED-FE-025	39%
RED-FE-008	38%
RED-FE-019	35%

### Lowest DB Free Space

Name	% Used Space
Inventory	91%
Orders	65%
Customer	45%
Credit	35%
Supplier	18%



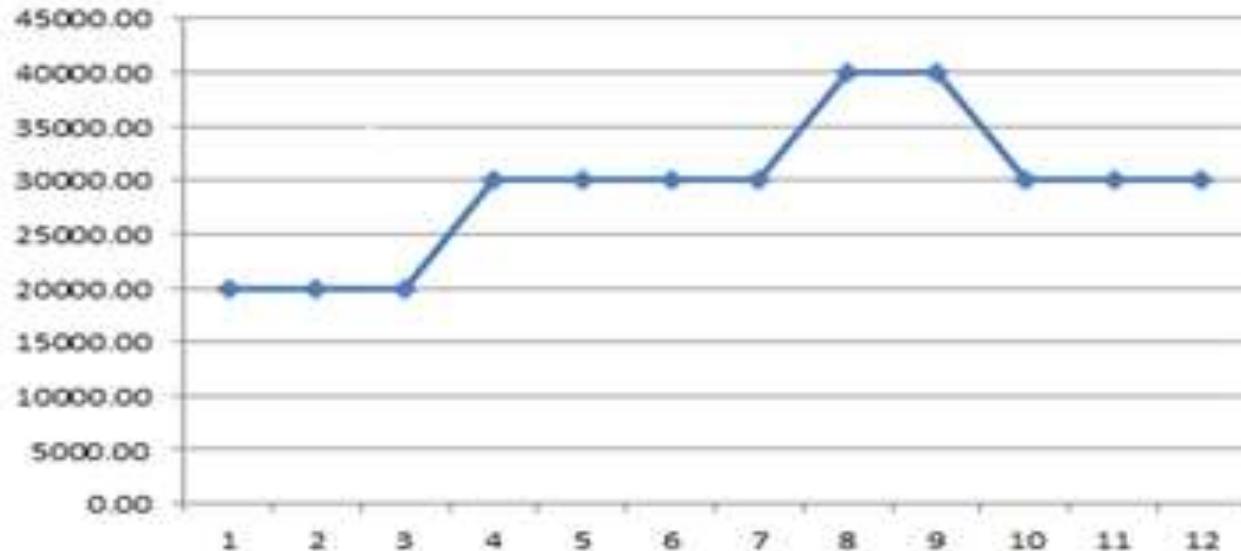
- ❖ Scenario: view alerts
- ❖ UI control: Grid
- ❖ Data provider: Alert data (OpsMgr DB)
- ❖ Configuration: group/instance, alert severity, priority and resolution
- ❖ Personalization: alert columns, sort order, grouping

 Source	 Name	Resolution State	Created
 Severity: Critical (45)			
 VOLT-10.193.22...	Voltage Sensor Alert	New	7/25/2010 9:23:50 AM
 FE80:0:0:0:221:5...	Duplicate IPv6 detected	New	7/22/2010 6:41:26 PM
 2008:B42:2619:1...	Duplicate IPv6 detected	New	7/22/2010 6:40:14 PM
 2008:B42:2619:1...	Duplicate IPv6 detected	New	7/22/2010 6:40:14 PM
 10.193.220.132 [...]	Duplicate IP detected	New	7/22/2010 6:35:26 PM
 10.10.12.3 [10.1...	Duplicate IP detected	New	7/22/2010 6:35:26 PM
 10.193.220.195 [...]	Duplicate IP detected	New	7/22/2010 6:35:26 PM
 10.193.223.35 [1...	Duplicate IP detected	New	7/22/2010 6:35:26 PM
 10.10.30.1 [10.1...	Duplicate IP detected	New	7/22/2010 6:35:26 PM
 10.10.12.2 [10.1...	Duplicate IP detected	New	7/22/2010 6:35:26 PM

- ❖ Scenario: view performance data
- ❖ UI control: Performance control
- ❖ Data provider: Performance data (OpsMgr DW)
- ❖ Configuration: group/instance, perf counters/objects/instances, time range
- ❖ Personalization: alert columns, sort order, grouping

