

Four Years of Tuesday Tips 2011-2014

.v01j FINAL

12/26/2014

Hallett German

hallett.german@ca.com

CA Technologies

Distribution Notes: This document may be freely distributed to all interested audiences to help APM Administrators and Users. However, no modifications may be made to this work.

Table of Contents

[Section 0: Introduction](#)

[Section 1: Best Practices](#)

- 1.1 [The Disposable Environment \(Tip #1\)](#)
- 1.2 [Self-Documenting Your APM Customer Experience Configuration \(Tip #2\)](#)
- 1.3 [Naming Standards \(Tip #7\)](#)
- 1.4 [System Administration Philosophies \(Tip #15\)](#)
- 1.5 [Cleaning Up the Backyard \(Tip #17\)](#)
- 1.6 [25 APM CE Tips for Stable and Scalable Sites \(Tip #25\)](#)
- 1.7 [Optimization: The Forgotten Task \(Tip #26\)](#)
- 1.8 [Creating an APM CE Roadmap \(Tip #28\)](#)
- 1.9 [Three Researched APM CE Issues \(Tip #32\)](#)
- 1.10 [APM Oil Change \(Tip #35\)](#)
- 1.11 [Effective Support Meetings Speed Up Case Resolution \(Tip #36\)](#)
- 1.12 [APM CE Urban Legends and Misconceptions \(Tip #42\)](#)
- 1.13 [Six Additional APM General Troubleshooting Approaches \(Tip #44\)](#)

1.14 [Cascading Issues \(Tip #48\)](#)

[Section 2: Capturing Transactions: TIM](#)

2.1 [Some Useful Network Documents \(Tip #6\)](#)

2.2 [APM Customer Experience, Content Types, and APM 9.1 \(Tip #9\)](#)

2.3 [Top Five TIM Mysteries and What to Do About Them \(Tip #18\)](#)

2.4 [Seven Mysteries of TIM Communication \(Tip #19\)](#)

2.5 [Private Key Overview \(Tip #22\)](#)

2.6 [Top APM CE Misconfigurations and their Impact \(Tip #23\)](#)

2.7 [Is the Issue on TIM or MTP Side \(Tip #29\)](#)

2.8 [Five TIM KBs \(Tip #34\)](#)

2.9 [APM TIM 9.6: Unofficial New Rules \(Tip #43\)](#)

[Section 3: Transaction Lifecycle](#)

3.1 [The APM Script Recorder and a 404 Error \(Tip #3\)](#)

3.2 [Setting Up a Business Service \(Tip #5\)](#)

3.3 [A Transaction Definition Creation Mechanism Decision Matrix \(Tip #8\)](#)

3.4 [APM Transaction Definition Setup - Part 1 Strategies \(Tip #11\)](#)

3.5 [APM Transaction Definition Setup - Part 2 Tactics \(Tip #12\)](#)

3.6 [APM Transaction Definition Lifecycle : Part 1 \(Tip #13\)](#)

3.7 [APM Transaction Definition Lifecycle: Part 2 \(Tip #14\)](#)

3.8 [Keeping your Definitions Current \(Tip #21\)](#)

3.9 [Application Monitoring Strategy \(Tip #27\)](#)

[Section 4: Reporting](#)

4.1 [Export Tool vs. Canned Report \(Tip #4\)](#)

4.2 [APM 9.1 and Semi-Canned Reporting \(Tip #10\)](#)

4.3 [Dude, Where's My Report \(Tip #30\)](#)

[4.4 **Component Timing Graphs \(Tip #31\)**](#)

[4.5 **E-Commerce and User Groups \(Tip #46\)**](#)

[4.6 **SLA Reports \(Tip #47\)**](#)

[**Section 5: Database**](#)

[5.1 **APM Backup \(Including Oracle and WTG!\) and Export Overview \(Tip #16\)**](#)

[5.2 **APM CE Backup, Config and Business Transaction Export \(Tip #20\)**](#)

[5.3 **APM Database Owner's Manual: Overview \(Tip #38\)**](#)

[5.4 **APM Database Owner's Manual: Upgrade \(Tip #39\)**](#)

[5.5 **APM Database Owner's Manual: Maintenance \(Tip #40\)**](#)

[**Section 6: Integration**](#)

[6.1 **Three Wider Scope KBs \(Tip #33\)**](#)

[6.2 **Configuring Percent of Slow Time \(POST\) for APM CE Introscope \(Tip #37\)**](#)

[6.3 **A General Approach to Troubleshooting APM Integration Issue \(Tip #41\)**](#)

[6.4 **APM CE as a Metric-Generating Engine \(Tip #45\)**](#)

Section 0: Introduction

[Return to TOC](#)

For the first time, all Tuesday Tips (Now called Tech Tips) are together in e-book format and are organized by topic. There are forty-eight so far and no end in sight! Many of these are under-documented and undocumented areas that you will find nowhere else. I hope you find these tech tips enjoyable and useful.

Note this distributed pretty much as is. Content has not been extensively proofed nor links checked. In some cases some updates of information received after the article was published was included and is so noted.

Hallett German. December 2014

Section 1: Best Practices

[Return to TOC](#)

1.1 The Disposable Environment (Tip #1)

[Return to TOC](#)

When going on an engagement with the APM Partner Mike Risser, I was impressed how he easily created "just in time" Introscope dashboards to solve a situation and then delete them.

The same idea also applies to APM Customer Experience. Here are some examples:

1) Create a business application/service named "SANDBOX" to place all autodiscovered transactions that you wish to analyze before moving into production or just to analyze a particular situation.

When all transactions are moved into production, then delete the business application/service.

2) Using the canned or semi-canned (Customer Export Tools) reports, create ad-hoc reports for special situations, user groups, timeframes etc.

3) Changing slow time thresholds. First a low number to get defects then raising it once production ready.

4) Temporarily creating transactions when you do not know the application at all or do not have access to the application development staff. Once you understand the user/session/user group identifiers and what parameter/value pairs can make up an application, then the definition can be thrown away.

As time allows, I will expand this to a public tech note.

Discussion Questions

1. What are your examples of "throw-away" transactions and reporting?

1.2 Self-Documenting Your APM Customer Experience Configuration (Tip #2)

[Return to TOC](#)

One of the lesser known features of APM Customer Experience is that you can take almost any screen on the TESS GUI interface and copy it to an MS Excel spreadsheet, MS Word document, or another document type. By doing this, you can start to build a detailed configuration setting workbook. This is useful for capturing Slow Time Settings, Web Server Filters, TIM IP addresses and much more. Also, by using a screen macro program, you can automate the configuration setting capture process.

I'd like to hear back if you are using this or other methods to capture your APM Customer Experience configuration.

1.3 Naming Standards (Tip #7)

[Return to TOC](#)

One often overlooked APM best practice is that of naming standards. This can provide the following advantages:

- Makes it easier to find the correct business service or Introscope Management Module element (such as dashboards and alerts) in the APM Customer Experience Console, Introscope Investigator, and other locations.
- Provides maximum detail in the smallest amount of space describing the application, environment, transaction, and other information.
- Used in sorting fields.
- Offers a consistent look to your application components.
- Helps show the different steps in a transaction.

So to start the discussion rolling.

- Does your APM Environment have naming standards?
- If not, are you planning to have naming standards?
- If not why?
- What are the drawbacks of naming standards?
- How often are these updated?
- What are the ways that naming standards help make your life easier in performing APM administration?
- What enhancements would you like to see to make naming standards easier (e.g. width of fields)?

Sometime back, a customer asked me for a CEM naming standard documentation. At the time, there wasn't one, so I created the document below. Enjoy!

APM Customer Experience Naming Standards

<https://communities.ca.com/documents/2301951/d13c2ae9-b2f6-49e1-8d5a-aa56a7bdd96f>

1.4 System Administration Philosophies (Tip #15)

[Return to TOC](#)

This month, we take a brief vacation from the APM transaction definition lifecycle to talk about a largely ignored topic.

In having met or trained 70 APM Administrators, I've learned a lot about you. You are all very hard-working in a typically reactive environment. Application monitoring is just one part of your job. (When things go south with the application, application stakeholders soon nervously hover around your desk asking "what does APM say?") Also, APM is just one of many tools that you support. There isn't a lot of time for education. But there are those rewarding times where APM has shown what is wrong with an ailing application. As a result, customer satisfaction has been raised, revenues are maintained or increased, and the application gets heavily used for another day thanks to your efforts.

In my experience, companies have one of three types of system administration philosophies. Knowing the system administration philosophy, can determine job responsibilities and expected outcomes. (Full disclosure. This is a topic I covered at some length in an unpublished work.)

MINIMAL OR DO NOTHING. In this environment, APM servers mostly are just left alone to generate metrics and reports until such time they stop doing that. Occasional system administration tasks such as upgrades, monitoring new APM agents or application transactions are performed. The advantage of doing this is that it doesn't take a lot of time to do. The disadvantage is the site is not leveraging full advantage of APM or making it an active part of their application lifecycle. Your APM environment is also likely to be unoptimized, and not current with your application's monitoring needs.

REACTIVE. This is the typical environment. APM is used as yet another "break/fix" tool. Administrative responsibilities may include some upgrades, adding new agents/application transactions, some report interpretation, and periodic upkeep of servers. The advantage is the site is using the solution to fix pressing issues and has some sense of what a successful application "steady state" is. The APM servers are also looked after and not outdated. The disadvantage is not using the product for things to get out of "reactive ****" such as capacity planning, application optimization, and event correlation. There are not always lessons learned reviews to avoid a performance issue in the future.

PROACTIVE. This is rarely encountered. There are a wide range of proactive APM monitoring activities that can be implemented as outlined in Mike Sydor's CA Press book -- all the way up to "monitoring nirvana". The advantage is that you have is your APM environment is keeping your application's needs. Application performance trends are well understood -- in the past, today, and

tomorrow. The disadvantage is that it takes time and patience to see full results.

It is my wish that you reflect on this article and use it as a starting place on how you can serve your application users better.

Discussion Questions

- 1) Did the opening describe your environment?
- 2) If in a reactive environment, what is your company doing to stabilize applications?
- 3) Are there other system administration philosophies that could apply to application performance monitoring?
- 4) How well do you know your application's past, present, and likely future performance?
- 5) Are you actively keeping up monitoring with the changes in your application?

1.5 Cleaning Up the Backyard (Tip #17)

[Return to TOC](#)

While working on a customer site involves some problem-solving and thinking on your feet, it also includes making recommendations for required housekeeping.

I envision it as cleaning up the front yard to get to the entrance. What are the risks of "keeping a messy yard?"

- Extra data storage is used to store and CPU/memory to process a growing number of metrics, reports, application maps, transaction traces, dashboards, etc. whether needed or not.
- It takes more time to read through a log with non-stop avoidable error messages simply because an APM management module has an invalid path.
- More likely to have database and performance issues because of the "extra weight."
- More unneeded metrics increases the possibility of clamping as well as extra time to find the true metrics that you need. It also makes it harder for someone new to ramp up in learning what is important.
- On the APM CE side, many false positives about invalid or missing components exist that would have been eliminated in an updated recording
- It is harder to show value of solution if cannot find crucial metrics and reports quickly. This makes it less likely to appeal to executive audiences with all the time sifting to find the right reports

Why is an APM "messy yard" maintained?

- As stated in previous months, APM administrators often have a lack of time due to being in a reactive environment.
- Cleanup is not perceived to have a high payback for the time involved.
- APM Administrators do not have the experience to do a rigorous cleanup.
- APM does not provide comprehensive utilities to do an extensive cleanup.

So how does one get a "clean yard" in the APM universe?

- 2-4 times a year, take the time to
- Eliminate avoidable errors in the logs.
- Review if anything can be removed (management modules, alerts, SNMP traps, dashboards, CEM recordings and recording templates/parameters), APM Reports (Introscope and CEM), CEM definitions (run the Business Transaction Save to CSV button).
- Optimize configuration (turn off unnecessary logging, evaluate definition and alert thresholds).
- Vacuum APM database if sluggish. (This happens automatically but sometimes an extra manual run is needed).
- Review monitoring strategy, monitoring roadmap, run book

Is there a "worst APM backyard ever" that I encountered? As much as it would be fun to tell, that's an answer that I'll keep to myself. Please do what you can not to be a future candidate for this category. Clean early and often!!

Discussion Questions

- 1) Question for Yourself -- Is your "APM backyard" clean or messy? If messy, when do you think you may clean it up?
- 2) How often do you cleanup your "APM backyard?"
- 3) Would having an APM utility to assist you doing this help?
- 4) What additional or related topics would you have liked to see the above article include?

1.6 25 APM CE Tips for Stable and Scalable Sites (Tip #25)

[Return to TOC](#)

According to my notes, this is the 25th Tuesday Tip that I have written. A lot of underdocumented areas and best practices have been covered so far and many more are planned. Suggestions for future topics are welcomed.

Here are twenty-five tips that you can do to have a stable and scalable APM CE environment. Many of these were covered in past Tuesday Tips.

1. Do your own self-healthcheck of APM CE environment on at least a bi-monthly basis. Things to check are the following:

- APM CE metrics being/closed to being clamped.
- TIM issues due to changes in traffic load and quality.
- Private keys about to expire.
- User groups near limit.
- TIM/TESS-MOM GUI are less responsiveness.

- Too many defects/incidents/users.
- New errors in logs.
- New types of APM CE logs.
- Review perflog and supportability metrics for EM and database health.

This can be supplemented by a bi-monthly/quarterly health check by APM Professional Service staff.

2. Maintain a configuration book with screenshots of APM CE settings. This can be supplemented by a runbook.
3. Maintain a spreadsheet of the values matched on for transaction definitions. This will help avoid definition overlap.
4. Create and maintain a monitoring strategy document.
5. Create and maintain an APM monitoring roadmap which lists new/updated applications will be monitored that period.
6. Have multiple APM environments including one to test real production scenarios and to capture updated APM definitions.
7. In production, have a business service for sandbox testing before deploying an APM transaction definition.
8. Have a naming standard for APM CE elements. See the tech note on this site for additional information.
9. Do an architecture review at least twice a year for fast changing environments.
10. Use the Run to CSV tool periodically to see if definitions are no longer seeing hits.
11. Have a separate APM environment for pre-APM 9/historical data.
12. Be able to recreate environment using backup, configuration and business transaction export.
13. Create a disposal environment when it make sense such as for temporary reports and applications. (See past Tuesday tip.)
14. Keep the environment clean of unneeded and used information. (See past Tuesday tip.)

