

# APM Selection Guide: How to choose the right Application Performance Management System

---

9 Criteria to determine a reliable APM solution  
with highest ROI

**Karun Subramanian**



[www.karunsubramanian.com](http://www.karunsubramanian.com)

## Contents

### Introduction:

The importance of the right Application Performance Management System .....	2
Chapter 0: What do you REALLY need? .....	4
Chapter 1: Architecture .....	6
Chapter 2: Load exerted on the monitored Application or Server .....	7
Chapter 3: User Interface.....	9
Chapter 4: Maintenance .....	10
Chapter 5: Implementation Timeline.....	11
Chapter 6: Intelligent Alerts.....	12
Chapter 7: SECURITY .....	13
Chapter 8: Pricing.....	14
Chapter 9: World Class Support.....	15
Conclusion.....	16
About the Author .....	17

## INTRODUCTION

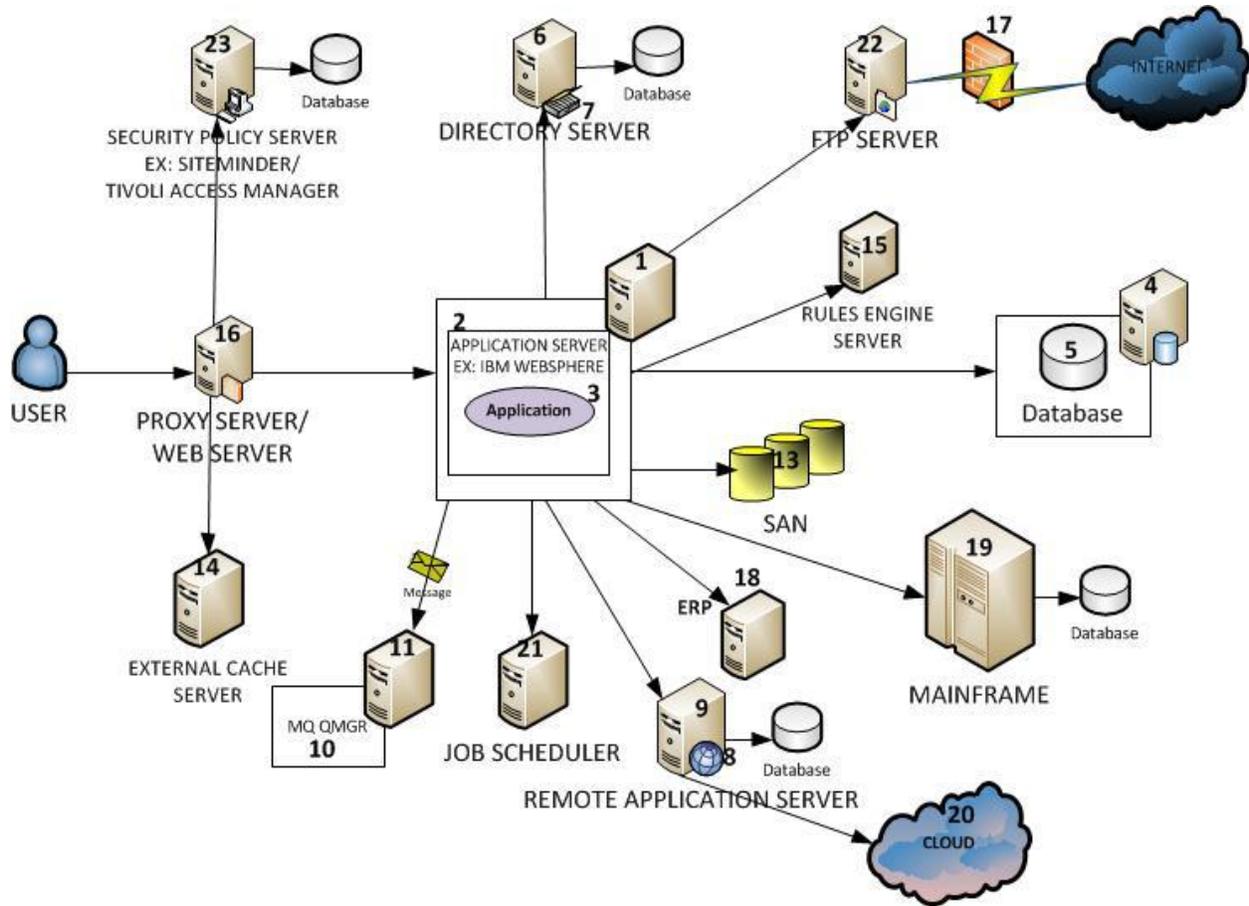
# The importance of the right Application Performance Management Solution

