

APM 9.1 Installation/Configuration Tips

Below are the primary things to remember when installing/configuring a new APM cluster, but which aren't necessarily handled out-of-the-box. **Titles underlined** should be considered both for pilot/concept work as well as actual implementations.

EM

- **Documentation**. Docs are no longer included within the product and must be downloaded separately. Either provide the bookshelf directly to the customer, or download the doc and place the .war file on the MOM so that doc is available via the workstation's help menu. To download the .war file, go to <http://support.ca.com>, login, choose "Download Center" from the left-side navbar, and type "Application Performance Management" in the product search box (get multi-platform). Select the right version to get the download listing and choose the one entitled "Documentation DVD". This contains the bookshelf and also the .war file. Extract the .war file and copy it to the webapps/ directory on the MOM (overwriting the existing placeholder .war file).
- **EM Heap Tuning**. Default settings are still 512mb/1024mb. Increase this to 2gb (both min/max) for collectors, larger for stand-alone and/or MOM EM's. If updating the heap sizes on Windows, be sure to do so on both the .lax file and also in the service wrapper config file (this is the one the service wrapper uses for settings, not .lax).
- **EM Time Sync**. In a cluster, time sync needs to be set. If not, and if collectors are off by more than 3s, the repeated check (every 15sec) could cause the MOM to go OOM.
- **APM Status Console**. The new APM Status Console needs to be enabled for users not in admin group or they will not see the launch button in the investigator. The server.xml file (on the MOM) is used for activities relating to operation of the Enterprise Manager. Add the following to it: `<grant user="your_user/group_here" permission="apm_status_console_control" />` (or full)
- **CEM TESS Services**. Ensure the TESS services are assigned to the correct EM (they default to the first non-MOM).
 - If you have dedicated EM for CEM services, set loadbalancing.xml to keep ALL agents from connecting to it (so that it can focus only on CEM workloads). The rule in that file should look something like:

```
<agent-collector name="CEM Services">
  <agent-specifier>.*</agent-specifier>
  <exclude>
    <collector host="your.host.here" port="5001"/>
  </exclude>
</agent-collector>
```
- **Management Modules**. Remove them from the collectors as they aren't needed there, only on the MOM. This will free up CPU cycles.
- **Start/Stop (Init) Scripts**. Though the EM comes with a start script, it's not setup for UNIX-style init (on server reboot). Install automatic scripts.
- **Domains**. Copy the domains.xml file (keep it synchronized) across all EM's in a cluster.
- **Thresholds/Clamping**. Validate clamping thresholds in the apm-events-thresholds-config.xml. This includes settings for the amount of disk space kept for traces (1gb).
- **WebView**. Don't run web view on the MOM (from sizing guide).
- **SmartStor Dedicated Storage**. Once you have dedicated disk, be sure to enable the property `introscope.enterprise.manager.smartstor.dedicatedcontroller=true`.
- **Load Balancing**. With Introscope 9.1+, even agents that connect directly to a collector EM will be load balanced as though they'd connected directly to the MOM. With 9.1.1.1, a new CLW command "autoprepare loadbalancing.xml" prepares loadbalancing.xml automatically.
 - Note: This command should be run only during the upgrade process. This command should be run after Enterprise Managers are upgraded and before agents are upgraded.

- When this command is run, MOM collects the runtime information of all the uncontrollable agents that have connected directly to the collectors and populates that information in loadbalancing.xml. So, it is important that all the uncontrollable agents that connect directly to the collectors are up and running and connected to the collectors for this information to be complete. Be aware that if the agents are also upgraded, then the agent collector connection relationship will not be captured in loadbalancing.xml.
- Customers are directed to ask their CA Technologies representative to access the document AgentCollectorLoadbalancingXMLAutoPrepare.pdf, which is attached to this issue no. 77780, for internal instructions..
- **Control EM Service Logging (Windows).** By default, the EM logs activity from the Windows wrapper service in 10mb log files but with no limit on the number of files. If you limit the output from the EM as suggested below, this will lower the amount of logging on these files, but you should still limit the number of these logs by editing bin/EMService.conf file, which is set to "0" (unlimited) log files by default.
 - wrapper.logfile.maxfiles=<valid number>
- **Eliminate EM Double Logging.** By default, if you use the EMCtrl.sh start/stop script (UNIX), logs are written by Introscope to the normal locations, but are also sent to em.log (with the very same content), where that file will then grow to fill the file system. On Windows systems, this same output is double-written to the EMService.log file as well. To fix this, set the EM to log only to files and not to STDOUT. This is done in the IntroscopeEnterpriseManager.properties file by simply removing "console" in the log4j section in the agent profile:
 - log4j.logger.Manager=INFO, console, logfile