15. Document your APM architecture and network environment and keep it current. This will be a tremendous help during problem resolution.
16. For transaction definitions, typically have no more than twenty transactions per application. When setting up transaction matching rules for no more than one to four parameters. Remember that this is an AND not OR condition so each parameter-value pair must be matched.
17. Continuously optimize and maintain your transaction definitions. Else old definitions will result in false positives or missing data may occur.
18. Determine your APM CE Administration Philosophy and then choose appropriate tasks to perform. (See past Tuesday Tip.)
19. Make APM as part of the development lifecycle so new/updated APM CE definitions are added to production before deployment.
20. Always keep your servers time synched, with plenty of disk space, CPU, and Java heap.
21. Do not capture anything that is not needed such as users/user groups, applications, report, and metrics. Also do not keep anything longer than needed.
22. If an outage does occur, do an after-action review to determine which changes are needed and how this can be proactively tracked in the future.
23. When time allows, read the various documents available on this site to take advantage of current and new features.
24. Periodically discuss with APM users on what they like and like less about the product to determine any missed opportunities or future projects that can be pursued.
25. Internally issue a quarterly APM Report Card on what changes were made in the environment, what problems were resolved due to APM, APM operating issues encountered, and discussion of APM roadmap/monitoring strategy.

I hope to meet or talk to you in the future and would love to hear back on how Tuesday Tips have helped you!

Discussion Questions

1. How of these twenty-five tips are you doing?

2. Do you have additional tips to recommend?
3. How has the Tuesday Tips articles helped you?

1.7 Optimization: The Forgotten Task (Tip #26)

[Return to TOC](#)

In these APM Tuesday Tips, a framework has been presented in parts. One important component has been in the APM Transaction Definition Lifecycle which included an optimization step. This optimization can be expanded out to all of APM in general. (This tip is based on the Performance and Sizing Guide, and various internal health check/optimization documents.) It also fits well with the proactive system administration philosophy discussed in earlier articles,.

The first step is to know your environment.

- Is it stable or growing at some pace? Are more applications planned to be monitored soon? Are there changes planned to versions of APM environment or integrations?
- Are there performance glitches in your APM environment? Are they customer-impacting or administrator--impacting? Are they recent or ongoing?

The second step is to do a health check twice to four times a year. It should include:

- Documenting the environment
- Summarizing performance issues in last 4-6 months
- Historical analysis
- Recent configuration changes
- Recent installs/upgrades/installations
- Overall assessment of environment
- Reports and Key Metrics
- Customization added recently
- Errors in logs

This should address such Introscope specifics such as

- Cluster health (Overall, EM, Database, Smartstor, Load vs Capacity, Harvest/Smartstor Durations)
- Supportability metrics
- Naming standards
- Authentication/Authorization issues
- Operating systems and database configuration settings.

It should also include APM CE specifics such as

- SSL/Network Data Quality
- Number False Positive Defects
- Filters (Hardware, Span/tap, web server)

- User Groups (Too Many, Not organized well etc.)
- Naming standards
- Stats and Defects Aggregation Health
- HTTP Plug-ins
- APM CE Configuration

The third step is to make the needed changes. A sample of these are below:- Removing unneeded things (metrics, calculators, alerts, user groups, definitions)

- Change scope of metric groupings
- Redistribute the agent connections.
- Tune settings On EM (Increasing EM Heap Size, Transport Outgoing Message Queue Size, others)
- Disable unneeded agent tracers
- Tune settings on APM CE (Domain Settings, User Accounts, Web Server Filters. My Reports, Data Retention, Incident and Business Impact, Introscope Settings. SLA and Defect Thresholds (According to Application Group's Specifications)

If you spend the time being proactive and optimize your environment, you should have less outages and performance problems. Else, one risks dealing with the alternative of more outages and performance sluggishness.

Discussion Questions

1. Are you doing health checks on your APM environment? How often?
2. Have they improved overall performance?
3. What additional documentation do you need to have a healthy environment?

1.8 Creating an APM CE Roadmap (Tip #28)

[Return to TOC](#)

This is a continuation of last month which covered APM Monitoring Strategy. This month we review an Application Roadmap for APM CE. I would love to hear if you are actually doing this and what works for you or not.

Note that some companies are not doing because they are too busy being in the Hobbesian universe of application reactive hell. That is the applications are constantly growing and having issues and administrators do not have time to be proactive. But on the other hand, having and implementing a plan moving forward, no matter how modest, is a positive move.

What would include in such a document?

- Key Goals

- Business and Technical Goals
- Overview of APM CE Architecture
- As-Is Environment
- To-Be Environment

- Projects getting to To-Be
- Overview of APM CE monitored applications
 - Number
 - Description
 - Number of Transactions, Users, Defects

- How measured in Introscope

- If monitored through other tools

- Stakeholders
- Key metrics and Reports
- Projects for next one month, six months, one year

- Can break down into Architecture, Application Monitoring, Reporting, Optimization and Maintenance.

- Costs
- Resources
- Risks, Challenges, Assumptions
- Linkages to Other Corporate Projects/Organizations.
- Security Concerns
- References to other documents (Application Performance Monitoring Strategy, APM Run book.)

Data could be presented in tables or graphs. This includes:

- Architecture Overview (# of Servers, OS,, CPU, Memory, Function, Physical or Virtual)
- Application Overview (Number, Ecommerce/Enterprise, Number of Users, HTTP/HTTPS, Number of Transactions, Number of Defects, Type/Number of Reports, Key Metrics, Introscope integration, Other integration)
- Projects (Timeframe, Cost, Applications, Type (New, Maintenance, Optimization))

These are the discussion questions for this article:

1. Do you have an Application CE Roadmap document? If not, why not?
2. If yes:
 - Who maintains the document?
 - Is there a process to get the document reviewed and updated?
3. Do you have anything that you wish to share about this topic? I would really like to hear what is working or not for you.

1.9 Three Researched APM CE Issues (Tip #32)

[Return to TOC](#)

[TEC598247 - Approaches to Use for Three common APM CE Situations - Not Seeing Enough Defects, Response Time Too Low/High, Not Seeing All Components](#)

Starting last month, I began to cover recent knowledgebase articles. I'm happy to see that our new content is being actively read. While some KBs are on very specific topics, there are others that provide general approaches to an issue. The above link is one of them.

This article provides a framework for the KB:

Among the tens of thousands of APM CE questions that I asked, there have been three that take some time to answer. These are the following:

Why is the transaction defect count too low?

Why is the transaction response time too low/high? (Especially against another third-party monitoring tool)

Why do I not see all the components in a defect?

To answer these questions, you need to look at application logs, TIM/EM logs, packet capture, Client HTTP Sessions (such as through httpwatch and the like) to do event correlation to see what is going on between the client through the web server.

Here are five general suggestions when looking at these issues:

1) Cause Elimination #1 Determine if the network infrastructure (such as quality of network data, response going a different route than request, traffic filtered out, full packet not being captured, high out of sequence packets) is contributing to not seeing all transactions that are expected.

2) Cause Elimination #2 Determine if SSL decoding (cipher suites, network traffic related, TLS version) is contributing to the inconsistencies.

3) If possible is do this in a test environment. (Previously I've talked about the value of a test environment for such situations.) Pouring through lengthy production logs to find one transaction can take unnecessary extra time.

4) If you do not have a test environment, then test off-hours to make it easier to find in the logs.

5) Use other tools at various points between client and the web server to verify APM CE results. However, realize that they may be seeing different components/transactions because of their location point and they may not be measuring the same thing as APM CE (Such as transaction generation that may be measuring three different business transactions instead of just one.)

Discussion Questions

1. How often do you investigate these three areas?
2. Have you found other general areas to look at in these searches?
3. What would you like to see added to the product to make this easier to do?

1.10 APM Oil Change (Tip #35)

[Return to TOC](#)

Instead of my usual monthly tip, I decided to write the Tech Note below. By asking these questions and performing these tasks, you should have an APM environment that runs smoothly. Please get the word out that proactive reviews will save headaches later! Please let me know what you think of it and have any suggested changes:

Tech Note:

<https://communities.ca.com/documents/2301951/18558982/APM+CE+Oil+Change/242e8dc8-1732-4740-92f9-c5855659d8d0?version=1.0>

Note that this task should be in addition to periodic health checks, upgrades, architecture reviews, and more!

1.11 Effective Support Meetings Speed Up Resolution (Tip #36)

[Return to TOC](#)

KB Link –

<https://support.ca.com/irj/portal/kbtech?docid=604794&searchID=TEC604794&fromKBResultsScreen=T>

Having a support meeting at certain points in an APM case lifecycle can impact positively case progress. A call is needed typically for three reasons:

- * At the start of the case or when a new Engineer takes over a case to describe the problem, provide details about the environment, and review business impact. A case with one issue that is well defined allows Support Engineers to focus on the correct issue right from the start.
- * If customer has a lot of questions on a particular topic and wants a more interactive response to supplement case notes.
- * A break-fix situation exists and the issue needs to be worked through.

Successful call logistics can make or break a call. This includes:

- * Scheduling the call
- * Attending the call on time
- * Getting comfortable to using Webex software and ensuring that it will work in your environment. If not, try to offer a fallback approach.
- * Getting the appropriate people on the call to provide system access, make needed changes, and provide insights about the APM environment.
- * Having an environment and authorization to make changes minimizing customer impact.

Guidelines on or after the call include the following:

- * Provide the requested logs on or as soon as reasonably possible after the call to maintain case momentum.
- * Focus on one issue per call. If time allows, additional issues can be reviewed or covered in a subsequent meeting.
- * Be able to show and ideally reproduce the issue including what you are seeing and not seeing.
- * Provide feedback if issue is resolved on the call and can be closed. Else offer input on next steps.
- * Reviewing deliverables at the end of the call

Discussion Questions

1. Do you have any suggestions for guidelines for successful support meetings?
2. Have you had any issues resolved by a support meeting? If so, what were some of the characteristics of the meeting that contributed to its success?
3. Are there any other topics along these same lines that you would like to be covered in future Tuesday Tips?

1.12 APM CE Urban Legends and Misconceptions (Tip #42)

[Return to TOC](#)

[This exclusively updates the information in the original article with some early history of the TIM based on an email from a TIM developer.]

Introduction

Throughout the years, there has been various misconceptions and tall tales told about APM CE (CEM). But no one has attempted to bring these to the light of day until now.

Urban Legends

Legend: TIM and TESS are names of some developer's child, wife, or other relation

Status: Unconfirmed. TIM and TESS have always stood for various acronyms such as Transaction Impact Monitor and Transaction Events and Statistics Server. But there is a rumor that TIM was originally called probe.

Update: They weren't named for anyone in particular. One developer liked the names. Another developer thought it was appropriate because it showed how hardy it was. (Being a nod to Thomas Hardy and his creation *Tess of the D'Urbervilles*.)

Update: The TIM did not have a proper name was called simply "the probe." The Tess was just called "the server." But did lead to confusion whether "the server" meant the web server being monitored or what is called TESS. This eventually led the TIM and TESS names which was later decided to be in all caps.

Legend: CEM once had a Basic Recorder in addition to the current Advanced Recorder

Status: Confirmed. In early releases, CEM had a recorder that could capture transactions from the browser. It was called the Basic Recorder.

Update: The Basic Recorder was an Internet Explorer plugin. When recording was first added to TIM, it was called the "Advanced Recorder."

Legend: You once created a 600+ page book on CEM.

Status: Confirmed. Work was halted due to extenuating circumstances. A small part of it has ended up as Tuesday Tips.

Legend: Timestock is the original name of a science fiction novel about business and time travel.

Status: Unconfirmed. It may be a book. But it was also the name of the original company that created CEM.

Misconceptions

Misconception: Success Rate is for Slow Time only. Missing and Partial Responses incorrectly bring down success rate.

Success Rate is for ALL defect types. That includes missing and partial transactions, unauthorized logins, client/server errors, etc. Some of these may be false positives due to bad network data. So if you do not like the success rate numbers that you are receiving, try to figure out why the defect is being created. A temporary measure may use Yield as a metric instead.

Misconception: E-commerce User Groups can be set up on the same type of user group identifiers as Enterprise Mode.

E-Commerce User Groups in Reports are typically only for Unspecified Users. But using HTTP request attributes, other user groups can be set up. However, manual IP subnet e-commerce user groups are not supported for statistics and reports.

Misconception: Duplicate Session ID is an error message.

It is a warning message and typically a concern because it fills up logs and the APM CE Events screen.

Update: Session IDs are expected to be unique, so this message indicates that the user may have picked the wrong parameter to use for the session id.

Misconception: There is no wrong way to set up a TIM to see network traffic. I shouldn't worry about dirty traffic.

There are **many** things that can be set up incorrectly resulting in not seeing traffic or seeing misleading traffic. These include

- Span, Tap, or Aggregator is misconfigured so it is seeing router/non-HTTP or one-way traffic. They also can be filtering traffic from desired web server.
- The ifconfig files on the TIM are misconfigured
- No network interface is enabled for TIM monitoring
- Private keys are incorrect or have wrong passphrase

- Dirty network traffic can either result in not seeing transactions, false positive defects, SSL decode failures, and many other factors. It should be eliminated if possible.

Misconception: Thinking that CEM metrics and Introscope CEM-based metrics measure things the same way.

There are a variety of factors that may impact differences in metrics. This include: reporting on different timeframes (such as CEM can only show hourly data and Introscope can show data in seconds and minutes), CEM being concerned about web servers and Introscope about application servers and backends, and more. This issue is covered in the knowledgebase and other documents.

Update: With the introduction of btstats (RTTM) data, this is no longer true about hourly data.

