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Introscope

CA APM Introscope(R) is an application performance management solution created to manage Java Application performance. Unlike development tools, Introscope(R) is designed to scale with minimal performance impact. This allows you to monitor and manage your application performance in live production environments.

The Right to View (RTV) version of CA APM Introscope is a restricted, read-only form of the full product and is bundled with SAP Solution Manager. With the RTV version, support is limited to products that are licensed and supported by SAP. The instrumentation, dashboards, Probe Builder Directives (PBDs), management modules, and Smartstor data contained within the RTV version of CA APM Introscope as provided by SAP is the intellectual property of SAP. Use of these functions is restricted by SAP and may only be used in an unrestricted manner by purchasing a full license from Broadcom.

Scope

✓ Monitoring of non-ABAP applications and infrastructures

✓ Tracing of non-ABAP applications and infrastructures

Important Resources

✓ [SAP Setup Guide for Introscope 10.8](#)

✓ [SAP Note 797147](#) Introscope Central Note

✓ [SAP Note 3247270](#) Introscope 10.8 Release Notes

✓ [SAP Note 2909673](#) Introscope 10.7 Release Notes

✓ [SAP Note 3000353](#) SAP Extended Diagnostics by CA, foundation 10.x

✓ [SAP Note 1280961](#) SAP Extended Diagnostics by CA Wily

✓ [SAP Note 2246406](#) Disabling Introscope Java Agent in emergency case

✓ [Official documentation](#) (provided by Broadcom)

✓ [Introscope section](#) in SAP Help Portal

Introscope consists of the Enterprise Manager central server component, Byte Code Adapters running as part of managed Java systems, and Host Adapters running as part of the diagnostics agent. These components and the integration with SAP Solution Manager are described in the following.

Enterprise Manager 9.4

The Introscope Enterprise Manager (EM) is the central Introscope server component providing user interfaces, persisting metric and trace data that is delivered by agents, and acting as integration point for SAP Solution Manager. Depending on the expected number of agents and metric load the EM can be run as stand-alone installation or as a more scalable cluster consisting of several collector EMs and a single Manager of Managers (MoM EM).

SAP provides a rich set of default content for common managed product types like SAP Netweaver Portal, SAP Process Orchestration, and a set of extensions that support the integration with SAP Solution Manager. Both is contained in the software component *management modules*.

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✓ [HTTPS Enabling](#)

✓ [SSL Enabling for TCP Port (e.g. 6001)](#)

✓ [High Availability](#)

✓ [SAP Note 3118721](#): Enterprise Manager Installation Troubleshooting

✓ [SAP Note 3128329](#): Enterprise Manager Performance Tuning

Connect to SAP Solution Manager

An Enterprise Manager can be connected to multiple SAP Solution Manager and SAP Focused Run systems. Since the SID of the Solution Manager is used as part of the file name for configuration files every Solution Manager SID and every Focused Run SID must be unique.

To connect the EM to a SAP Solution Manager a diagnostics agent must be installed on the EM host and the agent needs access to files in the EM installation. Reason for required write access is given where needed:

✓ <EM_HOME>/Introscope_Enterprise_Manager.lax (read only)

✓ <EM_HOME>/config/IntroscopeEnterpriseManager.properties (read, write to set some logging and tuning properties in *Define CA Introscope → Discover EM*)

✓ <EM_HOME>/config/users.xml (read, write to set users *Define CA Introscope → User Management*)

✓ <EM_HOME>/config/domains.xml (read, write to set user permissions in *Define CA Introscope → User Management*)

✓ <EM_HOME>/product/enterprisemanager/plugins/com.wily.introscope.em_<version>.jar (read)

✓ <EM_HOME>/bin/EMService.conf (read, Windows only)

✓ <EM_HOME>/sap/<SolMan_SID>.e2emai.properties (read, write to set System Monitoring configuration via *Basic Configuration → Configure Automatically → Push DPC Configuration to CA Introscope*)

✓ <EM_HOME>config/agentcluster.xml (read, write to define virtual system/instance-level agents in *Managed Systems Configuration → Configure Automatically → Generate System-level Metrics*)

After this you can discover the EM and set credentials: In the launchpad click *Configuration (All Scenarios)* and then *Infrastructure Preparation → Define CA Introscope*.

