Influence of agent’s behavior on report data
IBM License Metric Tool 7.5
Questions & Answers
# Table of Contents

- Agent deployment on dedicated devices - VIOS, HMC, hypervisors
- Agent uninstallation
- Agent upgrade and reinstallation
- Agent reinstallation on reinstalled operating systems
- Software scan frequency and changes in IBM software
  - Uninstall of IBM software
  - Upgrade of IBM software
  - Reinstall of IBM software
- Duplicated agent
- Duplicated universally unique identifiers
- TLM_VM_* entry on audit report

- Conclusions
- Survey
Contact

- ICT Team: LMTHelp@us.ibm.com

- ICT Team Lead: Grzegorz Sierak: Grzegorz.Sierak@pl.ibm.com
Agent deployment on dedicated devices - VIOS, HMC, hypervisors

- **Virtual I/O Server** (version 2.2.1 and higher)
  - Agent installation not required for PVU, however possible

- **IBM Hardware Management Console**
  - Do not install agent here

- **Hypervisors** (vSphere, RHEV-H)
  - Do not install agent here

Supported operating systems for agents:
Agent uninstallation

- Accident prevention mechanism
  - Agent with no connection becomes inactive within one day \(^{(\text{maxAgentInactivity parameter})}\)
  - Agent after 30 days of inactivity is automatically removed from the system \(^{(\text{maxAgentInactivityToDelete parameter})}\)

- Manually remove all agents that have been uninstalled using the Web UI

- Investigate inactive agents to keep your infrastructure in good shape

Uninstalling agents:
Agent upgrade and reinstallation

- Upgrade is not the same process as clean reinstallation
  - Upgrade does not change agent’s ID (kept in tlmagent.ini file)
  - Reinstallation changes agent’s ID

- Agent on Web UI
  - Upgrade – upgraded agent will be visible on Web UI
  - Reinstallation – old agent and new agent will be visible on Web UI
    - Both agents might be in OK status
    - Set inactivateDuplicatedAgentEnabled variable to indicate duplicated agents by status: „Unknown”
    - Remove old agent form the system manually using Web UI

- PVU calculation
  - Upgrade – no further actions required
  - Reinstallation – user attention is required
Agent reinstallation on reinstalled operating systems

- Operating system (OS) reinstallation requires reinstallation of ILMT agent
- Explicit uninstall of ILMT agents from OS is not needed
- Manual removal of ILMT agent from Web UI is required
- Installation of new ILMT agent is necessary
- Rebundling discovered components is also necessary
Software scan frequency and changes in IBM software

■ Software scan frequency is set to once a week by default
  ▪ IBM software inventory is only available in this type of scan

■ Agent software scan frequency has influence on software visibility in the report
  ▪ Only already discovered IBM software will be present on the report

■ Customer can install, uninstall, upgrade/update or reinstall IBM software anytime they need
  ▪ The change is not automatically communicated to the ILMT agent
  ▪ The change is not automatically communicated to the ILMT server

■ Agent software scan frequency has influence on software visibility in the report that is installed, uninstalled, upgraded or reinstalled
  ▪ Agent must rescan the host’s file system to be aware of this fact
  ▪ Agent must send scan result to the server
  ▪ Server must consume the data to understand new situation
  ▪ Server must process the data to present new situation
Software scan frequency and uninstall of IBM software

- Example covers one monitored endpoint
- DB2 is already installed on that endpoint
Software scan frequency and uninstall of IBM software

Software scan management:
Software scan frequency and uninstall of IBM software

Software scan:

1/07  7/07  11/07  31/07

DB2 Uninstallation

(*) - ILMT agent is only aware of software uninstall after the software scan. Server is only aware of uninstall after agent scan results have been sent and processed. For simplification, only the software scan date is in the chart. Even if the server is not informed on the same day, the actual date of the scan is used.
Software scan frequency and uninstall of IBM software

(*) - ILMT agent is only aware of software uninstall after the software scan. Server is only aware of uninstall after agent scan results have been sent and processed. For simplification, only the software scan date is in the chart. Even if the server is not informed on the same day, the actual date of the scan is used.
Software scan frequency and uninstall of IBM software

Audit Report 1/07-31/07
DB2 present

Software scan

1/07  7/07  11/07  31/07

DB2 Uninstallation

ILMT server awareness:
DB2 installed
ILMT server awareness:
DB2 not installed

(*) - ILMT agent is only aware of software uninstall after the software scan. Server is only aware of uninstall after agent scan results have been sent and processed. For simplification, only the software scan date is in the chart. Even if the server is not informed on the same day, the actual date of the scan is used.
Software scan frequency and uninstall of IBM software

Audit Report 1/07-15/07
DB2 present

Audit Report 16/07-31/07
DB2 not present

Software scan

1/07 7/07 11/07 31/07
DB2 Uninstallation

ILMT server awareness:
DB2 installed

ILMT server awareness:
DB2 not installed

(*) - ILMT agent is only aware of software uninstall after the software scan. Server is only aware of uninstall after agent scan results have been sent and processed. For simplification, only the software scan date is in the chart. Even if the server is not informed on the same day, the actual date of the scan is used.
Software scan frequency and uninstall of IBM software