Discussion Questions

- 1) Are there other APM urban legends and urban legends that you wish to share?
- 2) Do you want another Tip on this topic?
- 3) What other troubleshooting topics would you like to be covered in Tuesday Tips

1.13 Six Additional APM General Troubleshooting Approaches (Tip #44)

[Return to TOC](#)

Introduction

In a prior Tuesday Tip, I reviewed two different approaches that can be used to troubleshoot integration or any type of APM issue. These are the Visual Inspection (i.e. See what metrics and functionality is showing up or not.) and Functional Workflow approaches. (I.e. Which steps were completed in a workflow? Which ones failed? Which servers are involved between the last successful step and the next one?) But in thinking it through, there are at least six other general approaches that can be used together or separately.

1. Recent Change/No Known Event approach

Knowing the date that an issue first happened can be a big clue as to root cause. If determined, then the configuration and other files created, changed, or deleted after that date may need a review. Also note if logs are not created or updated after that date. Other things to check are third-party (Such as virus checkers) patches and permission changes around that timeframe. If there is a log book of administrative changes for a server(s), that can be studied as well.

2. Other Server approach

Application, Directory, Database and other servers can impact APM operations. If there is a known time period, these logs can be checked as well as for their impact on APM.

3. Event Correlation approach

An outage took place or unexpected behavior happened after an installation or upgrade, This approach combines somewhat the Recent Change and Other Server approaches but focuses on changes and logs for a specific time period. The focus is not necessarily on environmental changes but what happened around the time of an event. Some overlooked steps are seeing if the same behavior/set of errors occurred before the event and ignoring what was going on with other servers at that time.

4. New area/old area approach

A new type of application is monitored or functionality is implemented and is not working as expected or at all. Is there anything that can be learned from already monitored or existing functionality that can help? Do the differences between these applications/functionality give a clue on what might not be working?

5. Eliminate network/performance/architecture approach

The more complex the APM cluster(s), the more things need to be eliminated. If the entire cluster is impacted, then it often ties to network data quality issue, a performance issue due to an unoptimized environment, or a non-scalable and limited environment. Quickly eliminating these three as a cause can save time and frustration in troubleshooting.

6. What's a different approach?

Customers have two or more different environments or agents. One or more are working. One or more are not. Having a file and directory differences comparison helps in zeroing in on the root cause. The problem with this approach is that different environments have different characteristics such as load, versions, etc. that can result in misleading conclusions.

Discussion Questions:

1. Which of these seven approaches are you using? What type of situations do you use each of them?
2. Do you have your own APM troubleshooting approach that you wish to share?
3. Are there other topics that you wish to see covered?

1.14 Cascading Issues (Tip #48)

[Return to TOC](#)

Introduction

While the present and forthcoming APM troubleshooting covers common problems and resolution, it doesn't always review the complex area of *cascading issues*. I am defining this term as the following:

A chain of usually sequential events across multiple servers resulting in various problems and symptoms. These may reoccur over time.

For APM CE (CEM), this is one typical sequence

- A TIM Collector either underpowered or having Introscope Agents connect to it, becomes overloaded
- The Tim Collector stops communicating with TIM and gets a 4xx/5xx error on the Monitors tab
- Defects, btstats (RTTM), stats and other files are backing up on the TIM in /etc/wily/cem/tim/data/out/...
- CEM Reports are not being produced
- A call comes to APM Support

For Introscope, there are similar sequences between MOMs, Collectors, Agents, and other components. (Such as load balancing/Overloading EM issues.)

How to work this issue

- Although there are various approaches that can be used, I like the functional-workflow approach that I have described in earlier tips.

If I know the function of a server and the APM components it corresponds with, then typically I can quickly hone in on an issue.

- By getting the logs across all the impacted server, one can perform an event correlation on determine which events were happening on each server.

- Breaking into multiple issues and prioritizing them. For this case, I would break into two tickets/issues:

- * Get the files off the TIM by restarting the TIM Collector or disabling/re-enabling the TIM object

- * Clean up the Stats Aggregation issues

If relevant, I would include performance/architecture recommendations that should be addressed by the customer. This could include upgrades/hot fixes that usually resolve the issue. By addressing these concerns, the issue should less likely happen in the future.

Discussion Questions

- 1) What cascading issues have you/are you encountering
- 2) Which overall approach did you use to resolve them?
- 3) What other troubleshooting topics would you like to be covered in tech Tips?

Section 2: Capturing Transactions: TIM

[Return to TOC](#)

2.1 Some Useful Networking Documents

[Return to TOC](#)

One of the biggest issues that I've encountered during APM Customer Experience engagements is getting the TIM monitoring port to work correctly. I have just added three helpful networking documents to the document library that may aid in this effort.

Explanation of what is available for TIM networking connections (NetQos)

<https://communities.ca.com/documents/2301951/58dc3705-6850-48a9-b897-112ffd23e690>

Spanning Best Practices (NetQos) <https://communities.ca.com/documents/2301951/c8ee853c-15e7-4b34-9e89-3f5af0d4c105>

Overview of VACLs <https://communities.ca.com/documents/2301951/6757c386-77ef-4362-bc42-4d94b0f65b7d>

2.2 APM Customer Experience, Content Types, and APM 9.1 (Tip #9)

[Return to TOC](#)

It seem that almost daily I get an email about someone that is having trouble recording some application such as Excel or Cold Fusion using APM Customer Experience.

One issue typically encountered is that APM is unavailable to recognize a MIME content type that does not have a type of text (Popular ones are text/plain, text/html,text/xml).

[Geek education moment-- MIME (Multipurpose Internet Mail Extensions) is an Internet standard used on how to pass attachments through e-mail, web browsers, (via HTTP and HTTPS) and other means. Each attachment/HTTP component has an associated MIME type and subtype. This is presented in the format of type/subtype. Popular types include application,audio,image,multipart,text, video,vnd (vendor-specific), and x (experimental).]

In 4.5.6/9.0.6 and later, an undocumented feature was added to support content types. All one has to do is add a new content type to the tess-customer.property listed below followed by a space. For example, below shows adding application/x-java-serialized-object to the trusted content types. Don't forget to restart TESS/TESS-MOM after making this change.

```
recorder.mainComponentTrustedContentTypes=x-application/amf text/plain text/html text/xml  
application/x-java-serialized-object
```

The forthcoming 9.1 release does the following

- Officially supports two new tess-customer.properties (Requires restart of TESS/MOM.)

The tess-default.properties file uses the recorder.mainComponentTrustedContentTypes - selected content types to use for ALL recordings

recorder.mainComponentAvailableTypes-- potential content types that can be used for ALL recordings

- A GUI interface in EACH recording session to select the available and trusted content types. This does not require a TESS/MOM restart.

In addition, APM 9.1 will show now any "unrecognized component" due to invalid or undefined content types. These can easily be added to a recording as well.

Discussion Questions

- What content types do you use in your applications?
- Have you had issues recording these with APM Customer Experience?

2.3 Top Five TIM Mysteries and What to Do About Them (Tip #18)

[Return to TOC](#)

This is a continuation of last month's theme of looking at TIM Health. This month we look at common TIM issues and what to do about them.

Issue #1 Not seeing Traffic on TIM Questions to Ask:

- Did this ever work?
- Has something changed recently? (especially with span/tap)

Things to check:

- Is TIM powered on?
- Is TIM span/tap connection live?
- Is TIM span/tap connection configured correctly? (Seeing http/https, two way traffic)
- Are web server filters enabled?

Issue #2 Unable to record transactions.

Questions to Ask:

- Did this ever work?
- Has something changed recently? (With application, private keys, and network.)
- Is this working for some transactions and not others for the same application?
- Can I record with some recording mechanisms but not others?

Things to check

- Items listed under issue #1
- Private keys are correct and working.
- Check if redirecting to another server and that server is being captured by span/tap and included in web server filters.
- Check http headers (content-type, accept-language, IP address is same in request and response)

Issue #3 Unable to Decode SSL Traffic

Questions to Ask:

- Did this ever work?
- Has something changed recently?
- Are my private keys correct?
- Has the private keys expired?

Things to Check:

- Items under issue #1
- Private keys are correct.
- A supported cipher is being used.
- Certificate modulus not correct
- If too many defects/statistics is being produced.

Item #4 TIM Restarts

Questions To Ask:

- Has something changed recently? (Such as adding a new application)

Things to check:

- Quality and Load of Network Traffic.
- If SSL traffic is being monitored.
- Ciphers being used for SSL-monitored applications

Item #5 TIM Not Seeing Defects/Reports

Questions to Ask:

- When was the last time that you saw defects/reports?
- Is this a recent install?

Things To Check:

- Are defects/statistics files being backed on TIM (/etc/wily/cem/tim/data/out/defects../stats directories)
- Is collector and database responsive?
- In the collector and database logs are there errors?
- When was the last time that the collector was restarted?
- Schematools.log if a recent install.

Discussion Questions

- 1) Do you have any frequently reoccurring TIM issues not listed above
- 2) If you had TIM issues in the past were they due to 1) changes in the system, 2) increases in load, 3) additions of new applications, 4) recent upgrades and migrations.

2.4 The Seven Mysteries of TIM Communications (Tip #19)

[Return to TOC](#)

Some time around 1984, I was privileged to hear the late Andrew Fluegelman give a talk. (See http://en.wikipedia.org/wiki/Andrew_Fluegelman for more details). It was titled the Seven Mysteries of Telecommunications. Fortunately, I did take notes from the talk which I have made into softcopy.

This article takes those original mysteries and retrofits them for TIM Communication. Going through these questions will help you in debugging problems.

- 1) Have I made a connection?

In order for TIM to "make a connection", it needs to be powered on, and "cabled" to see the HTTP/HTTPS traffic.

If the TIM or web console is accessible, check if the TIM receiving packets.

2) Are you speaking the same language?

The TIM and other devices need to speak "the same language." This can use

- Using the same speed and duplex
- Storing the same private keys as used by web servers, load balancers, and firewalls.
- Using the same language encoding such as ISO8859-1 and UTF-8
- Using the same protocols such as TCP, HTTP, HTTPS, and SOAP/Web Services.

3) Who are you talking to?

Is the TIM talking to a switch, firewall or load balancer? Knowing this will help in answering the following questions.

4) Does your TIM/server understand?

What TIM "understands" is a topic in itself.

For example, TIM "understand" HTTPS traffic because of having the correct private key or not?

An incorrect or no key means the inability to record and see anything in the TIM logs.

A related issue could be a server could be using an SSL cipher suite that can't decode.

5) What is the weakest link?

The "weakest link" is always changing in a monitoring environment. This can include:

- 1) Too much traffic over the network connection resulting in dropped packets.
- 2) TIM being over capacity on memory or CPU due to number of transactions being monitored, too many defects, SSL traffic etc.
- 3) The Database is unable to keep up with open connections.
- 4) The MOM or Tim Collector does not have enough heap size.
- 5) Issues with spans/taps/load balancer/firewalls/servers.

6) Is it the fault of something else?

This can include such things as

- Firewalls/load balancers, etc. filtering out desired traffic or only allowing one way traffic.

Another issue could be these devices could be sending TCP packets with various integrity issues so the HTTP content is unreliable or unreadable

- There is no path affinity so a request goes through one load balancer/firewall/web server and a response returns through a different route.

- Needed ports are not open

7) Can you make sense of it all?

Trying to make sense of it all is a demanding effort requiring the following:

- Are we seeing the following in the logs?
 - Connections opening and closing from users?
 - HTTP Logins and Sessions?
 - SSL traffic decoded?
 - HTTP Requests and Response (two-way traffic) from the same Client and Server IP?
 - Are we see the same traffic as a HTTP capture?
 - Are any headers stripped?

Answering these seven questions should make your TIM issues a little easier to determine.

Thanks Andrew for the insights and safe harbors on your journey.

2.5 Private Key Overview (Tip #22)

[Return to TOC](#)

Overview

Alex Wilkens is a new APM CE Administrator. Her company, Gulch Gears needs to monitor a new web ecommerce application that is important for company revenue. The definitions are set up and the application starts to be monitored. But the reports and TIM logs are empty. After checking that the network setup is correct, Alex is dumbfounded.

She calls her handy CA Technologies support number. Quickly, they determine that the private keys need to be added to the system. Once done, the TIM logs are filled with HTTP requests and responses and defects/reports are appearing. All is well in the world.

This Tuesday Tip will give an overview of private keys, common issues, and troubleshooting techniques.

Ecommerce applications need to be encrypted to transfer financial transactions in a secure fashion. These use Transport Layer Security (TLS) or Secure Sockets Layer (SSL) protocols for this transmission. This includes using a private key to decode the traffic. The private key may use a variety of formats and cipher suites. APM works with private keys that are in PEM (Privacy-enhanced Electronic Mail) format. Server keys on Apache and Open SSL-supported Web servers are already in this format. Private keys for other web servers need to be converted using the OpenSSL Toolkit to the pkcs12 format (which contains the certificate, public, and private keys). Once done, simply pull out the private key part. This usually starts with BEGIN RSA PRIVATE KEY and terminates with END RSA PRIVATE KEY.

In the APM Configuration and Guide, there are directions to create and obtain private keys for Apache or OpenSSL-supported, Microsoft IIS, and Sun/Netscape web servers. However, this approach works for other servers such as Tomcat and IBM.

A variety of SSL cipher suites are supported: DES, Triple DES, RC4, RC2, and AES. Since 9.0.8, Diffie-Hellman ciphers are recognized but not decoded. There are many web pages that can provide the SSL ciphers being used by publically-facing web servers.

Importing and Migrating Private Keys

There are two ways to import private keys into APM.

Prior to 9.1.2, the only approach was to use the TESS/MOM Administration GUI. This can be found under Setup > HTTPS Settings. Once there, you can enter one or more private keys. Each private key is uniquely identified by IP v4/v6 address or address range and port. It is encrypted and placed on ALL TIMs in the /etc/wily/cem/tim/config/webrowsers. (Whether the TIM sees traffic from that web server or not.) Private keys are stored with names such as 1.2.3.4-1.2.3.5~443.xml-enc.

