Best Practices for minimal downtime during OMi software upgrade in an HA setup

Document release date: October 2017

Technical White Paper

Contents

Introduction

While installing hotfixes, patches, or service packs to upgrade Operations Manager i (OMi), the OMi production environment incurs some downtime which can range from a few minutes to several hours. The exact upgrade time highly depends on the OMi version, number and size of patches, IP (Intermediate Patches), hotfixes, specific setup instructions, type and amount of integrations and lastly on the time to be spent for proper system validation, before providing access to the OMi users again.

This production downtime is a major concern for many customers and they would like to minimize it if not make it zero.

The good thing is that a proper planning and preparation can significantly reduce the OMi production server downtime.

This document provides guidelines and ideas on how to minimize upgrade downtime for OMi – covering hotfixes, patches and minor version upgrade under different scenarios.

The scope of this document is Operations Manager i (OMi) with its typical integrations like Operations Connector, SiteScope, Operations Manager Unix/Linux/Windows, Service Manager, etc.

Please note:

- This document is not a replacement of the installation or upgrade guides (see ReadMeFirst files) which must be referred and carefully followed for the specific version installation.

- It does not apply to major software version upgrades, for which you find all information in dedicated manuals.

- This is not related to Stage Data Replicator (SDR).

Before starting the upgrade

Check the latest available material from HPE

- Check on the HPE Software Support Online (SSO) website if you have the latest recommended patches and documentations available. Read this information carefully!
- Consult with your HPE Support liaison if there are also hotfixes available which would be suitable for your environment.
- In case you have hotfixes installed on your current OMi production environment, double-check if all these hotfixes are covered by the latest official patch or if you would need to apply this hotfix again on top of the latest patch version.
- Pro-actively inform your HPE support / account contact about your OMi production environment upgrade plans. You might get some valuable additional guidance and latest information.

Determine the best time to perform the production upgrade

- Schedule the upgrade during a "low load" period and outside of your main business hours, if possible.
- Plan the upgrade at a suitable time to get also quick assistance from HPE – according to your HPE support contract terms & conditions.
- Collect input about the best production upgrade time from all your business users.
- In case you have a Change Advisory Board (CAB), place an official request for the production upgrade with all required associated information.
- Pro-actively inform all your service users about the planned OMi production change and what should be done during this unavailability time (e.g. working on a backup OMi installation, working directly on the data collector systems, etc.)

Test and document the upgrade in your test / preproduction environment

- Always test the software upgrade thoroughly on your test and/or pre-production environment before doing the production environment upgrade.
- Log the time needed to perform all upgrade steps specific to your environment.
- Log carefully all specials / customization steps (e.g. integration of home-grown tools, 3rd party element managers).
- Fully understand and document the potential differences between your test / pre-production environment and your production environment, which would require special attention / different steps / longer upgrade time in your production environment, etc.
- Determine and document the test cases to be executed after the software upgrade to evaluate that all business critical functions are working properly.
  Automate these sanity test cases as much as possible to minimize the production unavailability time for the users. You might want to split these sanity tests per integration and also define an initial sanity test suite, which runs even before the integrations are re-established.
- Fully understand, test, and document any rollback procedures provided by practicing this scenario on your test / pre-production environment.

Prepare the production environment

- Copy the patch files locally on each OMi server (GWS, DPS) to enable quick installation.
- Back up all your customized configuration files and do not make any configuration changes during the upgrade time window.
- Make sure there is enough disk space and appropriate configuration on all systems integrating with OMi for buffering the data (events, metrics, topology, incidents) during downtime. For example, check and/or change these buffering settings for Operations Manager (OMU/OML/OMW), SiteScope, Service Manager, etc.
- In case you do NOT want the data collectors to immediately send the buffered data to the upgraded OMi production environment (after OMi restart) – e.g. because you still want to perform some sanity tests – change product specific integration settings accordingly (either on the data collector or OMi side).

General notes

- To minimize the OMi downtime during patching, it is required to set up OMi in high availability (HA) mode with minimum 2 gateway servers (GWS) and 2 data processing servers (DPS).
- Each OMi server should be sized appropriately as per the deployment size and capacity calculator.
- Please note that OMi on DPS and GWS can be stopped and started in parallel.
- Several tasks during the OMi production upgrade can be done in parallel, therefore it is highly recommended that you have a small team of experienced engineers to perform the upgrade in case minimal down time is important for you.
- In case you haven't blocked your integrations during OMi upgrade, the buffered data (events, metrics, topology, incidents) will get sent as soon as the OMi server will be reachable again. In case you haven't finished your sanity testing successfully before and need to roll-back, the already transmitted integration data might be lost – in case they are not stored in the data base and/or file system.
- If you want that buffered data is not immediately sent to OMi after its upgraded and restarted, then you can consider changing the configuration on load balancer to disable the patched gateway server so load balancer will not forward any data to this server. In effect, this will block all the data collectors from sending any data into production until you enable the configuration on the load balancer again.
  (*NOTE that there are different loadbalancer settings for data collectors (e.g. OML) and OMi UIs. You could also connect to a specific Gateway directly, in case not blocked by a firewall rule, hence this will depend on the specific setup.*)

It is highly recommended to test and validate the above load balancer procedure before using it in production.

