VERITAS™

OpsCenter

Sizing, Tuning, Best Practices & Maintenance in Physical & Virtual Environment

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Business Critical Support

Factors affecting OpsCenter Performance

- Is OpsCenter Mission Critical In Your Environment?
- If Yes, treat it so
- Regardless of Physical or Virtual Deployment it requires some effort
- Software Tuning
  - OpsCenter DB size (sum of db files)
  - Sybase DB cache size
  - JVM heap size (OpsCenter Server and Web UI)
- Hardware (Physical or Virtual) Planning
  - Memory
  - CPU
  - Disk I/O

OpsCenter On Physical vs. Virtual Hardware Guidance

Physical

- ✓Fully Supported
- ✓Windows or Linux x64
  - ✓Solaris 10 (SPARC and x86) still supported, but last release and not recommended
- ✓More RAM= Better
  - ✓Goal is to load DB (operations) into RAM cache, so size appropriately
- ✓More CPU's = Better
  - ✓Multi-CPU cores fully utilized for multi-report execution

Virtual

- ✓Fully Supported
- ✓Hyper-V or VMware
- ✓Oversize the VM
- ✓Dedicated/Reserved Resources for the OpsCenter VM
- ✓Pre-allocate Disk If Possible
- ✓Shared resources on heavily loaded ESXi Server will affect OpsCenter

Factors affecting VM performance

- Memory
  - ESXi memory is used to hold the ESX code as well as the VMs
  - If ESXi cannot find enough free memory, it invokes the balloon driver in the Guest OS of one or more VMs (ballooning is a memory reclaiming technique in ESXi)
  - If this fails to free up enough memory, ESXi itself begins to swap at the host level
- CPU
  - ESXi allows significant levels of CPU over commitment
  - CPU Power Management Policy affects the performance
  - If an ESXi host becomes CPU saturated, latency-sensitive workloads might not perform well

VM - Recommendations - I

- Reserve CPUs and GB of RAM for OpsCenter VM
- Ensure that ESX on which OpsCenter VM is running is not overloaded in terms of CPU, Memory and Disk space usage
- Select optimum CPU Power Management Policy based on your requirement
- VMware snapshots increase the I/O heavily. Try to avoid snapshots
- Align file system (VMFS) partitions to 1MB (default in vSphere 6)

VM - Recommendations - II

- Do not install other Java applications on OpsCenter VM
- Install the OpsCenter database on a drive that is different from where OpsCenter server software and operating system is installed. This drive should be on datastore which is on dedicated LUN
- Make sure that OpsCenter database does not reside on a datastore where Guest OS swap and VM swap resides
- Save the OpsCenter log files on a drive other than one where database is installed to reduce I/O

Running on Physical May Be Needed In Some Cases

- **Customer Example**
- Was on virtual machine and had sluggish performance (UI, reports)
- Unhappy with performance in undersized VM
- Moved to physical and oversized hardware, ***now happy***

- **New Dedicated Physical Hardware Platform is:**
  - New server with Dual Quad-core CPUs
  - 96GB RAM (48GB dedicated to database cache for same size DB)
  - OpsCenter database lives on SAN storage – fast disk
  - Windows 2008 R2
  - Currently at 7.6.1 and ecstatic
- **Key Lessons**
  - Oversize your OpsCenter server whether in a VM or Physical to account for growth
  - Tuning OpsCenter to cache as much of DB operations into RAM as possible

Sizing Guidelines

- Opscenter Performance & Tuning Guide:
  - https://www.veritas.com/support/en_US/article.DOC8586

- CPU / Cores – More is better (for multiple report execution)

- OpsCenter DB (vxpmdb.db) will be approximately 1GB in size (after defrag) if 1K jobs collected per day (after 220 days which is the default purge setting for ”Backup Job” in 7.6 and onwards)