Note that the GUI only allows one to add a key, update a key (which deletes the old key) or delete all keys. There is not an option to delete one key. (However, the work around is you may go to the above directory and delete a key. You can also move the key to another TIM (on TIM restart, it should be picked up.)

The second approach is documented in APM 9.1.2 Release Notes. A script may used to import multiple keys. This can be on the TIM in /etc/wily/cem/tim/scripts. Then run sslkey_upload.sh with the appropriate arguments.

Troubleshooting Techniques and Tools

Some tools and techniques used in debugging APM CE issues are

- Looking at the TIM logs with SSL connections TIM Trace Option is enabled. If you see and open without a session close, there is likely a private key or a network issue.
- Looking at SSL Sessions and see how many were successful. Since 9.0.8 and later, the number of unsupported cipher session are also shown.
- Installing SSLDump to see which web servers are or are not decoding. It can be found at <http://www.rtfm.com/ssldump/>.
- Checking if the modulus of the SSL certificate and the private key match.

Common SSL issues

Some common SSL issues are:

- Not seeing any SSL sessions at all. This is likely to be the private key or that something is filtering out traffic from the web server such as private keys or the span/tap.
- SSL Decode failures near 100%. This is likely to be the private key. Things to check are if the correct key is used, if the key is still valid, the key has the wrong passphrase, the key entered has extra characters at end of the file. This can also be a sign that the network traffic has lot of out of order packets and other issues.
- Lots of SSL Sessions aging out. This can be changing these TIM settings -- ConnectionTimeoutInSeconds, SslSessionAgeOutCount, and SslSessionAgeOutSeconds

Discussion Questions

1. Are you using SSL web applications?
2. Do you have a scalable approach for private key generation and maintenance for APM CE.
3. What APM CE features would you like to see for private keys?

2.6 Top APM CE Misconfigurations and Their Impacts (Tip #23)

[Return to TOC](#)

Any actuarial worth their salt can predict the probability of life events happening in the population. And a good support engineer should be able to tell you what probably will be the most typical APM CE misconfiguration for that week.

Common misconfigurations are the following:

TIM

- Placing TIM in the wrong place which impacts Client IP, User Id, and other information appearing in defects and statistics.
- Having web server filters exclude desired traffic.
- Configuring span/tap/VACL to accidentally exclude/include traffic.
- Using incorrect logical port and hardware filters on a MTP TIM.

Not seeing traffic in TIM log

See the list under TIM.

Common causes are the following:

- TIM Trace options for HTTP components or parameters are not checked.
- The TIM Inspection settings are filtering out traffic.
- Issues with private keys/certificates? (See last month's Tuesday Tip)

Not able to record

See the above list. Other causes could be:

- Wrong client IP address, language(s), content-type specified.
- Hosts table/DNS are incorrect.
- The account is incorrect or has wrong privileges.
- Using the wrong application URL.
- Browser/Browser Settings
- Transaction discovery template/settings are incorrect.
- Wrong script recorder arguments or being sent to wrong EM.
- Time is not synchronized between EMs, database, and TIMs.
- Issue with TIM Collector (EM in Unknown state due to MOM properties file misconfiguration.)

Not Seeing Users/User Groups.

Some common misconfigurations contributing to this issue include the following:

- If using User Group by IP Subnet, check if the subnet is incorrect (Typically is 255.255.0.0 or 0.0.0.0 to allow widest range of traffic).
- Check if session timeout is too low.
- See if the Business Service is assigned to correct business application.
- See if using the wrong/unavailable user/session identifier or identifier logic incorrect (Too many ANDs).

Not able to See Defects/Statistics.

In addition to the above list, check the following

- The "Two enables" not set for a business transaction to provide statistics and defects.
- The Definition not matched (Incorrect, fields are not there, matching on too many fields).
- The defect thresholds are too high
- The defect retention period too low.
- Not waiting long enough (Thinking reports are real-time.)

The Response Time is shorter than expected.

There are many factors that may impact this but here are some reasons.

- Using the wrong Session Identifier. If the session identifier is not the correct one. the TIM will only match a transaction on a component base - hence ignore all " included" components in the timing calculation.)
- Not all components are included in the recording
- Comparing it against something that is configured incorrectly

And there are many more that can be mentioned but this will get you started. Use the Show

History/Audit capability to determine the author of the last change

Discussion Questions

1. Are there other misconfiguration issues that you have experienced? What were they and what is the impact.
2. Are there features that can be added to APM CE to reduce misconfigurations?

2.7 Is the Issue on the TIM or MTP Side? (Tip #29)

[Return to TOC](#)

The MTP or Multi-Port Monitor (formerly known as Multi-Port Collector) provides additional throughput capacity unimagined with a Timsoft. (By the way MTP is an acronym from (M)ul(T)i (P)ort.)

This Tuesday Tip provides a framework to help in determining if the issue is on the MTP or TIM side of the appliance.

What isn't working?

Here are some common scenarios if the functionality is failing **on the MTP side**:

- The MTP is not collecting data.

The APM for IM Guide mentions that the Napatech Card Time is different than that of the Network Time Protocol Server. But there could be other scenarios:

- * The Napatech card is misconfigured.
- * The MTP network connection to a span/tap/aggregator/etc is incorrect.
- * There were residual problems from the MTP install/upgrade.

- The MTP is collecting data but running out of space. Or the MTP is restarting frequently

This would be very evident from errors in the logs, seeing a non-zero value in the nospace column of protocolstats logs, viewing the Ramdisk filespace at 100% by issuing a df command at the MTP console, etc.

The cause of this could be the RAM Disk being too small or the network traffic at a customer is filled with various data integrity issues (such as out of order packets, packet retransmissions) that can be resulting in large packet capture files.

Another cause is the ramdisk is adequate but inadequate hardware filters are in place. This would result in receiving more traffic than actually needed.

Note the recently released TIM Monitor Fieldpack can alert when ramdisk runs out of space as

well as other error conditions. It is freely available with As-Is Support.

- The MTP is collecting data but not seeing traffic from a particular server.

The MTP appliance can do filtering at two locations:

The MTP hardware filter (Administration>Logical port) is filtering out traffic from particular ports, VLANs, or IP subnets.

The TESS Web Server filter does not include certain IP addresses so it is excluding traffic. With MTP appliances, it is recommended to do the filtering on the MTP side with the hardware filters rather than on the TIM side with the web server filters.

Here are some common scenarios that the data is failing on **the TIM side**:

- The MTP is collecting data but there are other issues.

As long as the data in the "Forwarded from MTP" column is a non-zero number, MTP is doing its job. Several Tuesday Tips have already been written on common issues on the TIM side.

Things to check on MTPs would include:

- If there is SSL traffic, are the ciphers being used by an application supported? Is the private key correct? If bad traffic impacting SSL decoding?
- Are there issues with TIM Plug-ins (SiteMinder, XML, Flex. custom) causing extra load?
- Is the definition configured correctly on the TESS-MOM?
- Is the domainconfig.xml file on the TIM correct?
- Is the TIM communicating correctly with MOM, Collector and database? (Resulting in 4xx/5xx messages in the Events viewer)

Discussion Questions

1. Has this been helpful as a first step in triaging MTP vs TIM issues?
2. What is the Ramdisk on your MTP currently set to? Is that the original value?
3. How has the inclusion of network data with APM CE defects helped you in improving application health and customer satisfaction?

2.8 Five TIM KBs (Tip #34)

[Return to TOC](#)

APM Technical Support is actively working your cases, creating new knowledgebase articles, and retiring old KBs. This month we focus on five KB articles about TIM (Transaction Impact Monitor) that should be aware of. These are two areas: information and warnings.

Information

Link:

<https://support.ca.com/irj/portal/kbtech?docid=601879&searchID=TEC601879&fromKBResultsScreen=T>

Description: Which versions of CentOS for APM 9.x MTP TIMs are supported?

Comment: The big thing to take away for the above is supported and tested for APM TIM 9.1.x on MTP 9.2 with 64-bit CentOS 5.5 and CentOS 5.7 as well.

Link:

<https://support.ca.com/irj/portal/kbtech?docid=601083&searchID=TEC601083&fromKBResultsScreen=T>

Description: How to download APM Software from support.ca.com

Comment: There are a steady stream of questions of how to download APM Software. This link with screenshots will help.

Link:

<https://support.ca.com/irj/portal/kbtech?docid=600885&searchID=TEC600885&fromKBResultsScreen=T>

Description: What is collected by default when using the Collect TIM Logs menu options?

Comments: It was not always clear what TIM logs are collected and why. I created this KB to rectify it. This includes the first time explanation of the stats directory. Note that core files are not collected by default

Warnings

Link:

<https://support.ca.com/irj/portal/kbtech?docid=601421&searchID=TEC601421&fromKBResultsScreen=T>

Description: Important notes concerning applications using SSL/TLS DEFLATE compression with APM CE (CEM) monitoring

Comments: This is the most important KB of the bunch. If your applications are using SSL/TLS with DEFLATE Compression, then they may be vulnerable to a security attack. (This feature is not supported in the latest versions of SSL/TLS.) Also note that the DEFLATE compression method is not supported by APM CE. So transactions using it will not be decoded.

Best Practices

Link:

<https://support.ca.com/irj/portal/kbtech?docid=600884&searchID=TEC600884&fromKBResultsScreen=T>

Description: Can full TIM logging create a no-space or frequent TIM Restart condition in a production MTP?

Comment: Too often APM CE Administrators do not realize that turning on full logging in a busy production environment can lead to TIM restarts, High CPU, and an unstable environment. So as a general rule, turn on logging as needed.

2.9 APM TIM 9.6: Unofficial New Rules (Tip #43)

[Return to TOC](#)

Introduction

Normally, I do not do a second Tuesday Tip in one month. But there has been some confusion about the TIM since APM 9.6 came out. I hope this Tip can clarify some things.

This is what is in the documentation:

TIM installation is now available as software. Because the TIM is no longer a "software appliance", it is easier for you to maintain and upgrade the software. The TIM System Health page and Machine Settings options are not available with the TIM installation Note: CA Technologies is researching support for 3G Napatech Drivers that would be made available in a future release.

And later in the documentation, the hardware/operating system requirements are provided.

But like parents to a newborn, you find quickly there is no owner's manual for the "new TIM". So here is my best guess what I believe the "new rules" are:

What you are responsible for:

- Providing and installing the operating system (Redhat, CentOS). An upgrade from prior releases is not supported.
- Making sure the correct software packages are installed. (They should be part of the operating system release. So nothing extra should be needed.)
- Installing TIM through the command line (No longer done through the browser.)

- Providing your own network driver card that is not from Napatech. As said above, this will be rectified in a future release.

- Time synchronization. TESS will no longer to synch with the TIM. And the documentation talks about why time synchronization is so important to APM successful operations.
- Adding as-needed security updates.
- Maintaining port (iptables) and firewall (SELinux) settings. These must also not conflict with TIM operations.
- Making sure that operating system and third-party software does not conflict or cause issues with TIM. This may be a harder task to do at times and may require opening support cases to clarify.
- A python script TIM-assist is provided to help the WebUI to perform tasks that may require root privileges. There is a helper file with details on using it.

Notes:

- 9.6 requires a fresh install. However you can move over custom components such as HTTP Plugins, Evidence collection, configuration file settings, etc. to the 9.6 TIM.

~~nCipher is listed in the 9.6 Security Guide. But it is my understanding this is also a new customer responsibility. An update of my findings will be provided.~~

- Update: nCipher is included in APM 9.6. However, it will no longer be updated to later versions of the nCipher software.

Updates after Article was published by other Support Engineers (Joerg Mertin and Lynn Williams):

Update 1:

- Keep in mind the following. If you want (as a customer) continue to use RedHat, you need to own/buy a License/subscription at RedHat to be entitled to use it.

The old RedHat installation on the Soft-Appliance cannot be used. A TIM installation on this old OS release will not work as it requires a clean pre-installed OS.

The alternative is to use CentOS - which is a "very" similar clone to RedHat. From experience, whatever software ran on RedHat, did run on CentOS (There are exceptions).

The TIM soft-only version is running under CentOS

Update #2

- A couple of others :

If SELinux is subsequently enabled post TIM install then the TIM will need to be reinstalled.

The 9.6 TIM for Multi-Port Monitor (MTP) version is still installed via Browser UI.

Discussion Questions:

1. How are finding having OS control of the TIM? Just right or more responsibility than desired?
2. Are there other 9.6 TIM gotchas and guidelines that should be listed here?

Section 3: Transaction Lifecycle

[Return to TOC](#)

3.1 The APM Script Recorder and a 404 Error (Tip #3)

[Return to TOC](#)

I am posting this Tuesday tip to save you time tracking down a fix to this subtle error. It has caught me a couple of times!

Sometimes one will receive a 404 (Page/File Not Found) error when trying to import a script into the TESS. There are a variety of reasons for this:

- 1) You have the wrong IP address/hostname for the TESS.
- 2) You are not using a CEM system administrator account so you do not have the needed system privileges.
- 3) Although in APM 9 there is a default port, the port number **MUST** be specified. (Default is 8081). This is not documented in all versions.

Fixing the above causes should resolve this issue and the script should successfully import.

3.2 Setting Up a Business Service (Tip #5)

[Return to TOC](#)

Setting up APM Customer Experience transactions to monitor is more art than science. This month we look at some of the ways that a Business Service can be used. This has implications for reporting, maintenance, scalability etc.

The approach that I like to use is "working backwards with the final product in mind." Looking at how the customer wants to group reports and statistics will determine how many and what type of business service is produced. Using the response time analysis graph is a good place to help visualize this grouping. This grouping generally falls into one of four areas

- a) Comparing across transactions in one application. This is the most common set up. In this case, the business service will be the same as the application and one can easily see the slowest response time for all transactions in one graph. This would look like this:

Application: College Class Registration

Business Service: College Class Registration

Business Transaction: Login

Business Transaction: Search

b) Comparing against each transaction in one application. This results in a Business Service for each function. This can create a lot of business services and will not easily allow comparing of all transactions for one application. The advantage of this approach is that everything is "moved up a level" providing more detail. This would look like this:

Application: College Class Registration
Business Service: Class Registration - Login -- "Moved Up A Level"
Business Service: Class Registration - Search

c) Comparing the same transaction across multiple applications. In this case, the business service contains the application and the function. The focus is which application is the worst performing doing the same function. This would look like this:

Application: College Class Registration
Application: College Parking Space Registration
Business Service: Login - College Class
Business Service: Login - College Parking Space

d) Comparing different companies using the same application. It is a variant of the first approach. This is typically done by ISPs and Call Centers. The focus is on the individual customer not across customers. This would look like this:

Application: Lemay College Class Registration
Application: Garfield College Class Registration
Business Service: Lemay College Class Registration
Business Service: Garfield College Class Registration

There is much more that can be said on this topic. I hope that it gets you thinking of the possibilities that are best for your environment. Which approach do you use? Why did you select

it? Are you also using "working backwards with the final approach in mind" or some other approach?