If you do not grant write access to Introscope configuration files to the diagnostics agent then you can still connect the Introscope Enterprise Manager to Solution Manager: Credentials and configuration files are then **not** updated by the diagnostics agent. Instead you have to manually maintain credentials in users.xml and domains.xml and then fill these credentials at least for the connection user in the *Define CA Introscope → User Management* dialog. You may get a warning here due to missing write permission, but the connection will succeed. Write access to sap/<SolMan_SID>.e2emai.properties and config/agentcluster.xml is still mandatory.

Additional details are described in the [help](#).

Metric Extraction for Workload Analysis / Early Watch Alert

The extractor framework periodically extracts key metrics from Introscope and persists them in SAP Solution Manager's BI.

## Metric Push for System Monitoring

Metrics for System Monitoring are selected via templates in the Monitoring and Alerting Infrastructure. SAP Solution Manager triggers subscriptions for metrics in Introscope and the EM periodically pushes metric updates to SAP Solution Manager.

[Details on the metric push mechanism can be found here](#) and in [SAP Note 1751225](#).

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The Introscope Host Adapter (aka Wily host agent) is an application which runs inside the SMDAgent. One of the tasks of the Introscope Host Adapter is to collect data from different configurable destinations and push them to the Introscope Enterprise Manager. The following picture provide a big picture of the architecture of the Introscope Host Adapter.
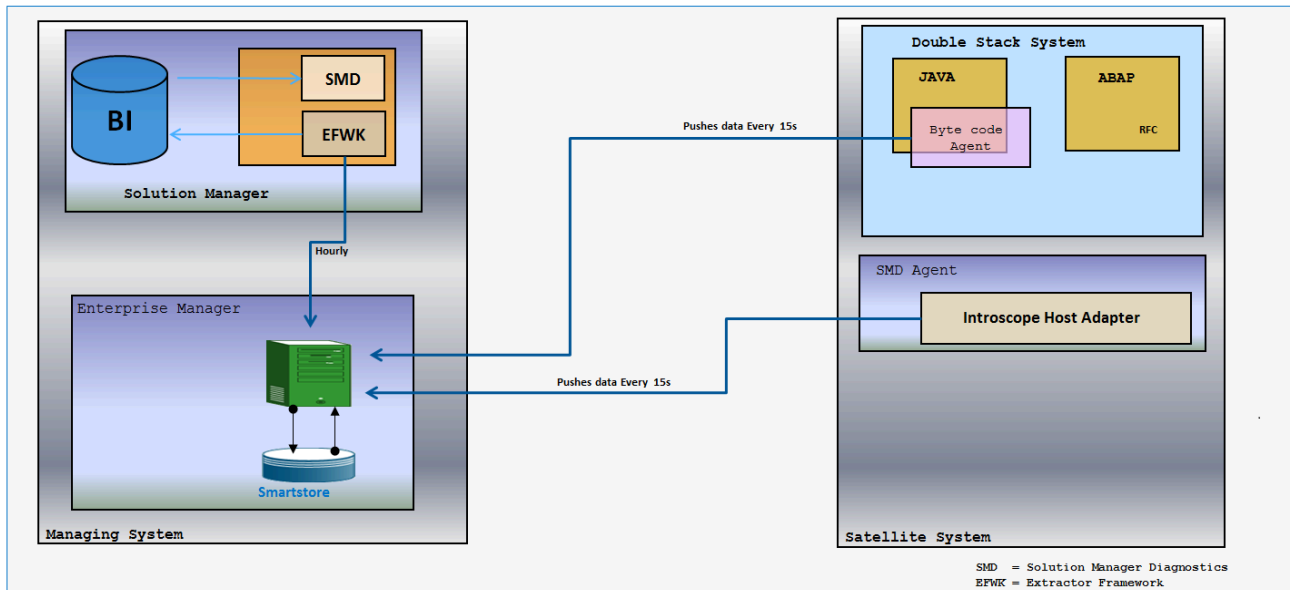
All applications running inside the SMDAgent are available in the Agent Administration UI. The Introscope Host Adapter can be found as shown in the picture below.