Production upgrade

Minimize downtime for hotfixes, intermediate patches and Service Pack installations

ATTENTION! The following procedure does ONLY apply under following conditions:

- Scope:
    - o Type of software upgrades: hotfix, roll-up hotfix (= hotfix bundle), intermediate patches (IP), and selected SPs (= minor-minors).
- Supported versions for SP updates:
    - o OMi 10.60 → OMi 10.61

> **Note**: For OMi 10.62 and later versions, refer to the interactive OMi Installation and Upgrade Guide.

Upgrade approach:

- Upgrade and start one part of the OMi HA setup first, switch over services to upgraded servers and then upgrade the remaining part
- In this scenario, updated and non-updated servers run in parallel

OMi High Availability Setup
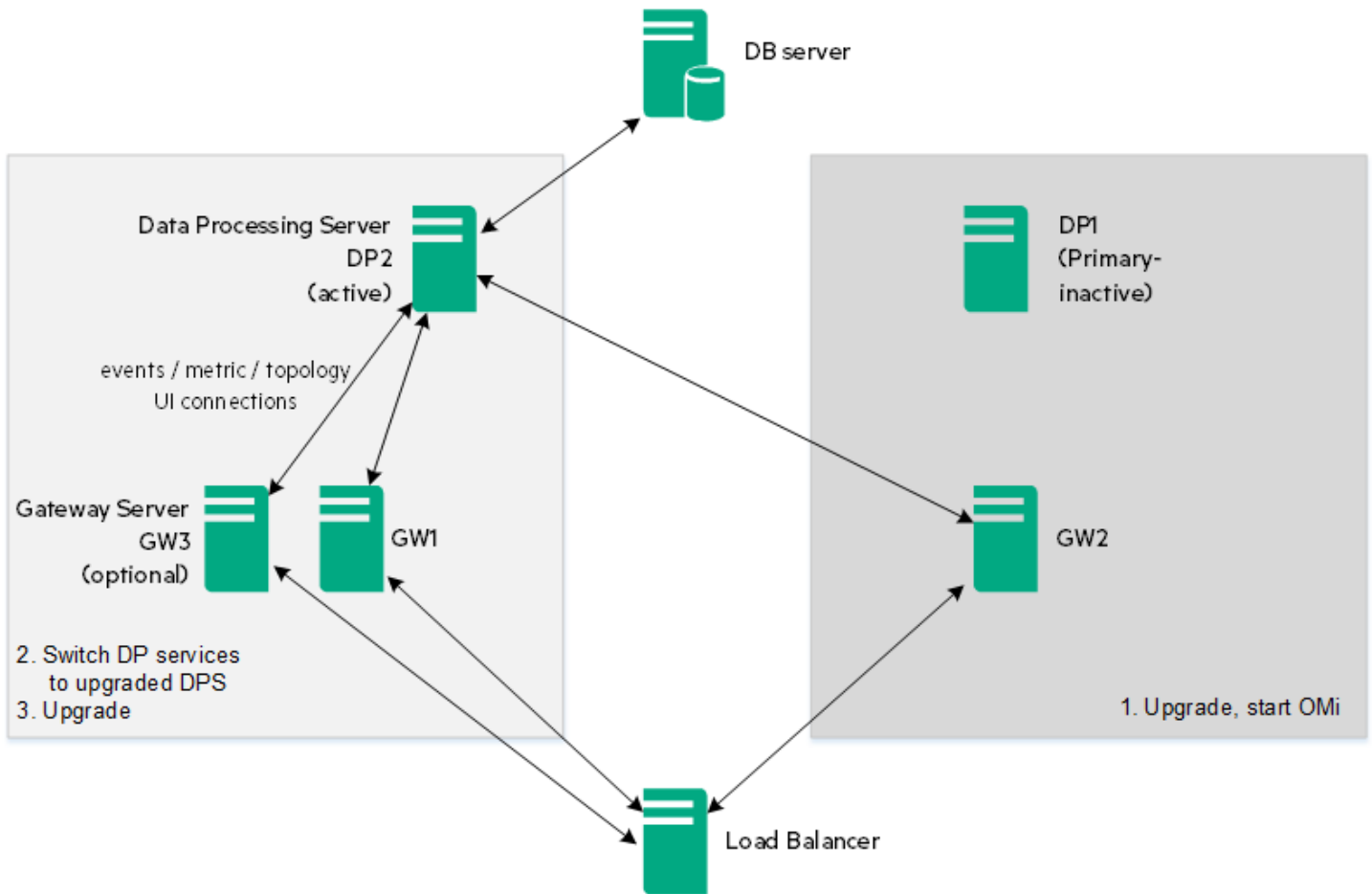
Upgrade steps

1. In case one GWS cannot handle the full load, minimize the number of concurrent users during the upgrade.

2. Inform the remaining connected users that they might see a short disruption in their user sessions and may have to log out and log in again.