APM DB

- **Installation.** Install psql first, by itself, and then run installer again and do the EM; that way if psql fails (as it often does on windows) you don't have to back out and half-baked EM install. If you have installation problems, look for a %TEMP%\install-postgresql.log and %TEMP%\bitrock_installer.log. These files contain the real errors; the APM installer only contains a wrapper without any error rollup.
- **APM DB Pruning for Triage Map.** Application triage map data pruning is enabled by default to be done on the APM database in a cluster environment for standalone Enterprise Managers and MOMs; it does not run on collectors (9.1+). See documentation for details on how to change the retention time for map elements. Data is kept for 1 year by default.
- **DB Tuning.** Set the following in the psql config at : \$PGHOME/database/data/postgresql.conf
 - max_connections=1000
 - effective_cache_size = 1GB
 - These property changes will require a restart of postgres.
- **DB Backups.** On Unix/Linux, it is here: <EM_HOME?/install/database-scripts/unix/dbbackup-postgres.sh. There is a corresponding .bat script on Windows. You need to schedule with cron or some other scheduling mechanism.
- **Oracle APMDB Oddities.** In Oracle Database 11g Enterprise Edition Release 11.2.0.1.0 - the property "deferred_segment_creation" is true by default. This defers the allocation of space for non-partition tables at the create table time. However the space is allocated for table when the first record is inserted. At that time in our initdb scripts "sequence.nextval" is called twice and that results in adding the record with id starting with 2 rather than 1. In other initdb tables this foreign key is inserted as 1 which is in this case is not there in the parent table resulting in "parent not key not found error"
 - Solution: For 11gR2 Oracle DB run the following sql once the user is created for the given database. This will allow the segment (space) allocation at the create table time itself. And everything will work as normal.
"ALTER SYSTEM SET deferred_segment_creation=FALSE scope=both"
 - To check if the table segment is created or not run: "select table_name, segment_created from user_tables order by table_name"

Workstation

- **Workstation Heap.** The default max heap in 9.1 is 512mb. Since the EM now offloads historical-query loads to workstations, this may not be large enough. If customer workstations can handle it, increase that heap to 1gb (or larger). You can adjust the webstart workstation heap settings here (on the MOM): `<ISC_HOME>\product\enterprisemanager\plugins\com.wily.introscope.workstation.webstart_9.1.0\WebContent\jnlp\workstation.jsp`. Then search for `java-vm-args`.
- **Launch Shortcuts.** When using webstart, customers tend to go back to the web page over and over, which is ugly and time consuming. Instead, install shortcuts from the java cache, which will make the webstart workstation look as though it was installed locally (giving icons on the desktop/start menu, and adding an add/remove program entry).
 - If no desktop or start-menu shortcuts are installed, create them manually by opening the java control panel, general tab, clicking "view..." under temporary internet files, and then right-clicking on the appropriate Introscope workstation entry and choosing "install shortcuts".
- **Java 7 Web Start.** By default, Introscope only allows use of Java 6 to launch WebStart. Using the following, you can change the JNLP web start requirements to allow Java 7 (default is JRE 1.6.0_05+)
 - Edit the following two files to remove "1.6*&1.6.0_05+" from the specification line:

```
<j2se version="1.6*&1.6.0_05+"
In
<ISC_HOME>/product/enterprisemanager/plugins/com.wily.introscope.workstation.webstart_9.1.0/WebContent/jnlp/
  workstation.jsp
  com.wily.introscope.workstation.feature.jsp
```