1. Agent Administration UI

2. Application Configuration

3. **com.sap.smd.agent.application.wilyhost**

The resources used by the Introscope Host Adapter application can be found under the 'Application Resources' node:
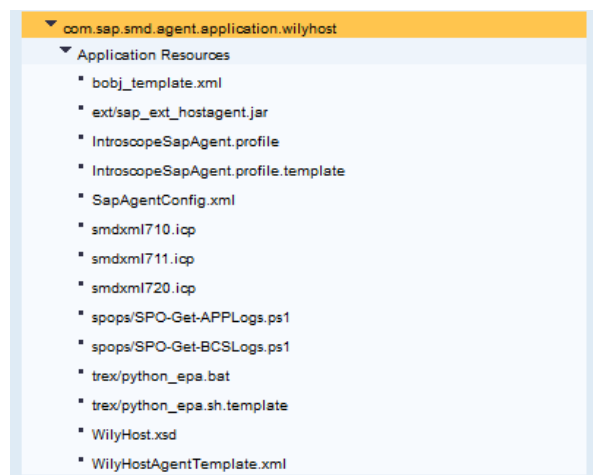
Note: When using the application configuration take care when performing changes. Changes should not be performed in the scope GLOBAL unless they are strictly required. The changes in scope global affect ALL SMDAgents connected to the SAP Solution Manager system.

In SAP Solution Manager, the Introscope Host Adapter is configured during the activity 'Introscope Host Adapter' of the Managed System Configuration for the target system: Step 7 "Finalize Configuration".

When the activity Introscope Host Adapter is performed, the application is configured to collect data from the managed system that will be monitored. The main files used by the agent are the following:

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✓ File created during the Introscope Host Adapter setup activity. It contains the destinations configuration and the link to actions to be performed for each destination

✓ IntroscopeSAPAgent.profile

✓ File is created from the IntroscopeSapAgent.profile.template. The host and port of the Enterprise Manager are configured in this file.

✓ Files used by application:

✓ WilyHostAgentTemplate.xml

✓ The is a global template file that defines all the possible actions possible for collecting all the Introscope Host Adapter data.

✓ WilyHost.xsd

✓ The is the XML schema file that defines the rules of validation for the WilyHostAgentTemplate.xml file. If you modify the action template it needs to conform to the schema.

Note: No manual configuration must be performed to the above files. The activity Introscope Host Adapter will configure the application automatically.

The file **SAPAgentConfig.xml** holds the configuration of the Destinations and the Actions that will be used/performed to collect data from the managed system.

✓ **Destinations:** The destinations will point out where the information will be collected. The destinations are configurable, for example a destination might be a Jco connection to the managed system or the location of a specific file.

For a typical double stack system you will have configurations generated for the following destinations:

✓ ABAP instance

✓ JAVA instance

✓ SAPStartSrv

✓ SAPHOSTAGENT

✓ File (for GC)

The following picture shows an example of a Jco destination. As you can see, the Jco destination has the connection information to the managed system, client, user, password, system number and hostname of the application server.

```xml
- <destination class="com.sap.smd.wily.hostagent.destination.JCODestination" name="XIN|ncev00000012a_XIN_00">
    <property name="jco.client.client" value="001" />
    <property name="jco.client.passwd" value="YVc1cGRERXlNeIE9" encrypted="true" />
    <property name="jco.client.user" value="VTAxRVFVZEZUbFJmVTAwNQ==" encrypted="true" />
    <property name="jco.client.sysnr" value="00" />
    <property name="jco.client.ashost" value="ncev00000012a.dhcp.ncel.sap.corp" />
```