(*) - ILMT agent is only aware of software uninstall after the software scan.
Server is only aware of uninstall after agent scan results have been sent and processed.
For simplification, only the software scan date is in the chart. Even if the server is not informed on the same day, the actual date of the scan is used.
Software scan frequency and uninstall of IBM software

(*) - ILMT agent is only aware of software uninstall after the software scan.
Server is only aware of uninstall after agent scan results have been sent and processed.
For simplification, only the software scan date is in the chart. Even if the server is not informed on the same day, the actual date of the scan is used.
Software scan frequency and upgrade of IBM software

- Example covers one monitored endpoint
- DB2 v9.1 is already installed on that endpoint
Software scan frequency and upgrade of IBM software

1/07 7/07 31/07

DB2 Upgrade
From 9.1 to 9.7
Software scan frequency and upgrade of IBM software

*(*) - ILMT agent is only aware of software uninstall after the software scan. Server is only aware of uninstall after agent scan results have been sent and processed. For simplification, only the software scan date is in the chart. Even if the server is not informed on the same day, the actual date of the scan is used.
Software scan frequency and upgrade of IBM software

Software scan* Software scan* Software scan* Software scan*
1/07 4/07 7/07 11/07 18/07 25/07 31/07

DB2 Upgrade From 9.1 to 9.7

ILMT server awareness: ILMT server awareness:
DB2 9.1 installed DB2 9.7 installed

(*) - ILMT agent is only aware of software uninstall after the software scan. Server is only aware of uninstall after agent scan results have been sent and processed. For simplification, only the software scan date is in the chart. Even if the server is not informed on the same day, the actual date of the scan is used.
Software scan frequency and upgrade of IBM software

Audit Report 1/07-10/07
DB2 9.1 present

Audit Report 11/07-20/07
DB2 9.1 present
DB2 9.7 present

Audit Report 21/07-31/07
DB2 9.7 present

Software scan
1/07
4/07
7/07
11/07
18/07
25/07
31/07

DB2 Upgrade
From 9.1 to 9.7

ILMT server awareness:
DB2 9.1 installed

ILMT server awareness:
DB2 9.7 installed

(*) - ILMT agent is only aware of software uninstall after the software scan.
Server is only aware of uninstall after agent scan results have been sent and processed.
For simplification, only the software scan date is in the chart. Even if the server is not informed on the same day, the actual date of the scan is used.
Software scan frequency and upgrade of IBM software

Audit Report 1/07-10/07
DB2 9.1 present

Audit Report 12/07-31/07
DB2 9.7 present

Software scan*
1/07
4/07
7/07
11/07
18/07
25/07
31/07

DB2 Upgrade
From 9.1 to 9.7

ILMT server awareness:
DB2 9.1 installed

ILMT server awareness:
DB2 9.7 installed

(*) - ILMT agent is only aware of software uninstall after the software scan.
Server is only aware of uninstall after agent scan results have been sent and processed.
For simplification, only the software scan date is in the chart. Even if the server is not informed on the same day, the actual date of the scan is used.
Software scan frequency and upgrade of IBM software

(*) - ILMT agent is only aware of software uninstall after the software scan. Server is only aware of uninstall after agent scan results have been sent and processed. For simplification, only the software scan date is in the chart. Even if the server is not informed on the same day, the actual date of the scan is used.
Software scan frequency and reinstall of IBM software

- Example covers one monitored endpoint
- DB2 v9.1 is already installed on that endpoint

1/07

31/07
Software scan frequency and reinstall of IBM software

(*) - ILMT agent is only aware of software uninstall after the software scan. Server is only aware of uninstall after agent scan results have been sent and processed. For simplification, only the software scan date is in the chart. Even if the server is not informed on the same day, the actual date of the scan is used.
Software scan frequency and reinstall of IBM software

(*) - ILMT agent is only aware of software uninstall after the software scan. Server is only aware of uninstall after agent scan results have been sent and processed. For simplification, only the software scan date is in the chart. Even if the server is not informed on the same day, the actual date of the scan is used.
Software scan frequency and reinstall of IBM software

(*) - ILMT agent is only aware of software uninstall after the software scan. Server is only aware of uninstall after agent scan results have been sent and processed. For simplification, only the software scan date is in the chart. Even if the server is not informed on the same day, the actual date of the scan is used.
(*) - ILMT agent is only aware of software uninstall after the software scan.
Server is only aware of uninstall after agent scan results have been sent and processed.
For simplification, only the software scan date is in the chart. Even if the server is not informed on the same day, the actual date of the scan is used.
Software scan frequency and reinstall of IBM software

Software scan*  
1/07  4/07  7/07  11/07  15/07  18/07  25/07  31/07

Software scan*  

DB2 9.1 Uninstallation  

DB2 9.7 Installation  

(*) - ILMT agent is only aware of software uninstall after the software scan. Server is only aware of uninstall after agent scan results have been sent and processed. For simplification, only the software scan date is in the chart. Even if the server is not informed on the same day, the actual date of the scan is used.
Software scan frequency and reinstall of IBM software