3. Stop OMi on the inactive DPS and one of the GWS (in parallel).[1]

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[1] When the load balancer's gateway monitoring detects that one of the GWS is no longer accessible, it will move all connections (including the "sticky session" ones) to an available GWS. TLS connections will be disconnected, and data collectors like OM will try to re-establish to the newly assigned GWS.

4. Update OMi 10.60 to 10.61 according to the *OMi Installation and Upgrade Guide*. Execute the steps as described in the "Run the Update Tool" section on the inactive DPS and gateway servers.

5. If you do not want the updated GWS to receive data (DPS is already the backup server) immediately, you may disable this gateway server on the load balancer, so it will not forward any data to this GWS.

6. Start OMi on the updated data processsing and gateway servers.

7. Run sanity tests as appropriate (please remember that updated DPS will start as backup DPS and hence DPS services will not be active on this).

8. If the load balancer configuration was changed as mentioned above in step 5, then enable the updated GWS in the load balancer, so that it starts receiving the data and at this time disable the non-updated gateway server(s).

9. Manually move the DPS services from the active DPS to the updated DPS
(by using moveServices JMX method as described in the *OMi Administration Guide* – High Availability chapter).

10. After the services are moved successfully, run sanity tests as appropriate.

11. Stop OMi on the non-updated set of gateway and data processing servers.

12. Update the remaining servers.

13. Start OMi on the updated servers.
(*Remember that the newly updated DPS will start as a backup DPS since the services were moved in step 9 and hence DPS services will not be active on this.*)

14. Run (additional) sanity tests as appropriate.

15. Enable the gateway server(s) in load balancer configuration.

16. In case you had reduced the number of concurrent users, allow full concurrent user access again.

Expected downtime for the above upgrade procedure:

Minimal - downtime equals to DPS services switchover time, the duration depends on database size and performance.

Patch rollback

If you have to perform a patch rollback, follow the patch uninstallation steps documented in the corresponding installation guide.

In this case, downtime may not be minimized unless there is an alternative test OMi environment that can be used.

Data collector buffering overview

During the OMi downtime, it's important to understand, if / what kind of buffering is configured for the various integrations – such as data collectors (e.g. SiteScope, OM), northbound integrations such as help desk (e.g. Service Manager) and other integrations such as CMS syncronization, web services, etc.

The following table provides a short overview.

Product / Data type	Default buffering time	Where and how to configure, related manual, other remarks

OMW: messages	1 hr	- Registry setting:
		`HKLM\Software\Hewlett-Packard\OVEnterprise\Management Server\Server-based flexible management -> SNF Delivery Timeout`
		- UI Setting:
		`Configure -> Server`
		`Tab: Generic Server Configuration`
		- Namespace:
		Server-based Flexible Management
		Value: Forwarding delivery timeout: 3600 seconds (default)

OMW: topo-sync	no timeout	- buffer size is hardcoded to 50MB
OML/U:messages	1hr (3600s)	- XPL Namespace: `opc.opcform` Value: `REQUEST_TIMEOUT`
OML/U: topo-sync	1hr	Timeout not changeable!
OM Agent: messages	Unlimited	Using the OM agent queue which is just restricted in size
Operations Connector: events		See OM Agent
Operations connector: metrics	Unlimited	Retry interval: 10 sec (not changeable) Metrics are cached at `%OpsCx_HOME%\cache\persistent\`
SiteScope: events	Unlimited	See OM agent
SiteScope: metric	Unlimited	Retry interval: 10 sec (not changeable) Metrics are cached at `SiteScope\cache\persistent\topaz\`
SiteScope: topoloy	Unlimited	Retry interval: 20 sec (not changeable) Topology is stored at `Sitescope\cache\topologyresultsdata` until RTSM is available

Glossary

DPS	Data Processing Server
GWS	Gateway Server
IP	Intermediate Patch
RTSM	Run-Time Service Model
SiS	SiteScope
UCMDB	Universal Configuration Manangement Data Base

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Learn more at

https://marketplace.saas.hpe.com/itom/category/all?product=Operations%20Manager%20i%20(OMi)

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