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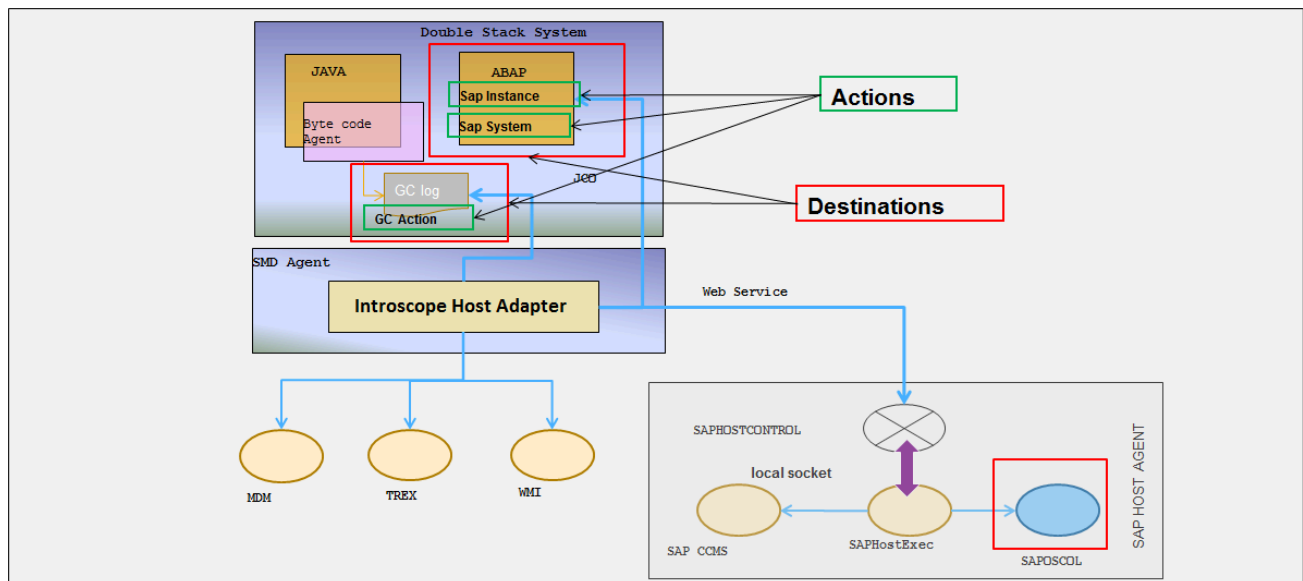|　　Introscope　　Enterprise Manager　　Host Adapter　　Byte Code Adapter (Java Agent)　　How-To Guides　　Troubleshooting

The following picture shows an example of some actions defined in a SAPAgentConfig.xml.

```
<action prefix="SAP OsCol" name="SapHostAgent_ncev00000012a.dhcp.ncel.sap.corp" destination="SapHostAgent_ncev00000012a.dhcp.ncel.sap.corp"
    template="SapOsColViaSapHostAgent" />
<action prefix="SAP GC|XIN_DVEBMGS00_server0" name="SAP GC|XIN_DVEBMGS00_server0" destination="XIN_DVEBMGS00_server0" template="SapGC" />
<action prefix="XIN|ncev00000012a_XIN_00" name="SapStartSrv_ncev00000012a_XIN_00" destination="SapStartSrv_ncev00000012a_XIN_00"
    template="SapStartSrv71" />
<action prefix="XIN" name="XIN AbapSystem" destination="XIN|ncev00000012a_XIN_00" template="AbapSystem" />
<action prefix="XIN|ncev00000012a_XIN_00" name="XIN|ncev00000012a_XIN_00 AbapInstance" destination="XIN|ncev00000012a_XIN_00"
    template="AbapInstance" />
```

The SAPAgentConfig.xml fully configured looks as follows:

```
<?xml version="1.0" encoding="UTF-8"?>
- <sapagent>
    - <destination name="SapStartSrv_vmw4446_SLM_00" class="com.sap.smd.wily.hostagent.sapcontrol.SapControlDestination">
        <property name="hostname" value="vmw4446.wdf.sap.corp"/>
        <property name="sysno" value="00"/>
    </destination>
    - <destination name="SLM_DVEBMGS00_server0" class="com.sap.smd.wily.hostagent.destination.FileDestination">
        <property name="path" value="D:/usr/sap/SLM/DVEBMGS00/j2ee/../work/std_server0.out"/>
    </destination>
    - <destination name="SLM|vmw4446_SLM_00" class="com.sap.smd.wily.hostagent.destination.JCODestination">
        <property name="sid" value="SLM"/>
        <property name="instanceNo" value="00"/>
    </destination>
    - <pool>
        <action name="SapStartSrv_vmw4446_SLM_00" template="SapStartSrv70" destination="SapStartSrv_vmw4446_SLM_00" prefix="SLM|vmw4446_SLM_00"/>
        <action name="SAP GC|SLM_DVEBMGS00_server0" template="SapGC" destination="SLM_DVEBMGS00_server0" prefix="SAP GC|SLM_DVEBMGS00_server0"/>
        <action name="SLM|vmw4446_SLM_00 AbapInstance" template="AbapInstance" destination="SLM|vmw4446_SLM_00" prefix="SLM|vmw4446_SLM_00"/>
        <action name="SLM AbapSystem" template="AbapSystem" destination="SLM|vmw4446_SLM_00" prefix="SLM"/>
    </pool>
</sapagent>
```

The following picture describes how the destinations and actions work in the managed system. As you can see, the destinations are the location where the data will be collected and the actions are the collections of data.