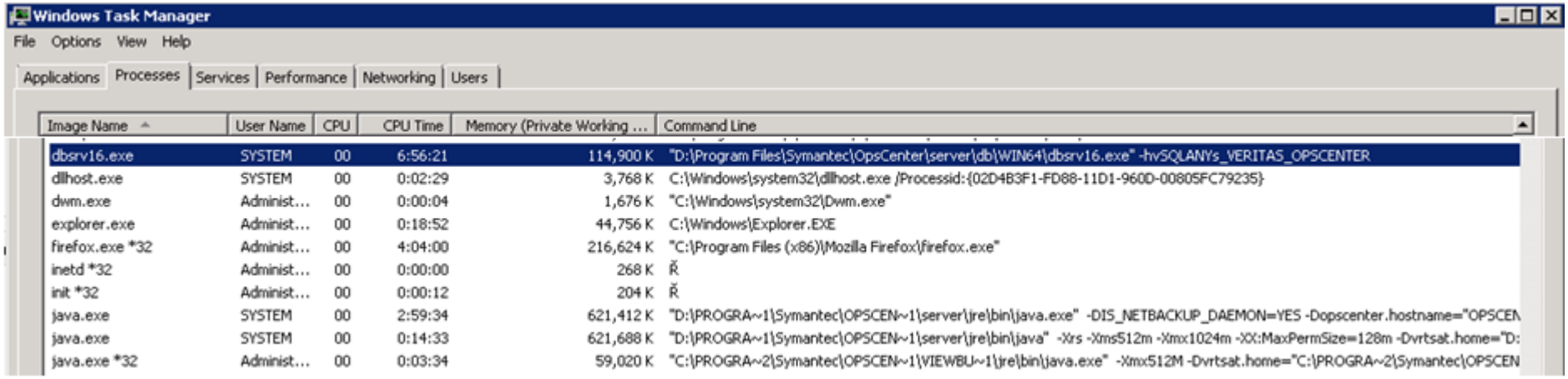
OpsCenter Tuning

Tuning Guidelines

- Three components/processes to tune memory
  - OpsCenter Server
  - Web Server
  - Database Server
- All memory tuning should be based on available physical memory. Don't exceed!
- Leave memory for the OS. Please follow your OS guidelines
- Adjust the cache size of the OpsCenter database based on size of the database (min 50% of the size of the DB, up to 100% won't hurt and may be needed, check processes memory consumption!)

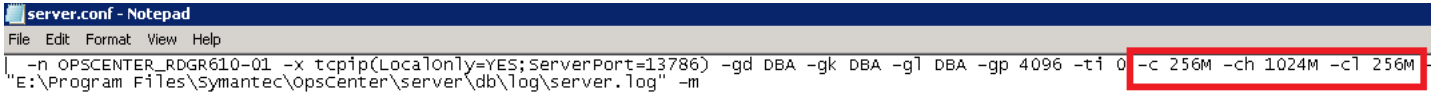
Tuning OpsCenter components

- Server, database, webgui are commonly tuned
- Task Manager:
  - DB process highlighted
  - Server and Web UI Java processes
  - Viewbuilder Java 32 bit process



Tuning OpsCenter components – config files

- OpsCenter Database
  - C:\Program Files\Symantec\OpsCenter\server\db\CONF\server.conf



- -c is initial memory reserved
- -cl is minimum cache size
- -ch is maximum cache size
- Restart services after changing parameter to take effect!
- Always safe copy file before editing!

Tuning OpsCenter components – config files (continued)

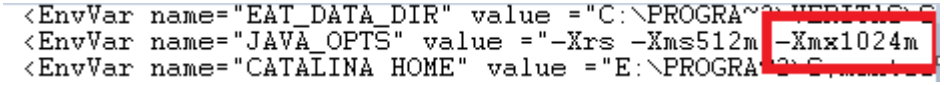
- OpsCenter Server
  - C:\Program Files\Symantec\OpsCenter\server\bin\OpsCenterServerService.xml

```
<CmdArg value="-DEAT_DATA_DIR=&quot;C:\PROGRA~2\VERITAS\Security\AUTHEN~1&quot;"
<CmdArg value=" -Xrs  -Xmx2048M  -Xms512M -XX:PermSize=64M -XX:MaxPermSize=128M
/CommandLine_Args>
```

- Safe copy file before editing!
- Restart services after changing parameter!

Tuning OpsCenter components – config files (continued)

- OpsCenter webgui
  - C:\Program Files\Symantec\OpsCenter\gui\bin\OpsCenterGUIService.xml



- Safe copy file before you edit it ☺
- Note, find BOTH lines in the OpsCenterGUIService.xml file and change the –Xmx value!
- Restart services after changing...