(*) - ILMT agent is only aware of software uninstall after the software scan. Server is only aware of uninstall after agent scan results have been sent and processed. For simplification, only the software scan date is in the chart. Even if the server is not informed on the same day, the actual date of the scan is used.
Software scan frequency and reinstall of IBM software

Audit Report 1/07-10/07
DB2 9.1 present

Audit Report 11/07-20/07
DB2 9.1 present
DB2 9.7 present

Audit Report 21/07-31/07
DB2 9.7 present

Software scan

1/07 4/07 7/07 11/07 15/07 18/07 25/07 31/07

DB2 9.1 Uninstallation

DB2 9.7 Installation

ILMT server awareness:
DB2 9.1 installed

ILMT server awareness:
DB2 9.7 installed

(*) - ILMT agent is only aware of software uninstall after the software scan. Server is only aware of uninstall after agent scan results have been sent and processed. For simplification, only the software scan date is in the chart. Even if the server is not informed on the same day, the actual date of the scan is used.
Software scan frequency and reinstall of IBM software

Audit Report 1/07-10/07
DB2 9.1 present
Software scan
1/07

Audit Report 12/07-17/07
No DB2
Software scan
4/07

Audit Report 18/07-31/07
DB2 9.7 present
Software scan
7/07

Software scan
11/07

Software scan
15/07

Software scan
18/07

Software scan
25/07

Software scan
31/07

DB2 9.1
Uninstallation

DB2 9.7
Installation

ILMT server awareness:
DB2 9.1 installed

ILMT server awareness:
DB2 9.7 installed

(*) - ILMT agent is only aware of software uninstall after the software scan. Server is only aware of uninstall after agent scan results have been sent and processed. For simplification, only the software scan date is in the chart. Even if the server is not informed on the same day, the actual date of the scan is used.
Duplicated agent

- Every ILMT agent working in your environment must have unique identifier (agent ID)

- ILMT agent creates agent ID during installation and places it in tlmagent.ini file

- Agent’s ID remains the same during the agent’s upgrade

- To use the VM cloning feature on an ILMT agent installed on a golden image, use the tlmagent -clone command to avoid agent ID duplicates

Image cloning with preinstalled agents:

Tlmagent command:
Duplicated agent (continued)

- ILMT server is not able to catch the erroneous situation of duplicated agent caused by the user
  - Software change is supported behavior
  - Virtualization migration is supported behavior

- Effect of software management on hosts with duplicated agent’s identifiers is non auditable

- Incorrect software management on such host is irreversible

- User must correct this situation as soon as possible to have the correct values on the report going forward

LMT: Detecting duplicate agent IDs:
Duplicated universally unique identifiers

- ILMT server retrieves host’s universally unique identifier (host UUID) as well as virtual machine’s identifier (VM UUID) from VMWare API.

- ILMT server uses those UUIDs to match them with agent’s data to, among other things, identify virtualization layers, which are needed to appropriately calculate PVU values.

- Duplicate UUIDs on either the hosts or VMs will prevent the server from appropriately assigning the monitored machine to the virtualization hierarchy.

- Agent remains in incomplete state and audit report’s data is incorrect.

- The issue is solved when every UUID is again indeed unique, however already corrupted data cannot be retrieved.
TLM_VM_* entry on audit report

- TLM_VM_* entry is an identifier of artificial server that ILMT automatically assigns to endpoint with unknown virtualization topology details.

- TLM_VM_* entry is related to incomplete agent status.

- TLM_VM_* entry appears when:
  - ILMT agent is installed on (or relocated to) a system that requires VM Manager data and such data is not known for ILMT server.
  - ILMT agent has not obtained topology data for longer than predefined period - 1 day by default (agentVmManagerDetachmentPeriod parameter).

- User has 24 hours to pull missing data to ILMT server and change TLM_VM_* entry to the real name of the server.

- After 24 hours, regardless of other actions, TLM_VM_* entry will remain on audit report to indicate that agent was installed and reporting however topology data was unknown; capacity value will be 0 PVU though.
Conclusions

- ILMT agent state implies audit report state
- Alteration of agent deployment will be revealed on audit report data
- Not only IBM software change is important to report records but also software scan frequency
- Duplication of any ID that is supposed to be unique results in an inconsistent state
- Quick reaction of ILMT user is required when TLM_VM_* entry appears
Where to find help in case of any issues regarding PVU calculation?

- IBM Information Sites
  - Information Center
  - ILMT Central Team Wiki
  - ILMT Support Site (Technotes)

- ILMT Forum Community

- IBM Support Team
  - PMR program

- IBM LMT Central Team
  - LMTHelp@us.ibm.com

- IBM Pricing Team
  - SubCap@us.ibm.com
Thank You

Influence of agent’s behavior on report data
IBM License Metric Tool 7.5 Questions & Answers