The file **IntroscopeSAPAgent.profile** holds the connection configuration to the Introscope Enterprise Manager. This file will tell the Introscope Host Adapter application what is the Enterprise Manager that the application must connect. The activity Introscope Host Adapter in the Managed System Configuration uses the IntroscopeSapAgent.profile.template file and then creates the IntroscopeSapAgent.profile. The following picture shows an example of IntroscopeSapAgent.profile.

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```
log4j.appender.logfile.MaxBackupIndex=4
log4j.logger.IntroscopeAgent=INFO, console
log4j.appender.console.layout=com.wily.org.apache.log4j.PatternLayout
log4j.appender.logfile.File=IntroscopeAgent.log
log4j.appender.console.target=System.err
introscope.agent.transactiontracer.sampling.enabled=false
com.sap.hostagent.enable=true
log4j.appender.console=com.wily.org.apache.log4j.ConsoleAppender
introscope.agent.enterprisemanager.transport.tcp.socketfactory.DEFAULT=com.wily.isengard.postofficehub.link.net.DefaultSocketFactory
log4j.appender.logfile.MaxFileSize=10MB
introscope.agent.hostName=vmw4446
introscope.agent.customProcessName=SAP HostAgent Process
introscope.agent.extensions.directory=ext
log4j.appender.logfile=com.wily.introscope.agent.AutoNamingRollingFileAppender
log4j.appender.logfile.layout=com.wily.org.apache.log4j.PatternLayout
introscope.agent.enterprisemanager.transport.tcp.host.DEFAULT=vmw4446.wdf.sap.corp
```

Troubleshooting

If the Introscope Host Adapter applications shows issues, for example: agent is not connected to the Enterprise Manager or managed system metrics are not being collected. Then the SMDAgent logs must be checked to find out what is the root cause of the issue. The Introscope Host Adapter application may not work correctly due to distinct issues and the SMDAgent logs will show the root cause.

Logging Information	Log File
Host Agent Information when trying to connect to the Enterprise Manage	/usr/sap/SMD/SMDA<xx>/work/jvm_SMDAgent.out
RFC Connections	/usr/sap/SMD/SMDA<xx>/SMDAgent/dev_jrfc.trc
SMD Agent Application log file. All of the interesting logging for the Wily Host Agent will be found here	SMDAgentApplication.X.log
SMD Agent System log file	SMDSystem.X.log

Byte Code Adapter (Java Agent)

The Byte Code Adapter, also known as **Introscope Java Agent,** is part of the CA Introscope APM solution and is used in combination with the **CA Introscope Enterprise Manager.** The main purpose is to collect data from the applications and systems running on Java Virtual Machines (JVMs). The data collected is pushed from the agents to the Introscope Enterprise Manager where it is persisted.

The byte code adapter is used to monitor SAP NetWeaver AS Java, but the same byte code adapter is also used to monitor other Java-based SAP systems, for example SAP Mobile Platform and SAP BusinessObjects Enterprise.

Details on the byte code adapter can be found on a separate page.

How-To Guides

Installation Topics

✓ Enterprise Manager Upgrade

✓ High Availability Setup for Introscope Enterprise Manager

✓ Enterprise Manager Installation Troubleshooting (SAP Note 3118721)

✓ Enterprise Manager Performance Tuning (SAP Note 3128329)

Setup SSL/TLS Communication for Introscope

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How to Edit/Change the Enterprise Manager Host Name

For some reasons, it may be required to change the host name used by the Enterprise Manager service. The steps below show how to do it:

1) Force the required hostname or IP address in the IntroscopeEnterpriseManager.properties file.

Edit/add property *introscope.enterprisemanager.ipaddress* in file *IntroscopeEnteripiseManager.properties* of the Enterprise Manager. The property introscope.enterprisemanager.ipaddress accepts hostname and IP address as values. Then restart the Enterprise Manager service to the changes take effect.

In order to also adjust the hostname of the navigation links in the CA Introscope WebView, set the property:
introscope.enterprisemanager.fullyQualifiedHostName=<fqn of EM host>
Note: Introscope does not allow to generate navigation links with protocol HTTPS, even if you set property introscope.enterprisemanager.webserver.port with an HTTPS port.

2) Update the Enterprise Manager Configuration in step Define CA Introscope of Infrastructure Preparation.

In the Solution Manager Infrastructure preparation navigate to step 4 Define CA Introscope. Here you can rename the server name of the EM host in edit mode in field Host.