OpsCenter Best Practices

Best Practices-OpsCenter Installation

- 64 bit OS Only!
  - Windows
  - Firefox browser
- Always stay current on patch releases.
  - OpsCenter must be same or higher version than the NetBackup master servers it manages.
  - OpsCenter version does **NOT** need to match the version of NetBackup (Any supported NetBackup version)
- OpsCenter components put on different file systems
  - Optimally no components on the OS file system
  - OpsCenter software (Installation Choice)
  - Database (Installation Choice, can move post installation)
  - Database backup (post installation)
  - Consider putting your database on high performance disk (SAN)

Best Practices-OpsCenter Backup

- **Must use the provided hot backup script**, dbbackup, to dump the database (no NetBackup policy)
  - The dbbackup dump script can be executed using the bpstart_notify command (or use OS scheduler)
  - Create a NetBackup backup policy to protect the database dump directory (as well as the application)
  - Changed DB password?
    - Also backup <Install_Path>\OpsCenter\server\config\db.conf
- Use Active Directory or LDAP accounts to log in to OpsCenter, avoid using local accounts within OpsCenter

Best Practices-OpsCenter Upgrade Process

For All Updates

- Be sure to backup OpsCenter! (this **does** apply also to point patches)
- Please notice the “Disk space requirements” section on the upgrade! Is it green? (Windows installer)

For Major Updates

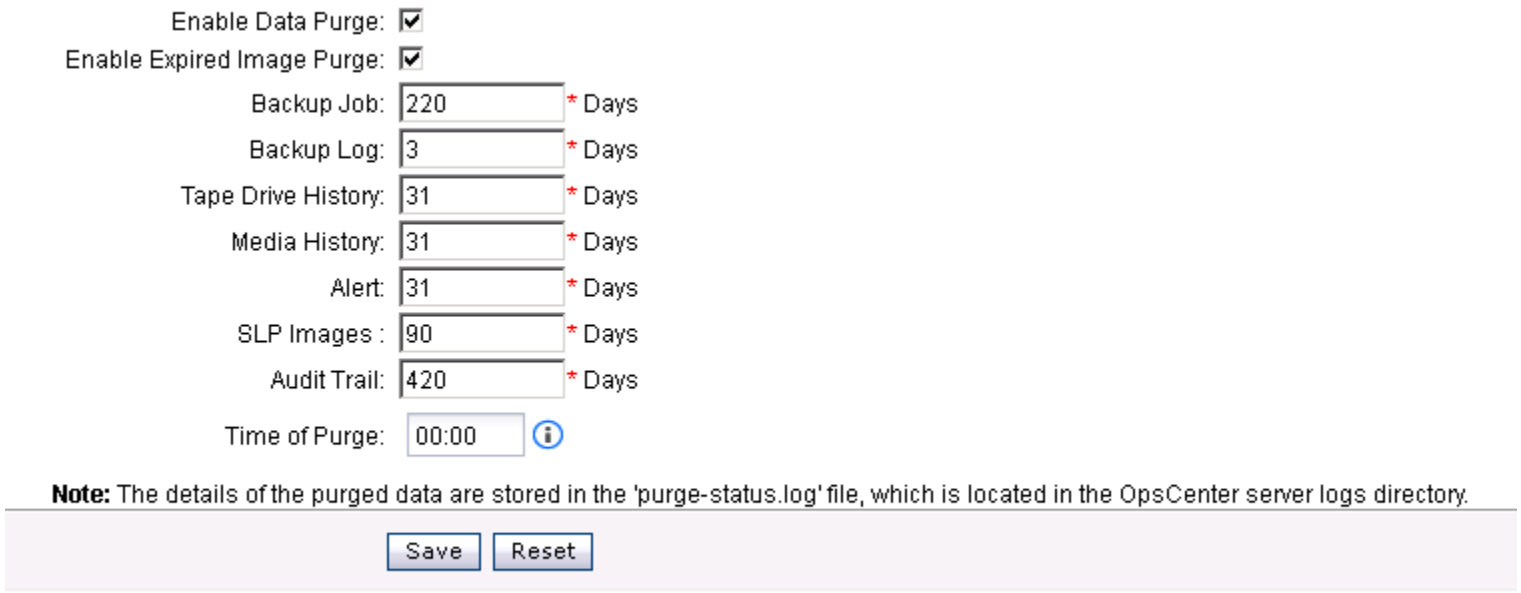
- For Unix or Windows have three times the size of the OpsCenter database as free space on the database file system.(Backout, Pre-Upgrade and Post-Upgrade copies)
- For Unix make sure you have enough room for the database in /tmp for working space.
  - Consult the manual to direct to an alternate location.