3.3 A Transaction Definition Creation Mechanism Decision Matrix (Tip #8)

[Return to TOC](#)

There are multiple ways that transaction definitions can be recorded and created. But when to use each of these approaches may not be obvious. This Tuesday Tip tries to do just that by providing various decision points.

1) I have a few (1-30) Transactions to create.

All of the approaches could be used here. Definitions can be created manually or recorded using the Advanced Recorder (TIM or Introscope Agent), AutoDiscovery (referring to both Version 9 Built-in or Fieldpack unless otherwise noted), or Script Recorder. If time is of a concern, then AutoDiscovery or Advanced Recorder, WTG, or Script Recorder may be appropriate.

2) I have many transactions (30+) to create.

For adding many transactions at once, AutoDiscovery is the fastest way to go as opposed to Advanced, Script Recorder, or WTG. However, finding one transaction across many pages of recorded transactions could take far longer with AutoDiscovery. (Version 9 Built-in). The AutoDiscovery Fieldpack does a nice job of organizing the information by placing each recorded application in a separate folder. However, the transactions recorded usually include duplicates and it may take some time to find the correct transaction in a folder. It has been my experience that Script Recorder may have issues with importing large files.

3) I want to capture the entire Business Transaction.

To meet this requirement, there is one and only one real approach -- Advanced recorder. Starting and stopping the transaction marks the start or end of the business transaction. The manual definition can do this but will likely not include all the transaction components needed to capture the true application customer experience. AutoDiscovery and Script Recorder only capture individual URLs (transactions).

4) I want to capture XML Transactions.

The easiest way to do this is with Advanced Recorder, which can import the XML from the recording using the matching rules in the transaction definition. Both AutoDiscoveries can

record XML but have not tried to match on them in a transaction definition. WTG can record Web Services and XML and may be another approach to explore.

5) I am doing this with the assistance of developers or application staff

If someone is volunteering to perform the transactions and has the time, then the Advanced Recorder/WTG can ably capture the transaction of the individual recording and nothing more. If they can provide Load Runner output or Network Packet Captures, these can be imported with the Script Recorder. If they are performing a Load Test, then AutoDiscovery can be used to capture all transactions for a specified timeframe.

6) I am doing this without the assistance of developers or application staff.

In this case, AutoDiscovery "shotgun" approach is the best approach to use since it is capturing all unmonitored transactions.

I just updated the following tech note of APM Customer Experience recording mechanisms

<https://communities.ca.com/documents/2301951/968b9d32-b198-49fc-9c8e-2d8d5075a86c>

3.4 APM Transaction Definition Setup - Part 1 Strategies (Tip #11)

[Return to TOC](#)

So you recorded and promoted your definition and it is time to set up the rules that uniquely identify a business transaction regardless of the steps used to access. This is such an important topic that it be covered in two articles.

Setting up the correct transaction define ensures that defects and statistics will only be for the transactions that you define. A clear definition means that no ambiguous or overlapping definition processing will result.

What would be an example of an ambiguous definition ? An extreme case would be having a POST with a * for variable name and DOES NOT EXIST. This may result in unexpected processing behavior

What are some examples of overlapping definitions? These include definitions that have the same matching rules (such as matching on same URL) or having two regular expressions that can inadvertently match on the same hostname. This may also result in unpredictable processing behavior on which one is matched.

There are some general strategies on building transaction definitions. These are not mutually exclusive.

1) Have a catch all rule (such as path is * or /* or /MyWebPage/* for a particular site). There are at least two reasons to do this -- to determine which transactions are not defined (such as the result of a new release.) Or to gather statistics for all URLs. Remember this will not be matched if there is a more specific (hint -- longer) definition.

2) Build a set of related rules for a particular function (Such as one definition matching on OP=SEARCH to cover all search operations, and a set of definitions to cover more specific rules -- e.g. OP=SEARCH, STATE=CA, OP=SEARCH,COMPANY=CIRCULAR LOGIC INC etc.)

3) Build a full set of similar rules that are slightly different for each environment, customer, etc. that would be stored under different business applications or business services.

4) Use Business Services/Business Transactions to group definitions

- Try building a sandbox business service/transaction to define and optimize definitions before moving to production. The same thing could be done with multiple testing environments before migrating definitions to production.

- Placing basically the same set of definitions under different business services/transactions for different locations, customers, types of devices (such as mobile, electronic kiosk, and desktop computers) application environments, language, and other factors.

5) Use Business Services to differentiate special type of transactions such as Siebel, SAP, FLEX etc.

6) With APM 9.1 there is the additional flexibility of defining

- Request Only
- Response Only
- Request and Response

For responses this is based on the HTTP status code, HTTP Response parameters/values, or HTTP/Flex parameters that appear in the response body. This allows you to build powerful definitions that can better capture the application transaction round trip.

7) One or more HTTP Plug-ins can be created to define the special transaction definition parameters that cannot be created out of the box

This is the tip of the iceberg. Next month, we will go into more specifics on building definitions.

Discussion Questions

- Which of the above application/transaction strategies are you using? Are there others not listed above that you are going to use.
- How are you planning to use the new APM 9.1 response definition capability?
- What additional functionality would you like to see added to make transaction definitions easier?

3.5 APM Transaction Definition Setup - Part 2 Tactics (Tip #12)

[Return to TOC](#)

Last month, we began looking at creating transaction definitions including reviewing some possible implementation strategies. This article continues exploring this topic by looking at tactics when creating transaction definitions.

These can be covered through a series of questions.

1) Is there something in the request or response that can uniquely identify a transaction?

At a minimum, there needs to be at one parameter that is defined. Typically this is the path (/mycompany) part of the URL. However, if the same path is common to multiple environments (such as QA and Production) or applications, then at least one other parameter has to be added (such as host which is the fully-qualified domain name of the URL). Additional parameters may be selected as well.

What do you do if there is only a host and common URL which is used for multiple transactions? In this case, you can only set up one definition that will cover those conditions. However, when the definition is defined and defects appear, then you may be able to split the transactions into multiple definitions to handle the various conditions. Or you may see all the defects look the same and settle for the one definition.

2) How many transaction parameters should I match on?

Typically one to four parameters. Remember that this is an AND not OR condition so each parameter-value pair must be matched. Too few conditions may result in overlapping conditions. Too many conditions and the definition may not be matched at all resulting in undercount.

3) Should I use Regular expressions or does not exist?

There are certain situations where using a wildcard (*) to match all or part of a string will fall short. Suppose you are matching against a list of host names where the name is target10-target19. This can be done very concisely in a regex (target[1][0123456789]). Another case is matching on combinations of static and dynamic text such as (*.statictext.*) to match on static text somewhere in a string. However, adding a lot of regular expressions can add undesired CPU utilization to an APM environment. Does not exist is a great matching rule when you have two components but one includes a parameter and the other does not. So in this case, the Does Not

Exist acts as a tiebreaker between two definitions.

4) Do I need name.html, name(1).html, name(2).html etc.?

Sometimes a component is called in multiple requests or responses. So the definitions will have the same name multiple times. How many of these do you need for your definition? Typically, one should re-record to see if the same number of components appears and then determine which is the better definition.

5) Should I change my identifying transaction?

APM does a good job of finding the identifying (typically first) transaction. But sometimes after getting defects, you want to switch a transaction to get more meaningful parameters. As an iterative process, keep trying various transaction components until you get the transaction results that are desired.

6) Should I use a wildcard in my component name or value?

The answer depends on how inclusive or exclusive you want your definition to be. Do you want your definition to include more or less conditions (such as abcd* abcd* or abc* or ab* or a* from least to most inclusive).

7) Is there a parameter present in the application that I am not capturing?

Sometimes there is a needed transaction parameter that does not show up in the definition. Check to see 1) if the parameter is being stripped by some network device, 2) APM is unable to record the parameter and may need a HTTP Plug-in to capture or 3) some other factor.

Discussion Questions

1) How many transaction parameters do you typically use to create a transaction definition?

2) How many iterations does it typically take for you to get the definition correct?

3) How do you handle the name1...name99.html situation?

4) How do you handle the situation where your transaction definition is not unique but you still want to use it?

3.6 APM Transaction Definition Lifecycle - Part 1 (Tip #13)

[Return to TOC](#)

APM Transaction Definition Monitoring is typically presented as a series of discrete steps resulting in a monitored transaction. This approach fails to address the following:

1) How to maintain transaction definitions in a fast changing environment.

2) How to optimize transaction definitions.

3) That transaction definition is an ongoing not one-time process.

This article proposes that a different approach is needed in the real-world for applications which continue to be updated. Instead of a series of steps, see it as a repetitive circular process -- a lifecycle.

The lifecycle consists of five steps:

1) Record a Transaction Signature -- Previously we talked about the many different ways that one can create a transaction signature. It is important to make sure that we have captured the steps that uniquely define that transaction and do not have any overlapping definitions.

2) Define a Transaction -- This includes setting up the transaction matching rules, cleaning up definitions and consolidating/splitting off definitions. Take the time here to get the definition correct to eliminate false positives.

3) Monitor -- Set up the defect thresholds, promote, monitor the transaction and look at the defects/reports/and statistics produced. For many customers, this is when the process ends.

4) Optimize

Clean up your definition for 1) creating false positives, 2) including old or unneeded components, 3) handling all appropriate environments and users (internet and intranet for example).

5) Maintain

Your transaction definition must be actively maintained so it continues to uniquely identify a transaction regardless of the application release. Curiously, it is not publically documented which changes in the application would require corresponding changes in the transaction definition. (I have created such a list that may be published in a future article.)

These five steps may be repeated as many times as needed. I would recommend no less than once a quarter.

In the next few months, we will talk about the implications of the lifecycle and more on optimization and maintenance.

Discussion Questions

- 1) How often do your applications change? Do these require frequent transaction definition revisions?
- 2) How much time does you or your company spends the optimization/maintenance phase?
- 3) How do you manage this lifecycle for multiple applications simultaneously?

3.7 APM Transaction Definition Lifecycle - Part 2 (Tip #14)

[Return to TOC](#)

Last month we discussed the APM transaction application definition lifecycle as an approach that can be used to create, monitor, and maintain transaction definitions.

This month discusses the five implications of this lifecycle:

1) Seen as an ongoing process rather than a one-time event

The result is that APM transaction definition activities can be proactively scheduled and resourced. It can also be included in the application monitoring roadmap and strategy. This is less likely to happen if viewed as a one-time event.

2) Ties in well with Application Lifecycle Management (ALM)

Transaction definition and monitoring activities has a corresponding ALM event. The result is that APM monitoring is an active part of the application creation, test, deployment, and maintenance lifecycle. So, having constant and consistent visibility into application performance and customer experience reaps the benefit of a higher quality and better performing application.

3) Helpful for Time Tracking and Hiring Resources

The approach can be used to track the time of each phase and hire APM administrators for just one or two phases. This allows one to see 1) if more hours need to be spent on a particular step. 2) The relationship between hours spent on creating, maintaining, and optimizing definitions and the number of false positive or missed defects/alerts. Few hours spent maintaining definitions may lead to outdated and invalid definitions plus false positives.

4) Can easily incorporate reporting as part of the lifecycle.

Reports can be used as a validation tool to determine, false positives, under and over counts, overlapping definitions and more. This works well with the monitor, optimize, and maintain phases.

5) The phases also correspond nicely with setup/configuration issues.

Each transaction definition lifecycle activity has a related set of things that could happen to hinder completion. One may be unable to record because of bad private keys or bad network traffic. A definition may not work because of missing a request header or the content type used. An application may be hard to optimize if there are few parameters that are unique. Knowing what can go wrong in each phase will make it easier to resolve.

The lifecycle will continued to be reviewed in forthcoming articles particularly the maintenance and optimization stages.

Discussion Questions

- 1) Do you use reporting as a transaction definition validation tool? What are some of the techniques that you use?
- 2) What are some of the issues that you face in each face that hinder your completion?
- 3) How well do you tie the ALM approach with APM?

3.8 Keeping your Definitions Current (Tip #21)

[Return to TOC](#)

Did you ever read the story of Rip Van Winkle? You know the one -- where an APM CE administrator who falls asleep after adding a hundred transaction definitions? He wakes up after sleeping for six months and finds that all his definitions are out of date and generating false positives and bad metrics. What horrors! What, that's not how the story goes? Well for some APM CE Administrators, it does happen that way. This article talks about why transaction definitions go out of date and tips on keeping them current.

Transaction definitions go out of the date for these reasons:

- 1) New application releases (both major and minor) come out with new/modified/deleted URLs, HTTP headers, HTTP components and the like.
- 2) The definition was not correct to begin with.
- 3) HTTP/HTML/SSL etc. is always changing.
- 4) New releases come out of web servers, load balancers, firewalls, application servers, etc.
- 5) Changes in host names/fully-qualified domain names.

So how often should one review their definitions? Typically this is done once every three to six months (2-4 times a year). This of course depends on frequency of application changes and the other factors listed above.