3) Update the hostname configured in the agents of the landscape.

For ALL managed systems, run again the activities Introscope Host Adapter and Byte Code Adapter in the Managed System Configuration. These activities will reconfigure the agents to use the new Enterprise Manager host.

Also, for the agents that have been configured manually it is also required to update the *IntroscopeAgent.profile* of these agents to use the new Enterprise Manager host name.

Troubleshooting

General
Information to be Provided for Support Messages

The following items are required for support messages:

✓ Version of software component LM-SERVICE on SAP Solution Manager Java stack

✓ Version of component ST on SAP Solution Manager ABAP stack

✓ http Remote connection (if not conflicting with company policy) to

  ✓ SAP Solution Manager Java stack

  ✓ SAP Solution Manager ABAP stack

  ✓ Introscope Webview

✓ Credentials (in Secure Area) for a user with admin permission

✓ Log files from component with problems (EM, agent, …)

✓ Screenshots of the problem (if this makes sense)

Enterprise Manager (EM)
Additional Information to be Provided for EM Issues

1. Description of the problem

  ✓ What kind of problem (slow Workstation / Webview, gaps in line chart, MoM losing connection to collectors, …)?

2. Time range

  ✓ When did the problem start occurring?

  ✓ Did the problem disappear without any action? If yes, when did it disappear?

3. Thread dumps

  ✓ If you observe any kind of hang / crash situation trigger a series of thread dumps for the MoM at least, if possible also for the collectors. See below for details on triggering thread dumps.

4. Log files

  ✓ Provide a complete set of log files (full contents of /logs folder) for MoM and all collectors. The log files must cover the time range when the problem occurred. Thread dumps will also arrive in the logs folder (em.log / EMService.log)

5. Heap dumps

  ✓ In case of out of memory situations heap dumps may have been generated (java_*.hprof) in the EM installation folder. They might be needed as well

6. Contents of the /data folder of the MoM installation

  ✓ This contains important self-monitoring metrics for post-mortem analysis

EM Additional Diagnostics Options

To enhance the diagnostics options the following configuration changes are recommended (at least in case problems occur)

✓ Run the Enterprise Manager on SAP JVM instead of the bundled Oracle / IBM JVM. This will provide more details in thread dumps, address some heap dump problems of Oracle JVM and enable a bunch of other diagnostics facilities. Make sure to use the same major Java version as present in the bundled JVM:

  ✓ Java 8 for EM 10.1 and higher

✓ Oracle / SAP JVM: Set the JVM parameter -XX:+HeapDumpOnOutOfMemoryError

Enterprise Manager Log Files

Most relevant log files for problems with EM in sub directory *logs* are:

✓ IntroscopeEnterpriseManager.log

✓ IntroscopeEnterpriseManagerSupport.log

log4j.logger.Manager=DEBUG, logfile

in file file <EM_Home>/config/IntroscopeEnterpriseManager.properties.

On Unix platforms the file em.log in the EM home directory contains helpful information. All console output of the Java VM, including full thread dumps, goes here.

On Windows platforms the logs folder contains an additional file EMService.log. This is written by the Windows service wrapper and may contain important information in case the EM fails to start as Windows service.

Enterprise Manager Version

There are multiple ways to determine the EM version:

1 The log file **IntroscopeEnterpriseManager**.log contains the full version string at each startup of the EM. Example:

8/23/12 09:49:47.289 AM **MESZ** [**INFO**] [**WrapperSimpleAppMain**] [Manager] **Introscope** Enterprise Manager Release 9.1.0.2(Build 581100)

2 SAP Solution Manager discovers the version and displays it in Basic Configuration.

Adapt Enterprise Manager Java VM Parameters

Depending on the OS there are different locations where you adapt the Java VM parameters.

Windows
Adapt the file <EM_HOME>/bin/EMService.conf. The properties **wrapper.java.additional.<number>** contain the Java parameters. Java heap size is specified in parameters **wrapper.java.maxmemory** and **wrapper.java.initmemory**.

Unix
Adapt the file Introscope_Enterprise_Manager.lax in the EM home directory. Property lax.nl.java.option.additional contains all JVM parameters. For Java heap size see Java parameter -Xmx and -Xms.

Recommended Java VM parameters for Enterprise Manager