Agent

- **Dynamic Instrumentation.** Ensure dynamic instrumentation is enabled if you're going to want it (it's not always on, depending on the platform)
 - Add permission "dynamic_instrumentation" in the domains.xml file, along with "run_tracer" and "read" so that you can actually run it once enabled.
- **CEM Integration.** Agent decorator property for CEM integration (and don't forget the pbd that goes with it).
- **Custom Instrumentation.** If creating custom PBD files, errors are not detected with a simple `BlamepointTracer`. You must use `ExceptionHandlerReporter` and "...WithParameters" (or other error tracer) in your PBD to catch errors successfully.
- **Eliminate Agent Double Logging.** By default, agent output is written by Introscope to the normal locations, but is also sent to the application server's logs as well (with the very same content). When DEBUG logging is turned on, this can write too much info to the app log. To fix this, set the agent to log only to files and not to STDOUT (where it is forwarded to the app-server log). This is done in the `IntroscopeAgent.profile` file by simply removing "console" in the log4j section in the agent profile:
 - `log4j.logger.IntroscopeAgent=INFO, console, logfile`

TIM

- **Packages.** Do not use the installonce image or installupdate (they will lock permissions and break future updates), just the TIM and 3rd party packages.
 - MTP-based TIM uses different packages than TIM-soft; be sure you download the correct format.
- **Monitor the TIM.** Install Chris Kline's TIM EPA to monitor TIM CPU, packet-processing issues, throughput, etc. It parses the TIM status pages and scrapes the HTML; no agent install necessary. <http://cawiki.ca.com/display/wilynet2/TIMMonitor+Fieldpack> (internal link, ask your CA rep if you need help to download). Public link may be available via Dropbox at <http://bit.ly/V2nymp>.
- **TIM APM Scripts.** Install Joerg Merten's "APM-scripts" from http://zero2hero.ca.com/ftp_apm91/ (internal link),
 - The apm-script fieldpack provides 3 scripts.

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Chris Kline 8/9/12 8:13 AM

Comment [1]: +PBD Rules
-When using wildcard matching for classes (like package and classname), always use differentInstances, in order to keep overhead low and simply identify which layers are called and how long they take. Then, once you identify which specific classes to go after, remove the differentInstances so that you can go after specific calls, but on a more granular level
-BlamePointTracer doesn't actually watch for exceptions! Have to do that separately. Always use a TraceWithParameters when you want to catch exceptions. So better to use TraceOneMethodWithParametersIfFlagged AND ExceptionReporter (or one of the other 3 error tracers) type of stuff.
1.BlamePointTracer sets up empty stalls and errors in order for heuristics to have something to watch, though they are empty until you add additional tracers to get nonzero values. That's the only reason they are part of BPT.
2.ExceptionReporter gives you both errors and stalls, since a stall is a form of an error.

- Hardening to DoD Standards (Very tight). Once hardened, you can't install any more software.
- sysStat is a script that will extract all system based information out of any location it can, to make sure the system is installed Ok, and has no issues.
- netStat is a script that will extract all network related information on a TIM installation that it possibly can.
- Usually, when 2 and 3 are run, we can extract to 90% what is happening on the system when providing remote assistance.
- The apm-POC package will install the necessary libraries for tethereal/wireshark/tcpdump, which can be useful for troubleshooting network feeds. This fieldpack provides the following functionality to the Field Engineer (not left on production):
 - Wireshark (console version only) - call using tshark
 - Tcpdump (console version only) - as wireshark - old version
 - iptraf - Interactive IP traffic monitor
 - tcpdump - replay network traffic stored in network files
 - ntop - display top network users
 - Run this program first on the command-line using "ntop", and set the admin password. Check the /etc/ntop.conf file, and only after start the service using "service ntop start". Note also that ntop starts a small http-server listening on port 3000. You will have to adapt the iptables firewall and any other firewall to access the interface.
 - ssldump - to be able to simulate the MIM on the TIM with the real key to look into encrypted traffic.
 - iftop - display bandwidth usage on an interface by host
 - A link to uninstall this fieldpack after the work is done is provided in the web-information page.
- **Hardened TIM:** A custom RedHat image is available from Joerg Mertin which has been hardened for DoD/PCI Compliance standards. See [http:// zero2hero.ca.com/released/](http://zero2hero.ca.com/released/) ([internal link](#))