What is the best approach to update a definition? Typically used are a variety of approaches

- 1) Under Business Services, run the "Save to CSV" option to see when the last time a transaction definition was "hit." If it has been many months, then a new definition is in order.
- 2) Re-record the definition and see if you can get defect/statistics. It might be worth the time to compare to the current definition to understand the differences.
- 3) For new releases, record the definition first in APM CE test environment and then migrate them to production. (Provided the definitions are close to each other.) Discussing release changes with application staff may help speed up this process. Part of this testing should be have defects and statistics changed in the new release and the reasons why.
- 4) You can also record in production, move it to a Sandbox business application to test. You can then copy it under the business service. (However this will be seen as a new business transaction

and cause issues for those tracking historical statistics. To overcome this, instead promote the new definition instead into the existing business transaction. (Of course after testing.)

Discussion Questions

1. How often to do refresh your transaction definitions/ What are some of the major reasons for changing definitions?
2. Which of the above approaches do you use to update a definition?
3. How involved are your application teams involved in testing that your transaction definitions are current?

3.9 Application Monitoring Strategy (Tip #27)

[Return to TOC](#)

When I was an architect, I would include the following as customer deliverables at the end of each engagement trip report:

- Create an APM Monitoring Strategy and an Application Roadmap for APM CE to monitor applications.

However, I am not sure if any customers actually followed through on this. (One did tell me that they already had an application monitoring strategy. Another was proud to mention that they did not.)

This article will deal with the monitoring strategy and next month will cover the application roadmap.

Wikipedia defines strategy "as a high level plan to achieve one or more goals under conditions of uncertainty." That seems to be a great fit to the application performance market where uncertainty and change are the only givens.

So what are some guidelines for this strategy document?

- 1) It should be a living document. It should be reviewed and updated either quarterly or monthly.
- 2) it should be high-level and no more than eight to ten pages.
- 3) It should be easily accessible and highly visible throughout the APM Support organization.
- 4) It should be flexible to cover changes in an organization.(This would include - organizational changes such as mergers, spin-offs, consolidations, responsibility changes etc.
 - application changes such as new application implementations or old application removals.
 - monitoring responsibilities in a federated environment. (What will your organization will monitor versus your business partners?)
 - Changes in technology (such as the migration of data centers to the cloud, big data, etc.)

5) It should have buy-in from application monitor stakeholders such as the application owners, application customers (when appropriate), and the application monitor organization among others

What would such a document include?:

- 1) Vision for Application Monitoring
- 2) Key Objectives of Application Monitoring
- 3) Key Metrics for measuring Application Health and Transaction Success.
- 4) Organizations involved
- 5) Applications being monitored
- 6) Solutions being used. This includes vendors, strengths and weaknesses, key components, integrations, and other information.
- 7) Six month- 1 year projects and goals
- 8) Key documents for further information
 - Vendor manuals
 - Policies
 - Best Practices
 - Glossary
 - Network setup
 - Overview of key applications
 - Run books

Discussion Questions

1. Do you have an application monitoring strategy document. If not, why not?
2. If yes:
 - Who maintains the document
 - Is there a process to get the document reviewed and updated?
3. Do you have anything that you wish to share about this topic? I would really like to hear what is working or not for you.

Section 4: Reporting

[Return to TOC](#)

4.1 Export Tool vs. Canned Reports

[Return to TOC](#)

For the majority of APM users, the APM Customer Experience canned reports are more than adequate in presenting their application health. But for some customers, they may need to consider using the APM Export Tool instead for the following situations.

- When needing custom percentiles for reports involving transaction time, size, and throughput. Currently, the canned report cannot customize percentile values in reports.
- When statistical aggregations are needed for a selected time period.
- When specific defect information needs to be extracted.
- When custom graphs and reports need to be produced from the raw data.
- When data or statistics for a specific combination of time, business service/transactions, user groups, etc. are needed.
- when a custom report can be created by extending the export tool Java code.

If you haven't use the tool before, please take the opportunity to do so. If you have, please respond to this tip with other uses of the tool.

Notes:

1. The Export Tool can be found here:

<https://community.wilytech.com/entry!default.jspa?categoryID=604&externalID=2893&fromSearchPage=true>

2. A tech note on report options can be found here:

<https://communities.ca.com/documents/2301951/dedba930-d370-48d5-957b-73f3b9d1523d>

3. Make sure that you use the correct export tool for your APM version. Else the tool will not work and give unexpected error messages.

4.2 APM 9.1 and Semi-Canned Reporting (Tip #10)

[Return to TOC](#)

APM Customer Experience offers a full range of reporting from canned reports to full-blown systems (usually built by CA Technologies Professional Services). APM features a middle ground which I call the semi-canned reports. These include the following features:

- Expanded report content
- Programmatic creation
- Export of data in a format that can be manipulated by third-party reporting software.

In APM 9.1, Semi-canned reporting has been expanded in a big way:

- In addition to the existing Readme files, there is a new document -- the APM API Reference Guide. It covers the Web Services SDK and the APM Customer Experience Data Export Tool (which is built using the APM Customer Experience Transaction Model API.) The CA

Introscope Web Services API is also discussed.

- The Data Export Tool has additional reports for Transaction Content Errors -- making it now 50 report types and countless options.

Note that to use the Export Tool, you must have APM Customer Experience Administrator privileges.

- The arrival of Flexible Reporting. Flexible Reporting is built into the TESS Admin GUI and does not require Administrator privileges. Go to CEM>Export Data in the TESS GUI to access. Once there, go to the Statistics Data (producing aggregated or non-aggregated data), Defects Data (selecting data for a time range, if including metadata such as HTTP response/request variables and other parameters), and Incidents Data. Select the appropriate parameters to filter the data and click the Save to CSV button. An export file is then produced. This also gives you the ability for the first time from the GUI to customize the percentiles shown in the report. Note also that producing these export files can also be scheduled and mailed as one or more zip files.

Discussion Questions

- Do you have the need

To extract selected defects and incidents?

To manipulate APM Customer Experience data using third-party reporting systems?

4.3 Dude, Where's My Report (Tip #30)

[Return to TOC](#)

Sometimes, defects or reports will not show up. This Tuesday Tip gives you some suggestions on what to check before contacting CA Technologies APM Support.

Step 1: Triage and Problem Determination

First thing is to discover the extent of the problem and which APM and underlying infrastructure components are impacted.

1) Is it something simple as the span port/network tap is misconfigured? So traffic is being filtered out, or two way traffic is not set up. Traffic could also be inadvertently with hardware filters (MTP) or web server filters.

2) Are there issues with private keys so the traffic cannot be decoded? (Previously

discussed in an earlier Tuesday Tip)

3) Are files backing up on the TIM?

4) Are the definitions still valid? Check the Save to CSV option under Business Services to see when a transaction last received defects

5) Try to understand the extent of the problem:

- Using Analysis Graphs, figure out:

The date of the last defect or report. Also the scope of the issue for reports (Is it for certain date ranges, Is it for a particular time frequency such as hourly.)

- See which reports are impacted. (All or just one type of report.)

- Also look for "disappearance patterns" such as hourly data is showing up but not daily. This would show up in reports as data today is showing up but not yesterday.

Step 2: Fixing the issue

Second, research the likely cause of the issue:

1) Check if you have network traffic and private key are valid

- Use tcpdump to check if getting traffic from the desired web servers.

- Check SSL statistics to see if SSL sessions are decoding successfully

2) See if defect and stat files are even being generated at all

- Check the timfiles logs on the TIM and TIM Collector EM Logs to see if defects and stat files are being generated at all. .

3) Defects and Stat Files are being generated but not showing up in APM CEM GUI.

- See if defect and stat files are backing up under /etc/wily/cem/tim/data/out. Look in the defects and stats subdirectories to see how many files are there. (Defects should be processed real-time and have only a few files for a couple of seconds. Only one stats file should typically be present for the previous hour. If files are backed up restart the Stats Aggregation EM.

- Run the appropriate SQL query to check the Last Aggregation Row value in the appropriate stats base table (Such as those in the daily table select max(ts_last_aggregated_row) from ts_st_ts_us_dly;)

- Look for errors after midnight when the stats aggregation has taken place such as org.postgresql.util.PSQLException: ERROR: relation "ts_st_ts_us_int_XXXXXXXX" or Bad Row

- Note the version that is installed. Check the release notes of later versions (Such as 9.1.2 and higher)

Once having this information and having done the above, please contact Support on next steps.

Discussion Questions

1. Are there other techniques that you use when having report issues?

2. Would a way to track files backing up on /etc/wily/cem/data/out be helpful?
3. Which topics would you like to see covered in the future?

4.4 Component Timing Graphs (Tip #31)

[Return to TOC](#)

As I mentioned during this week's APM Global Community presentation, there is a major KB (Knowledgebase) content improvement effort in report. In future Tuesday Tips, I will include a review of the recent Knowledgebase articles created by support.

Until I created the following three KBs, the topic of component timing graphs were underdocumented. Happily, this is no longer the case.

[1. What do the Component Timing values mean in the CEM Export Tool? \(TEC596036 \)](#)

The Component Timing Values are unclear. What does this mean?

```
[login.do|06/01/2013  
17:02:15|61|52|31049][[/gmxx/site_files/loginjs|06/01/2013  
17:02:20|9|9|14940][[/gmxx/site_files/menupage.js.js|06/01/2013  
17:02:21|6|6|7033]"
```

Answer: The values returned are the following:

(Name

Name - Component Name

Start Time - Start Time of the Transaction Request

TransactionTime(ms) - Transaction Time in Milliseconds

TimeToFirstResponse - Time to First Response

Size(Bytes) - Response Size in Bytes

To generate a component timing report, the following two conditions must be true:

The export-command-number must be for a defect related report. Currently these include these numbers: 10-14,36-44.

The -includecomptiminginfo export tool parameter is specified. It contains no other arguments and is optional.

[Author's comment: To figure this out, I had to spend some time going through the export tool Java code to figure out the values returned and the reports that it applied to. This

question was asked in a case and another Engineer asked me to find out the answer. I want to thank Vijay from Support for being a rigorous reviewer on this]

[2. What does the Component Timings Area of a CEM Report show? \(TEC596047 \)](#)

The APM component timing information consists of the following columns:

Name - the rows are the components associated with the transaction response. Typically the overall transaction component is first.

Time to First Response (ms) - the time of the transaction from the request's last packet to the response's first packet. A time of 5000 ms (5 seconds) or larger is typically of concern and is indicative of server or network issues.

Start Time - the time that the transaction is started to be received. The time is in the format YYYY-MM-DD hh:mm:ss.ms

Transaction Time (ms) - the component's portion of the total transaction time from the start of the first request to the end of the last response. A time of 5000 ms (5 seconds) or larger is typically of concern and is indicative of web server issues.

Size in KB - the observed size of the component that was loaded in the web browser

Time Line (ms)- the barchart shows the entire lifecycle for one component. The barchart is separated into two parts - the time to first response and the response transfer time. A color key is shown

Other information

The bottom left hand corner of the chart lists the number of items found and links to other pages if there are many components.

Interpreting the Chart

Much interpretation of the chart is straight forward - it is easy to see which component is

the slowest and the fastest. But interpreting other issues may not be as clear.

Here are three special cases:

Case 1: Time to First Response is almost as long as the Transaction Time

The first case is usually an indication that the application server or network is experiencing slowness. The defect detail information alone is not enough to determine the root cause of the slowness.

Case 2: Transaction Time is longer than the Time to First Response

The second case is an indication that the network or remote client is experiencing slowness. The defect detail information alone is not enough to determine the root cause of the slowness.

Case 3 Gaps between components

*One popular question is why are there gaps between the component bar graphs
The gap is due to the operation of the HTTP protocol and HTML layout operations.*

For example, if there are dynamic components that load after the prior components and then refer to additional components, a gap will exist. Other factors include:

The type of browser (which impacts layout speed, web standards supported, javascript engine, etc.)

Computer Speed. Certain computers will do everything within a paging file.

The speed of the web server response. (It may be impacted by proxy servers, load balancers, etc.)

[3. Why are there gaps in my component timing graphs? \(TEC596052 \)](#)

[Author's note: This is probably the useful of the three. There are some helpful screenshots included in the KB. So please take the time to read.]

This is a subset of the previous KB -- TEC596047.

[Author's Note: This was the first of the three written. I wanted to get something out the door fast.]

Discussion Question:

1. Will Tuesday Tips annotating recent KBs be helpful?
2. After reading this are there still unclear aspects of component timing reports?
3. What would you like to see a KB article on?

4.5 E-commerce and User Groups (Tip #46)

[Return to TOC](#)

Introduction

We continue looking at APM CE setups that may be useful but can have hidden costs including opening support cases. This week we look at various user group situations.

Some APM administrators may not realize that they will get user information in defects whether it is set for enterprise or e-commerce mode. The difference is enterprise mode supports a wider range of user group identifiers and user information is not kept for historical reports. (Ecommerce only supports Request attribute user groups and Unidentified Users.)

Here are some common scenarios that can cause issues:

Scenario 1: Using case-sensitive user names/High number of Inactive Users

By selecting the case-sensitive user name setting, Gwashington,gwashington, and gwashingtoN are seen as three different users. This may be valid user names or user typos. For a busy enterprise mode application, this can fill up a database quickly. Combine this with a low setting for the number of days that a user becomes inactive and your APM database can fill up quickly. So cleaning up the database and changing the case-sensitive settings are two ways to alleviate this. Another way may be setting to e-commerce mode or removing the user identifier.

Scenario 2: Using a User Identifier with Ecommerce

The documentation states the following when having many user groups due to request attributes or many Client IP Subnets:

Important: If your installation is a large-scale e-commerce site (hundreds of thousands or millions of users) use caution with this feature. The number of user groups created can become unmanageable.

In spite of the warning, some customers utilize a user identifier in e-commerce mode. This results in the following:

- Many users being created and stored in the database.
- EM busy collecting user and session information which gets written to the database each hour. This eventually will fill up the database and it will become sluggish

So deploy users/user groups in ecommerce mode with caution and periodically assess the need for periodic database maintenance.

Scenario 3: Exceeding the Maximum APM CE User Group Limit

In the TESS-default.properties, there is a setting called maxUserGroups. It has a default value of 5000. Once reached, users are placed in the New Users Group and additional user groups are not created. However, the documentation is silent on what the highest that this value can be configured. Exceeding 5000 user groups should be done with care and will depend on your architecture and EM/database hardware.