In case the EM crashes with OutOfMemory (OOM) it makes sense to analyze the Garbage Collections (GC) in more detail. So setting additional java parameters
-verbose:gc -XX:+PrintGCTimeStamps -XX:+PrintGCDetails is recommended.
With java parameter **-Xloggc:gc.log** the GC output is redirected from file em.log to a dedicated file gc.log.

The parameter **-XX:+HeapDumpOnOutOfMemoryError** is useful to trigger automatically a heap dump in case of OOM.
NOTE: heap dumps get a big as the Java heap size is configured. So make sure you have enough disk space available.

The bigger the Java heap size is configured the more it makes sense to work with parallel GCs by
setting additional java parameters **-XX:+UseParNewGC -XX:+UseConcMarkSweepGC** or   **-XX:+UseG1GC**.

Start/Stop the Enterprise Manager

1. Windows Service: Default Windows Service display name is "Introscope Enterprise Manager"

2. Unix: use the script EMCtrl.sh in folder bin:

      ✓ EMCtrl.sh start

      ✓ EMCtrl.sh

      ✓ stop

The command to register the service is **EMCtrl64.bat register** and **EMCtrl64.bat unregister** to remove the Windows Service.

The Windows Service display name and other details can be set in file <EM_HOME>\bin**EMService.conf**. Changes to e.g. property **wrapper.displayname** modifying the default service display name "Introscope Enterprise Manager" of an already registered Windows Service only take effect after unregistering and registering the Windows Service.

Other properties you may need to change e.g. if you run several EMs on the same Windows host are **wrapper.name** and **wrapper.description**.

Collect Thread Dumps from the Enterprise Manager

If the Enterprise Manager appears stuck it may make sense to trigger a thread dump. The procedure differs depending on the operating system and the mode it is started.

Windows
If the EM is running as service (which is normal): Open a command prompt as administrator and issue the command sc control IScopeEM 255 (IScopeEM is the default name of the service). The thread dump will be appended to the service log file logs/EMService.log. For processing in any thread dump analysis tools you will have to remove the wrapper prefix added to every line.

Example output of the command:

C:\usr\sap\ccms\apmintroscope>sc control IScopeEM 255

SERVICE_NAME: IScopeEM

        TYPE   : 10 WIN32_OWN_PROCESS

        STATE   : 4 RUNNING

                        (STOPPABLE, NOT_PAUSABLE, ACCEPTS_SHUTDOWN)

        WIN32_EXIT_CODE   : 0 (0x0)

        SERVICE_EXIT_CODE : 0 (0x0)

        CHECKPOINT   : 0x0

        WAIT_HINT   : 0x0

Using jmxremote or SAP JVM is an alternative, but requires extra configuration.

If the EM is launched interactively (Introscope_Enterprise_Manager.exe) you can hit Ctrl-Break to trigger a dump. Unfortunately you get it on the console, difficult to capture.

Unix
On OS level identify the process ID of the Enterprise Manager, e.g. via the command ps -ef | grep java.
Send signal 3 to this process: kill -3 pid.
The thread dump will be written to the file em.log in the EM installation directory

Collect Heap Dumps from the Enterprise Manager

If the EM crashes and you find errors like "JAVA heap space out of memory" in the IntroscopeEnterpriseManager.log may have either configured the EM with low Java heap size (then see "Adapt Enterprise Manager Java VM parameters" above to increase the heap size) or there could be a memory leak. For the latter heap dumps are needed for analysis. To get heap dumps in case of an OutOfMemory set the additional java parameter **-XX:+HeapDumpOnOutOfMemoryError** (see "Adapt Enterprise Manager Java VM parameters" above; a restart of the EM is needed). Setting this parameter automatically a heap dump is triggered if an OutOfMemory occurs. The heap dump could consist of more than one file and is usually named java_pid<pid>.*.

In case you want to trigger heap dumps manually set java parameter **-XX:+HeapDumpOnCtrlBreak**. With every triggered thread dump (see "Collect Thread Dumps from the Enterprise Manager") you then also get a heap dump.
NOTE: heap dumps get a big as the Java heap size is configured. So make sure you have enough disk space available.

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The EM provides several self-monitoring metrics about its internal status. The metric Overall Capacity (%) is also reported for each EM in the *SAP Solution Manager Administration* work center. A value of 100% means that it has reached its capacity limit. Short peaks beyond 100% are not critical. Only if the capacity is permanently substantially beyond 100% you will experience problems like missing data points, poor performance, etc. You can find this Overall Capacity (%) metric in the Introscope Investigator via this path: Superdomain -> Custom Metric Host -> Custom Metric Process -> Custom Metric Agent -> Enterprise Manager -> Overall Capacity (%).