Best Practices-OpsCenter Database

- Defragment the Database if performance degrades.
  - Database defrag script included with OpsCenter. (dbdefrag)
  - Defrag is recommended to run monthly
  - Remember to have a good DB backup before running dbdefrag!
  - Check server.log for ”performance warning” messages
    - Indicates disk fragmentation
- Defragment the file system with the DB
  - Use Operating system tools
- Turn off anti-virus scan of the DB directory
- Change the OpsCenter Data Purge settings only with Veritas guidance (if increasing to large value/s)
- Install the OpsCenter server software on a separate server (not your NetBackup servers!)

Best Practices-OpsCenter Database

- Data Purge
  - Settings > Configuration > Data Purge



Best Practices of OpsCenter Reporting

- Trying to export/email reports with more than 4K rows?
  - Not enabled by default
  - Second, If you really need to, see the section of the Admin manual titled: “Configuring number of rows in a tabular report for email or export”
  - This is meant to protect you from inadvertently exporting/emailing a report with a large number of rows
- OpsCenter agent is needed for:
  - Collection of certain data from pre-7.x Master Servers
  - Collection of License Deployment Data (all versions including 7.6)
  - No agent needed for OpsCenter 7.6.1 < 7.7 (OpsCenter <-> bpjava)
  - No agent needed for OpsCenter 7.7 (OpsCenter <-> NBSL)

Troubleshooting steps

- The first step to ensure a stable OpsCenter environment is to ensure sufficient tuning is in place – and to follow best practices
  - Not having proper tuning in place can, in a worst case scenario, affect data collection from master server/s
  - If data collection is not running properly this will affect reports in OpsCenter. Reporting accuracy relies on successful data collection!
- Ensure that OpsCenter and NetBackup master servers resolve to the same GMT time (else data collection may have issues)
- Always ensure a master server is in a ”Connected” state
  - If master is ”Partially Connected it means that one, or more, data collectors are in a failed state – this may affect reports

Data collection – initial troubleshooting

- If Master server is ”Partially Connected”, check which data collector/s is/are in a failed state
  - Wait for an hour or two, data collectors often recover by themselves
  - Secondly, try to disable/enable data collection for the master in OpsCenter console
  - Thirdly, stop NBSL service on master and OpsCenter services (opsadmin stop/start from OpsCenter\server\bin) - to ensure there is no stale connection preventing collection
  - If none of above helps, then enable verbose logging for NBSL (OID 132) on master and OID 148 on the OpsCenter server

OpsCenter – size limitations?

- OpsCenter software does not itself impose any limitation in terms of database size or number of master servers connected
  - There are no official benchmarks available for load and performance
  - We have observations from the field from which we can provide guideance (for sizing and tuning)
- SAP Sybase DB does have some limits documented:
  - http://dcx.sap.com/sa160/en/dbadmin/da-limits.html
    - These are database specific numbers and nothing to do with the OpsCenter software

OpsCenter – real world examples

- Customer 1:
  - OpsCenter 7.7.1
  - +10 master servers connected
  - 180 GB database size
  - Windows 2008 R2 Enterprise edition, physical server
  - 2 multi core CPU's
  - 240 GB physical RAM installed
  - Collecting 45-50.000 jobs per day
  - Tuning: DB process: 148 GB cache, server process: 12 GB memory heap, Web UI process: 6 GB memory heap
- Customer 2
  - OpsCenter 7.6.x
  - Windows 2008 R2, Enterprise edition, physical server
  - 256 GB RAM installed
  - 284 GB database size
  - Collecting +150.000 jobs / 24 hours
  - DB process consuming ~157 GB cache, Server process consuming ~20 GB memory heap, Web UI consuming ~3 GB memory heap

OpsCenter – real world examples

- Customer 3:
  - OpsCenter 7.7
  - Windows OS, physical box
  - 128 GB RAM installed
  - 50 Master servers connected
  - 100 GB database size
  - 80.000 jobs collected / 24 hours
- Customer 4:
  - OpsCenter 7.6.0.4
  - Windows 2008 R2 physical server
  - 32 GB RAM installed
  - 150 master servers connected (small environments)
  - 15 GB database size

Q&A

Thank you!

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