Users/User groups are a great APM feature. But its impact on APM responsiveness should be reviewed as an ongoing task.

Questions:

1. Are you a site that has seen one of these three scenarios? What did you do to resolve the situation?
2. If you are using e-commerce with user identifiers, is performance and functionality working as expected?
3. What other topics would you like me to cover?

4.6 SLA Report Misconceptions (Tip #46)

[Return to TOC](#)

Introduction

The last two monthly tips talked about APM CE configurations that have troublesome implications. This month, we look at the success rate trap.

First let us review what the APM Glossary defines as a success rate.

The success rate measures the percentage of transactions that are defect-free. CA CEM Calculation: success rate = 1 - defective count / total count

Note the key words "**percentage of transactions that are defect free.**" This is talking about ALL transactions and ALL types of defects.

The Trap

Not realizing this, the unwary APM administrator gets in trouble. They agree to comply to a very high SLA with their application owners thinking that this applies to slow time only

But if the network data is not cleaned up, they could get a high number of missing and partial transactions. Or see a high number of Client or Server errors due to network and server issues.

All this contributes to a low success rate even though there may be a low number of slow time defects.

Discovering too late their plight, the frantic APM Admin opens up a support case asking what to do.

The Remedy

Currently there are three things that can be done:

- 1) Ask for an enhancement request in this community site for a slow time success rate be added to a future release.
- 2) Create a custom report that showing the slow time success rate for a business transaction.
- 3) Use Yield as a measurement instead which is less impacted by this situation due to the larger denominator than a success rate.

Discussion Questions

- 1) Do you know an APM Administrator that fell into this trap?
- 2) What did they do about it?
- 3) **What other troubleshooting topics would you like to be covered in Tuesday Tips?**

Section 5: Database

[Return to TOC](#)

5.1 APM Backup (Including Oracle and WTG!) and Export Overview (Tip #16)

[Return to TOC](#)

You have spent a lot of time getting your APM environment just right to monitor the appropriate applications and return the most useful metrics and statistics. But have you spent as much time getting your environment properly backed up? In this tip, we will look at what, how often, and strengths, and weaknesses with the mechanisms.

One of the first steps is to create a backup inventory which will include at least the following:

- Partitions, Directories, Files, etc. to backup
- Backup mechanisms
- Frequency of backup
- Type of backup (See <http://en.wikipedia.org/wiki/Backup> under Data Repository Models.)

Typically is full or incremental/differential.

- Storage media
- If placed offsite

From this inventory, one can devise an overall backup philosophy including practices, processes, and resources. This can then be included in a backup/restore plan. In turn, this can be incorporated in the server run book of operational procedures. (Don't have a runbook. Ah, that's a topic for a future tip.)

So what could be included in an APM backup inventory?

What

- Appropriate APM EM directories (such as EM_HOME/config,/data,/ext, /license). For APM CE specific files include tess-default/tess-customer.properties, HTTP plugins, and evidence collection scripts. For Introscope this includes smartstor data, startup files management modules, extensions, and calculators.)
- Appropriate APM Agent directories (such as AGENT_HOME/config for custom pbds, startup files), and screenshots of related application server configuration settings.
- Appropriate WTG/CTG directories (WTG Agent Directories usually starts with wtgagent_agent,RTMC and Tomcat configuration files)

How Often

- In the APM Administrators Guide, the APM Configuration/Administrators Guide lists the following tasks (Full Disclosure: I created the original list.)
 - 1) Daily -- perform APM database (and any other) backup.
 - 2) Weekly -- test APM database (and any other) backup/restore procedures.

Mechanisms

- APM does not include a mechanism to backup the operating system. So it is BYOB (Bring Your Own Backup.) Most companies have operating system or IT groups that ably handle this requirement
- APM does not include a backup for configuration and non-APM database files. However, since these are just files and directories, they can be backed up by the same software used to backup your operating system files.
- APM database has three backup mechanisms (Note these are Postgres only)
 - 1) Full Backup which saves APM CE configuration, statistics, and triage map information. This uses the ddbbackup compressed format. A restore replaces everything in the database. Note that in APM 9, this is available through the command line only.
 - 2) Configuration Export which saves APM Configuration only (no statistics). This uses an unpublished, uncompressed XML format. An import replaces everything in the database. Note that in APM 9, this is available through the command line only.
 - 3) Business Transaction Export which saves the business transactions only (No configuration or statistics). It uses a different unpublished, uncompressed XML format. This will not wipe out the existing system or statistics. You will have to create the business application/business service object if using this approach. Note this is available through the GUI only.
- For APM CE, you may also take screenshots of various aspects of the configuration and manually type them in. (Particularly for APM CE.)

- For APM databases on Oracle, you may use a variety of mechanisms to backup or restore. A tech note that I created on using the imp/impdb commands is available at <https://communities.ca.com/documents/2301951/df8b2bda-f5c7-45d4-a55c-c1f19e2ee2b0>

Note that all three approaches can be used with server migrations as well.

There are many articles out there, I have included two sample ones:

<http://www.lesbell.com.au/Home.nsf/b8ec57204f60dfcb4a2568c60014ed0f/2c051f1c36c2f47eca256ce400760de5?OpenDocument> -- Covers backup options for Linux

<http://www.pcurtis.com/backup.htm> -- Lists sample backup philosophy

Discussion Questions

- 1) When did you last backup? When is your next scheduled backup?
- 2) Do you have a backup inventory, backup philosophy, backup plan, and runbook with a backup plan?
- 3) Do you have some restore lessons learned that you wish to share?
- 4) What additional or related topics would you have liked to see the above article include?

5.2 APM CE Backup, Config and Business Transaction Export (Tip #20)

[Return to TOC](#)

Once a month a ticket is opened. "My APM database had issues and I lost my definitions -- What are my options?"

To answer this question, it is helpful to take a step back in time and review the history of APM CE Backup and Export.

CEM pretty much always had a **backup** command. It was accessible from the UNIX Console and could be modified to send to another file location or to use a third-party backup. Then in CEM 3.3, a GUI interface was added for backup and also for **Configuration Export/Import**. Only by receiving an email could one tell if the backup/restore or configuration export is completed.

So what were the differences between these two features? Backup was automatically done each day at 3 AM. It used a compressed ddbackup format. It would include everything CEM related -- Configuration, definition and statistics. The Configuration export was only created manually and did not have an automatic option. It used an unpublished xml format which produced large files. The difference from backup was that it included the configuration and definitions -- but not statistics. Note that neither option backed up and restored the operating system.

Both options would wipe out the existing configuration if restored/imported. This was not helpful for those administrators that just wanted one definition that wanted to keep the existing configuration and statistics. In CEM 4.1, a new option -- **business transaction import/export** became available. This allowed one to bring in just the needed definitions without wiping out an existing CEM setup. The import/export file used a different unpublished XML uncompressed file format. This useful feature has some quirks -- 1) It can only be run manually and not automatically. 2) If doing each business process/service, one had to go into each business transaction to export. 3) One had to create the Application/Business Application and Business Process/Business Service BEFORE importing the business transaction. And 4) If the export/backup was corrupt, there was no repair utility.

Let's move ahead to APM 9. The CEM database was renamed to the APM database to reflect its new functionality (of storing triage maps). All three options are still available. However, the GUI option was no longer available for backup/restore and configuration export/import -- only the command line. And backups were no longer automatically done -- it was now the Administrator's responsibility to add backup to the job scheduler. Also at present time, APM backup is for Postgres not Oracle only. (Please see the Oracle Tech Note/Tuesday Tip for Oracle Backup options).

One question that I was often asked was "which of the three options should I use?" I would always say - "For greatest flexibility, use all three. That way you have multiple options at the time of restore and import. This is particularly useful for upgrades, migrations, and maintaining definitions in multiple environments. And then I'd launch into "the talk" which was the abbreviated version of the above.

So let's get back to the original question:

"My APM database had issues and I lost my definitions -- What are my options?"

If this is the case and one has not implemented any of the three options, then your choices are

- 1) Recreate the definitions from any appropriate recordings
- 2) Use Script/Advanced Recorder or Transaction Discovery to re-record the definitions
- 3) Manually recreate the definitions. However by doing this, you are likely to have a minimum of transaction components and not capture the complete customer experience.

Discussion Questions

1. Do you have an automatic backup scheduled for APM database? How often is it scheduled?

2. Are you using third party tools to backup APM ?
3. If you are not backing up, which restore option will you use?

5.3 APM Database Owner's Manual: Overview (Tip #38)

[Return to TOC](#)

Introduction

This month's Tip is a start of a new series on the APM database. This article gives an overview of some parts of the APM database administration lifecycle.

The APM database is a superset of the 4.x CEM database containing data both for APM CE and Introscope. This includes:

- APM CE overall configuration settings. Most of these can be configured through the APM CE MOM-TESS GUI interface.
- APM CE transaction definitions and related settings (such as defect thresholds, SLAs).
- APM CE statistics settings and values (such as retention).
- And new to 9.x, application triage map data

The database schema is not publically available but one can see the tables and fields used in the APM database by examining the various database scripts found under the <EM_HOME>/install directory such as the createtables, createapmtables, createappmptables. Other installations scripts set the table constraints and sequences.

Note that only one APM database can be active in a cluster at a time and currently only custom APM database failover mechanisms are used.

Planning

This is a very important task to get correct. So take the time that you need to investigate and plan for the APM database deployment. CA Technologies resources are available to assist as needed. When deploying a database, there are several decisions to make:

1) Choosing the Database vendor. The APM database may be installed on either Postgres or Oracle. (There is a tech note that explains some of the requirements that you may consider in making this decision. Also, there are many articles publicly available on this topic to help in the decision process.) Both products will do the job so select what makes sense for your environment.

2) Architecture and Sizing

Getting this step right is important for a stable environment. Failure to do so may mean:

- Database being too busy to be available to perform operations because being undersized or not on dedicated box.
- Database operations stopping for running out of table space. (In more recent APM releases, there is a configurable warning for Oracle when this is about to happen.)
- Database operations not completing because the database is running out of memory.

Some of the things to determine are the following:

- Where on the network to place the APM database in relation to the EMs and TIMs. Placing it in another database center than the EMs could contribute to performance problems due to network

latency and other factors.

- Size of the database. You want to be able meet your present and future needs. (Such as if you need to monitor thirty additional applications tomorrow. Use the APM Performance and Sizing guide on factors to consider for sizing.
- Hardware requirements to make sure the memory and other hardware provided are adequate for present and future needs.
- Look into the connection pool (c3po) settings to see if they need to be changed for the number of planned database connections.

3) How many databases?

- is there a need for multiple databases for different environments, failover, testing etc.? How many are needed?

4) Dedicated or Non-dedicated server?

- Unless it is a small test environment, a dedicated server is a good investment from a performance standpoint. Otherwise you may have some of the issues mentioned earlier.

5) Is Database needed at all?

- If this is an Introscope only installation and not using appmap, then a database may not be needed at all. However, your logs may then be filled with all sorts of database errors and EM startup/shutdown may be slower.

Installing

The install guide goes into the details on this area. Some of these include:

- Database pre-requirements (Not meeting these can impact successful database performance.)
- Order (Install database then EM or the reverse? Typically most sites do the former)
- Account used -- root or not-root. (But not sudo.)
- Parameters to enter during database installation (such as database name and port, account name and password, database password.)

It also lists any post-installation steps that are needed to be completed.

One important step many administrators often forget is to look at the install log and schematools.log to see if the database installation is successful. Since the database installation is running a series of SQL scripts, it is possible that a line in an individual script was not successful. This can only be found by reading the entire APM database log (Unlike the install log, there is no summary at the end to see if was successful or not.) In some cases, the database may need to be installed again

In the coming months we will take on APM database upgrades and migrations, administration, and optimization.

Discussion Questions

- 1) What are the lessons that you have learned and best practices followed for APM database planning, architecture, and deploying?
- 2) What would you like to see changed in APM database installations?
- 3) What other database topics would you like to be covered in Tuesday Tips?

5.4 APM Database Owner's Manual: Upgrades (Tip #39)

[Return to TOC](#)

Introduction

This month's Tip continues to explore the APM database lifecycle by looking at upgrades and migrations. Future months will include database optimization and administration.

Planning

An upgrade or migration offers a chance to revisit existing choices and expand existing capabilities. This could include any and all of the following decision points:

- - Migrating from Postgres to Oracle (There is no supported migration tool to go the other way.)
- - Moving to new hardware/operating system & software
- - Upgrading database version only
- - Upgrading APM and database
- - Install database then restore statistics and configuration
- - Install later version of database and import definitions only
- - Keep existing APM database as a historical database only.
- - Upgrade manually or using the installer.
- - Undergoing capacity planning to handle current and future database needs. This includes determining how many future business applications will be monitored.

Some guidelines in this process include the following:

- - Starting with a fresh database rather than migrating an existing database ensures typically a smoother implementation.
- - If a database is being migrated/updated, then it should be cleaned up first. This includes vacuuming for Postgres, reducing data retention settings, removing unused definitions, and cleaning up triage map data. This is a very important but often overlooked step.
- - Have three different types of backup before migration/update
 - * Backup (Configuration and Statistics)
 - * Configuration Export (Configuration and Definitions Only)
 - * Screenshots and Business Transaction Export (Definitions only). Screenshots are needed of the Business Application and Business Services so they can be recreated before the Business Transaction is imported.
- This way you can use the appropriate restoration/export tool. Such as if you want one particular transaction definition, then just import only that definition. Note that having screenshots of the configuration and definitions is a good fallback on what was in the pre-update/migration database.
- Not having a backup means that all data is lost and there is no fallback plan. So it is something that should be avoided.
- - Do a dry run of restoration/import.
- - The documentation has special procedures for APM databases with versions earlier than 9.0.6, schema updates only, migrations, etc.
- - Revisit changing database settings such as the connection pool (c3p0) and Postgres max connections in postgresql.conf file. These may need to be changed to handle increased traffic.

Installing

A successful planning process means a healthy database migration/update. The following should be done during the actual install of software

- Before installing, make sure that you have:
 - * the needed values for the input items requested during the database installation.
 - * met all the upgrade pre-reqs (such as having enough disk/table space/memory etc.)