A more detailed view is available in the Introscope Investigator tree via the following path: Superdomain → Custom Metric Host → Custom Metric Process → Custom Metric Agent → Enterprise Manager. If you select the node *Enterprise Manager* in the tree, the tab *Overview* on the right side displays eight charts on EM sanity, as shown in the screenshot. It reveals heap utilization, number of metrics and agents.
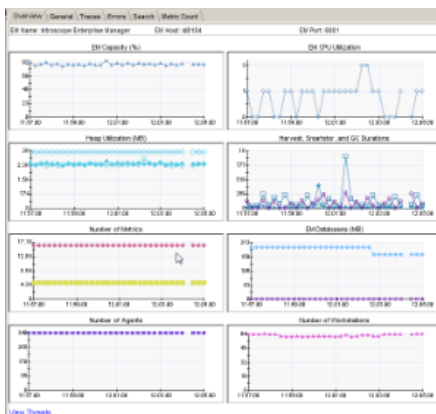
Perflog Analysis

The EM collects Metrics about itself and reports them to a file called perflog.txt under 15 second time periods. By analyzing the entries in this file, it is possible identify beforehand if the EM is becoming overloaded and avoid future issues.

Java Bytecode Adapter (BCA)
See troubleshooting section on dedicated page Java Bytecode Adapter (BCA).

Introscope Host Adapter (wilyhost)
Check if Introscope Host Adapter is connected to the Enterprise Manager
It is possible to check if the wily host application is connected to the EM directly in the Introscope Investigator. By default the Introscope Host Adapter application connects to the EM using the process name = **'SAP HostAgent Process'** and agent name **'SAP HostAgent <SMDAgent_instancename>'.** The following picture shows the same agent of the above log entry connected to the EM.

To find information about the connection between the Introscope Host Adapter to the Enterprise Manager it is required to check the **jmv_smdagent.log** (or jvm_smdagent_<node name> in case agents on-the-fly is used). This file shows the information about the connection between the Introscope Host Adapter application and the Enterprise Manager.

In case of connections problems between the Introscope Host Adapter and the Enterprise Manager, check the following:

1. **Enterprise Manager host and port:** Ensure that the Enterprise Manager host and port used by the Introscope Host Adapter to perform the connection are correct. If the EM host and port are not correct, then check the following:

    1. Check/Update the Enterprise Manager Configuration in step Configure CA Introscope of the Basic Configuration (SOLMAN_SETUP);

    2. Check the Enterprise Manager which has been chosen in step Enter System Parameters of the Managed System Configuration of the affected system;

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2. **Check network connection:** If the Enterprise Manager host and port used by the Introscope Host Adapter is correct, then perform a telnet command to the EM host and port to check whether the network connection between the Introscope Host Adapter and the EM hosts works fine. Example of the command is:

   ✓ telnet <enterprisemanagerhost> <em_port>

3. **Check Enterprise Manager load:** If the checks 1 and 2 above are ok, then check the Enterprise Manager health. If the EM is overloaded the agents cannot connect to the Enterprise Manager.

Log Files and Log Levels

Relevant logfiles for problems with Introscope Host Adapter are:

✓ SMDAgentApplication*.log (most content here)

✓ SMDSystem*.log (in case wilyhost does not start up at all)
They are persisted in directory /usr/sap/<SMDAgentID>/<InstanceNo>/SMDAgent/log

The log level for SMDAgentApplication.log might have to be increased to DEBUG for troubleshooting. This is done via diagnostics agent administration.

If the Introscope host adapter does not show up in the Investigator the file **jvm_SMDAgent.out** may also be relevant. It corresponds to IntroscopeAgent*.log of the BCA. To increase the log level for the Introscope runtime of the host adapter (in **jvm_SMDAgent.out**) edit the application resource "**IntroscopeSapAgent.profile**" and change the property

log4j.logger.IntroscopeAgent=DEBUG, console

Thread Dumps

Thread dumps for the Introscope host adapter means thread dumps for the whole diagnostics agent. They can be triggered in various ways, e.g.:

1. Via the SAP Management Console / MMC: Right-Click on the java process for the agent and click *Dump Stack Trace*

2. On OS level (Unix): find out the process ID of the agent process and issue the command kill -3 <pid>

In any case the thread dump is written to the file std_smdagent.out in the work directory of the diagnostics agent.