**SQL Memory Usage in KB**

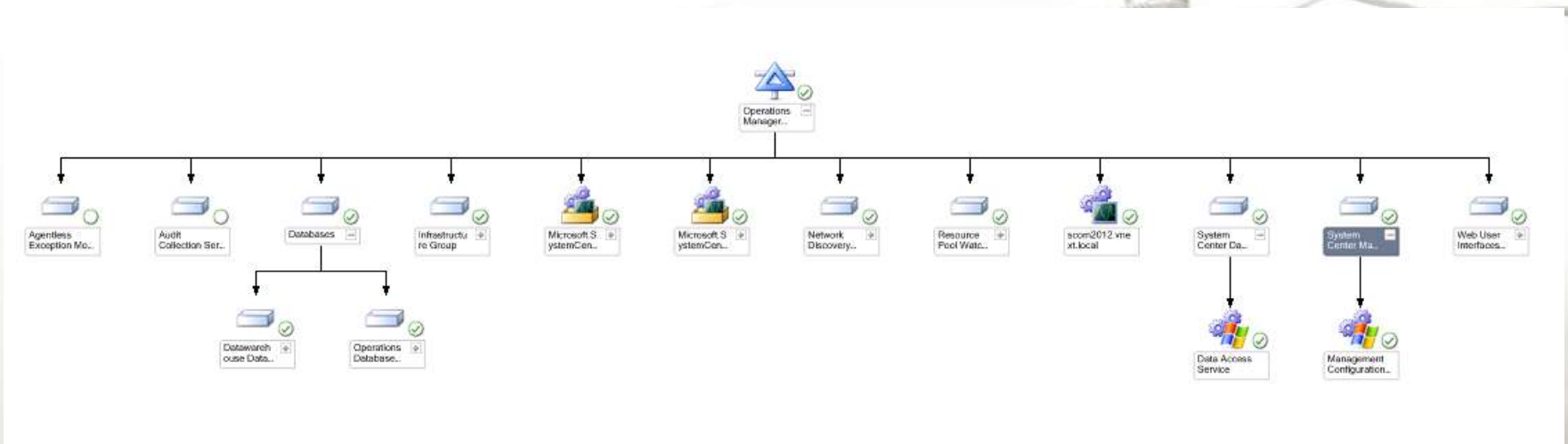
Total Memory: 50,000 KB



- ❖ **Scenario: View state on a map**
- ❖ **UI control: topology control**
- ❖ **Data provider: state data (OpsMgr DB)**
- ❖ **Configuration: image, group/instances, location**
- ❖ **Personalization: TBD**



- ❖ **Scenario: View state on a map**
- ❖ **UI control: topology control**
- ❖ **Data provider: state data (OpsMgr DB)**
- ❖ **Configuration: Show contained objects, Levels of containment, Virtual grouping (yes/no), Virtual group parameters, Background image, Object location (pinning)**
- ❖ **Personalization: TBD**



- ❖ Scenario: View state of objects
- ❖ UI control: grid control
- ❖ Data provider: state data (OpsMgr DB) + managed entity properties + performance provider
- ❖ Configuration: group/instances, columns
- ❖ Personalization: columns, sorting

Previous 24 hours

Node State	Node Name	CPU Usage
✓	42_2619_Ci3560_02	7%
✓	42_2619_Ci4506_01	7%
✓	42_2619_Ci3560_01	6%

- ❖ Scenario: view TOP instances in relation to some performance metric
- ❖ UI control: grid control
- ❖ Data provider: Top/bottom N for performance provider (DW)
- ❖ Configuration: group/instances, Top or bottom, Bar color, Latest value or average, Time window for average, Threshold
- ❖ Personalization: columns

Name	Highest CPU
server1	98.6
server8	36.3
server3	32.5
server2	27.8

- ❖ **Scenario: view availability history for an object**
- ❖ **UI control: performance control**
- ❖ **Data provider: Availability history (DW)**
- ❖ **Configuration: collection of instance/monitor, Availability algorithm (0/100 per sample or aggregate over sub-periods), Sub-period aggregation periods, Min/max of vertical axis, Line color, Line width**
- ❖ **Personalization: TBD**



- ❖ Scenario: view instances with the most alerts
- ❖ UI control: Grid control
- ❖ Data provider: Top N for Alerts
- ❖ Configuration: group/type, bar color
- ❖ Personalization: TBD

Name	Number of Alerts
server1	6
server8	5
server3	3
server2	3

- ❖ **Scenario: View perf value, View SLA value**
- ❖ **UI control: gauge control**
- ❖ **Data provider: perf DP (DW), SLA DP (DW)**
- ❖ **Configuration Perf: Object-counter-instance, Collection rule, Last sampled value or average, Latest value or time range of average (hourly/daily), Min/max of gauge, Pointer color, Threshold**
- ❖ **Configuration SLA: Instance or Monitor, Time range for availability calculation, Min/max of gauge, Pointer color, Threshold**
- ❖ **Personalization: TBD**



- ❖ Scenario: View perf value, View SLA value
- ❖ UI control: gauge control
- ❖ Data provider: perf DP (DW), SLA DP (DW)
- ❖ Configuration Perf: Object-counter-instance, Collection rule, Last sampled value or average, Latest value or time range of average (hourly/daily), Min/max of gauge, Pointer color, Threshold
- ❖ Configuration SLA: Instance or Monitor, Time range for availability calculation, Min/max of gauge, Pointer color, Threshold
- ❖ Personalization: TBD



- ❖ **New Topology**
- ❖ **Remove of the RMS**
- ❖ **Management resource pools**
- ❖ **Network monitoring**
- ❖ **Application monitoring**
- ❖ **Extensible dashboards**

Presentation download: <http://blogs.inovativ.nl/>

Personal blog: <http://www.systemcentercentral.com/blogs/oskarl>

SCUG: <http://www.scug.nl/>

Facebook: [scugnl@groups.facebook.com](http://scugnl@groups.facebook.com)

OpsMgr 2012 CEP Program:

<http://blogs.technet.com/b/momteam/archive/2011/06/02/now-enrolling-for-the-operations-manager-2012-cep.aspx>

**Oskar Landman**

System Center Operations Manager MVP