- * A successful backup, config export, and business transaction export.
- * Use an account with correct permissions to install.

- During/After the software install:

- * Check the install and schematools.log
- * Check that the permissions and account of database files are correct
- * See if you can connect to the database via the appropriate tool.
- * See if data is showing up in APM CE GUI.
- * Verify that the database is doing aggregation correctly after an upgrade. Otherwise, aggregation issues may lie undetected for weeks or months. I previously distributed a tech note on this topic.
- * Review Collector and APM database logs to see if database is logging any errors such as connection Issues. This will eliminate future issues.
- * Review APM Database Supportability metrics/tessperflog to see if the APM database is performing as expected.
- * Review the triage map in the APM Investigator to see that all is working as expected

- One area of confusion is doing a Postgres upgrade manually. The basic steps to follow are:

- * Drop the database - drops all the tables in the database and deletes the database
- * Create the database - Creates the APM CE database
- * Create the schema - Creates the schema, tables, etc. in the new database.

Discussion Questions

- 1) What best practices have worked for you in terms of APM database and upgrades.
- 2) What would you like to see changed in APM database upgrades?
- 3) What other database topics would you like to be covered in Tuesday Tips?

5.5 APM Database Owner's Manual: Maintenance (Tip #40)

[Return to TOC](#)

Introduction

This month's Tip (#40 for me) reviews the often overlooked area of APM database maintenance. Next month, we will finish up the series by looking at database optimization.

Currently the best documentation in this area is selected Knowledge Base articles. I am working on a Tech Note on this topic that should be out shortly. Once released, it will be stored in the Best Practices Documents area of the APM Community site.

Proactive Activities

There are some things that an APM database administrator can do to ensure continuous database health.

- 1) Review and Implement Database Vendor best practices. These can be found in the following links:

<http://www.postgresql.org/docs/9.3/interactive/> This is an example of on-line Postgres database administration documentation.

http://docs.oracle.com/cd/E16655_01/index.htm this is an example of on-line Oracle database administration documentation.

2) Frequently review the growth in the overall APM database as well as particular tables. This is discussed in the following links:

http://wiki.postgresql.org/wiki/Disk_Usage

<http://stackoverflow.com/questions/10006294/simplify-an-postgres-sql-query-for-listing-table-and-index-sizes>

http://www.dba-oracle.com/t_script_oracle_table_size.htm

Typically the largest tables are defect-related (such as meta-data), users, and session information. Depending which table is oversized, will determine what the cleanup strategy will be.

3) Check the Postgres logs to see if the vacuuming process which soft deletes various (but not all database tables) is working. A good KB on doing manual vacuuming is

<https://support.ca.com/irj/portal/kbtech?docid=597519&searchID=TEC597519&fromKBResultsScreen=T> This same KB talks about database retention settings.

4) Review and Change APM Database as needed:

The following link covers Postgres settings that should be occasionally reviewed for performance:

<https://support.ca.com/irj/portal/kbtech?docid=610832&searchID=TEC610832&fromKBResultsScreen=T>

One APM setting worth configuring is the Oracle APM tablespace size warning message --

<https://support.ca.com/irj/portal/kbtech?docid=606480&searchID=TEC606480&fromKBResultsScreen=T>

5) Every few days, look in the EM and Database logs for errors and rectify them. For example, you may suddenly see APM database index errors. A fix for that can be found here:

<https://support.ca.com/irj/portal/kbtech?docid=610831&searchID=TEC610831&fromKBResultsScreen=T>

Data Retention Settings

There are four types of data which have data retention configurable settings: events, session partitions, defects and stats. These include:

- User/UserGroup Statistics -- See Setup>Domain>Data Retention Settings. Please contact APM Support if you need a script to purge inactive users.

- Defects --See Setup>Incident Management Settings

- Events -- System > Events, and then click on the Event Manager table to configure events.

- Session Map -- See Administration - > Business Applications -> General (under specific application)-> Session Timeout These are partition tables which get dropped according to configuration. The default value is 60 (minutes).

Note also there are other configurable changes:

- In the <EM_HOME>tess-default.properties/tess-customer-properties, there is a setting that impacts how long concurrent session data is kept in the APM database:

Concurrent session data is removed from the database when it is older than this value (2-24)

concurrentSessionData.purgeAfter_Months=3

There are other tables that are not configurable by design and do not include soft delete record fields at the present time. These include the following:

- Appmap
- Quartz (Report Scheduler)
- Audit Records
- Daily/Hourly Aggregation logs
- Service Start Times
- Hourly Defect Re-aggregation
- Session Usage Data

Finally, there are many other tables in this category that should never be deleted. These include most of the configuration settings found in the APM CE MOM GUI such as domain settings.

This is just a start on this topic that I will cover in more detail in the tech note. Your feedback is especially welcomed.

My thanks to Sustaining Engineering particularly Sivasankari Gnanasekaran for providing information on this topic.

Discussion Questions

- 1) What best practices have worked for you in terms of APM database maintenance?
- 2) If you are running APM 9.1.x and Postgres would you be willing to provide to test a new script that does additional APM database cleanup? Please contact me at hallett.german@ca.com
- 3) What other database topics would you like to be covered in Tuesday Tips?

Section 6: Integration

6.1 Three Wider Scope KBs (Tip #33)

[Return to TOC](#)

[Steps for integrating problem-resolution \(transaction trace\) APM CEM with Introscope.](#)

[APM CE \(CEM\) just created a defect. Is it possible that it is a false positive?](#)

[An overview of 85% of the WTG issues encountered during recording, monitoring, and integration, and how to address them.](#)

I've had some great feedback in the past few weeks from readers on this column on how helpful it has been to you. Thank you! And I hope to continue to read future columns.

Each week, each APM Support Engineer is tasked in getting out a KB article. While KBs are helpful for the "specific problem -- need a solution" scenarios, there is also a need to sometimes take a wider scope and focus on process, best practices, and techniques.

Three recent KBs attempted to do that.

The first one provides an approach to get transaction traces working with Introscope and APM CE (CEM). This is the first time that I have written this down after using it for a number of years. My success rate using this approach in getting things working is near 100%. It is also the same approach that I use also to debug these type of issues.

A second KB provides a list of conditions under which a false positive defect may occur in APM CE. Knowing this will help you determine which types of defects to trust or not trust. Eliminating false positive defects also improves TIM throughput and report quality.

The third KB is on the under-documented area of WTG Troubleshooting. Types of issues, logs to review, next steps, tools and techniques are all provided. By knowing this, hopefully you can hone in on the real issue a little quicker

Discussion Questions

1. Will Tuesday Tips annotating recent KBs be helpful?
2. What "Big scope" KBs would you like to see??
3. Were the above KBs useful?

6.2 Configuring % of Slow Time (POS) for APM CE (Tip #37)

[Return to TOC](#)

This month's tip covers the area of problem resolution triage (aka transaction trace) integration. In a previous tip, I already discussed a knowledgebase article on an approach to use for getting the integration to work.

Reading through the documentation in the Configuration and Administration Guide, one learns the following:

- 1) Go to Setup>Introscope Settings to configure the integration.
- 2) Once there, you can configure how long a transaction trace can run (*Maximum Transaction*

Trace Session Duration) and the time threshold that must be exceeded to start a transaction trace (*Transaction Trace Time Threshold as a percentage of the slow time defect.*) Hereafter, it will be referred to as "percent of slow time or POST"

- 3) Once a transaction time on the application server (NOT the web server) exceeds the POST value AND the transaction definition is matched, then the transaction trace is initiated and sent to the EM.
- 4) Setting the value too low may negatively impact an application server.
- 5) These settings are global and cannot be applied to individual business services or transactions. So you could get transaction traces on some transactions that are not of interest.

But other than that, many other questions are unanswered:

- 1) What are typical POST values during test?
- 2) What are typical POST values during production?
- 3) What are the implications of setting too high a value?

Let's explore each of these in turn:

- 1) What are typical POST values during test?

Typically, there are only a few transactions being monitored by APM so the POST setting can be configured very low such as 5-25%. There is more concern about learning what contributes to a slow response time than the impact to the application server. Note that an APM Proof of Concept could also use the same settings.

- 2) What are typical POST values during production?

These are usually set to a low value before a production rollout to see if the integration works. Then for a rollout/optimization, the value is raised higher than the default value of 50%. By doing this, one will only get transaction traces on the slowest 5-10% of transactions. So 50-200% could be possible values depending how many transaction traces you wish to obtain.

- 3) What are the implications of setting too high a value?

If the value is set too high, then a transaction trace may not kick off. Typically by looking at the Traces tab in the Investigator can show this. For example, if the longest transaction trace took a few milliseconds according to the Traces tab. Then a percent of slow time resulting in a threshold of 2.5 seconds will never be exceeded. And if never exceeded, then transaction traces will not appear in a APM CE defect.

Note, I have also submitted a knowledgebase article on this same topic.

Questions for Discussion

- 1) Would you want to see these values configurable at the Business Service or Business Transaction Level?
- 2) What typical POST values do you use for testing and production?
- 3) What other functionality would you like to see for CEM-Introscope integration?

6.3 A General Approach to Troubleshooting APM Integration Issue (Tip #41)

[Return to TOC](#)

Introduction

In Tip #33, I talked about the steps to resolve Problem Resolution Triage (also known as CEM transaction trace or original integration.)

<https://support.ca.com/irj/portal/kbtech?searchID=TEC599818&docid=599818&bypass=yes&fromscreen=productKBDocs&techDocAccess=N> Steps for integrating problem-resolution (transaction trace) APM CEM with Introscope.

Following that approach should solve many of these issues. However, a steady stream of these types of cases are still coming in. So, I decided to expand what was written into a tech note. (It will be announced in a Community posting when ready.) And this has gotten me thinking of what should one do in working an integration issue of any kind. Here are the steps I follow while working on integration issues:

Step 0: Do the Pre-work

Before looking at any logs, you should already know the following:

- Which components comprise the integration?
- What function does each component perform?
- Which files need to be configured for the integration to work?
- How will I know that the integration is working?
- Which logs are available for each component? Do they have a debug mode?
- Which server does each component reside in my environment?

To find the answers to this, look for the following in the APM documentation:

- A components list
- An architectural diagram
- A workflow diagram or description
- Screenshots of the integration functionality working.
- A list of log and configuration file names and location.

A good example of a document having this is the CA SiteMinder Application Server Agents Guide.

Step 1: Troubleshooting (In the fire.)

The inevitable issue has occurred and it is time to show how the above will help in resolving issues. Let us get back to Problem Resolution Triage. Two different approaches can be used together

- Visual Inspection
- Functional Workflow

Visual Inspection

With Problem Resolution Triage, seeing what is and is not appearing can be an important clue on what to do next. This includes seeing

- What is appearing in the Investigator. (Such as is anything appearing under Custom Metric Host)
- What is appearing in the APM CE defect? (Such as looking in Introscope view in the APM CE GUI or the x-wily-info header in the defect.)

If something is not appearing, it is probably a configuration issue or a threshold not being exceeded (such as percent of slow time).

Functional Workflow

After completing the visual inspection approach, you can then look at the workflow diagram or description and determine the following:

- Which was the last step successfully completed?
- What is the next step in the integration workflow?
- Which components are involved in those two steps?

By knowing which components are involved, you can avoid looking needlessly at other components. For example, looking at the section "CA APM problem resolution triage overview" in the Configuration and Administration Guide, I determine that a Transaction Trace start request is made as part of a new Incident but the transaction definition is not being matched by the agent. So knowing the components involved, I would ignore all others such as TIM and database. My focus would be on why the **Component** (APM Introscope Agent) was not successful in performing this **Function** (Matching an APM CE transaction against the Introscope Agent ruleset.) This would start with an Introscope Agent log in debug mode, a screenshot of the APM CE transaction definition. And much time has been saved on my troubleshooting.

Step 2: Post-Resolution

Build yourself a wiki keeping track of using this approach and add additional questions in the pre-work steps, visual inspections/functional workflow steps as needed.

Discussion Questions

- 1) Does this approach make sense to you
- 2) If not, which approach do you use?
- 3) What other troubleshooting topics would you like to be covered in Tuesday Tips?

6.4 APM CE as a Metric-Generating Engine (Tip #45)

[Return to TOC](#)

Introduction

For the next two months, we will talk about several APM CE scenarios. These situations provide useful functionality but can have hidden costs including involved support cases.

The scenario discussed this month is having APM CE (CEM) only generate metrics to be seen and alerted in the Investigator. This data is analyzed then for short- and long-term trends. Any alerts are discussed and resolved in conjunction with the application team. As long as the dashboards are populated, the metrics are produced, and the alerts provide proper notifications, then all is good.

But there are lost opportunities and future potential setbacks with the above approach as stated. This includes the following:

- 1) Typically, any sort of APM CE (CEM) maintenance is ignored completely. So Incidents and defects (depending on volume and data retention settings) can pile up. In the worst case, the APM database and APM CE GUI become unresponsive. If periodic maintenance and cleanup is not done, then one is risking hours or days of downtime due to database maintenance benign neglect. So if you are going to do this approach, ensure that the database is maintained and not ignored.
- 2) If the APM CE transaction definitions are not being maintained, then invalid metrics and defect-dependent metrics may be produced. Using fresh recordings increases the possibility that current components are being captured. If this is not the case, then the average response time metric captured may be less than reality. (Because

missing or invalid components means an invalid response time.) So at least a quarterly review of transaction definitions is a must.

3) Analyzing the metrics on the APM CE side means you can see over time the subtleties in defect and incident trends. Even better, you can work on resolving the low-hanging defects and then focus on the incidents impacting truly application health.

4) As of today, looking at just the Introscope metrics does not allow you to analyze user/user group trends. So, you are unable to tell if application performance is impacting a small group of users or is system-wide.

It takes words and music to make up a song. So it is with APM. Both the customer experience and application analysis is needed to see the complete picture.

Discussion Questions

1. Are you one of the companies doing this approach? Is this working well for you?
2. Do you have anything that you wish to add on the tradeoffs of using this approach?
3. Are there other topics that you wish to see covered?