Application Outages, especially when they are unplanned, can create mayhem in your organization. Your reputation- whether you are the CIO or an Application support Engineer- is on the line. In some cases your organization could be penalized depending on the SLA (Service Level Agreements) with your clients. Frequent application availability issues will greatly impair your credibility in the marketplace. The growing complexity of Software Applications makes this worse as the number of failure-points for an Enterprise Application has unbelievably increased. In order to tackle this issue, a reliable and cost effective Application Performance Management solution is imperative. Simply put, following are the reasons why you must invest in an APM solution.

1. Without an APM solution, **you are walking on a land mine** because you never know when your application is going to break.
2. Your credibility is on the line because it is not favorable when your **client finds out about an issue before you do**.
3. You must know how your applications perform so that you can plan for future - **in terms of Infrastructure**.
4. **Your Mean time to resolution (MTTR)** will be much higher without adequate and intelligent APM solution.
5. **You must discover a problem before it occurs**. It is NOT possible to do this without a dependable Alerting mechanism that only a proven APM solution can deliver.

Consider the following rough System Diagram of a typical Web Application. There are more than 20 failure points in this System. Failure of any of these sub-systems can result in a complete outage or degraded performance of the Web Application. Welcome to the modern era of Application Performance Management.

## APM Selection Guide: How to choose the right Application Performance Management System



LUCKILY, we have tons of commercial APM tools to choose from. UNLUCKILY, we have *tons* of commercial APM tools to choose from.

The challenge is not just deciding to procure an APM solution (which I hope is a no brainer); it is deciding which particular APM is the right fit for you. The solution that is easy to deploy and maintain, at the same time deliver value from day one, is the solution you would need to go after.

In this ebook, I will walk you through 9 critical selection criteria that you should use when selecting an APM solution. The advice I give is based on years of experience in helping several organizations of various sizes manage their Software and Hardware infrastructure.

## CHAPTER 0:

# What do you REALLY need?

## Gathering requirements – the key first step

Do NOT begin the search of an APM solution unless you have clearly defined the requirements. You may be wondering 'This is not a *software application* that we are developing. This is a monitoring tool! What do you mean by *requirements*? Well, consider the following questions:

1. Do you need deep insights such as **code level diagnostics**?
2. What are the various types of **technologies** you need to monitor? PHP? Ruby? Java? Mainframe?
3. Do you need end-to-end visualization with **end-user experience monitoring**?
4. Do you need to build **custom Dashboards** for your IT Operations folks to use?
5. Are you particular about using **agent-less monitoring**?
6. Do you need **SAAS** (Software as a service) solution?

These are just few critical questions that can help you narrow down your search for an APM solution.

I recommend coming up with two different types of requirements documents.

- a. **High level requirements**
- b. **Detailed requirements**

### High Level requirements:

The six questions I presented earlier are all High Level requirements. They are critical in selecting the potential APM solution. You must update the list of high level requirements based on your own requirements for your environment.

### Low Level requirements:

This is where you would list out every critical Metric you need to monitor. For example consider the following table that shows a fragment of low level requirements of a Java based Web Application.

### Detailed Requirements for the *MyBank* online banking Application

Metric	Rationale	Alert Mechanism	Alert Threshold
<b>Application Availability</b>	When the Application is down, business is impacted.	Page Support team; Email Account Management team	DOWN/UP
<b>Average Response Time</b>	When the Application is slow ,business is impacted	Page Support team	> 3000ms
<b>Average Response Time of 'TransferFunds' Business Transaction</b>	Business critical function	Page Support Team	Automatic (Based on Baseline learned by APM tool)
<b>JVM OutOfMemory Error</b>	Application is impaired when it runs out Java Heap	Page Support Team	Presence of 'java.lang.OutOfMemory' error in the server.log log file

When you sit down to document the detailed requirements, you will come across the capabilities of the APM tool that you will need to have. You may not be able to get all the detailed requirements documented at first. But can you see the value of getting as clear as possible on the requirements? You should at minimum, come up with detailed requirements for your mission critical applications.

**Action item:**

Even if you have an APM solution already deployed, create a requirements document for your monitoring needs. If you are on the lookout for a new APM solution, this is your step 0. Having clearly documented requirements is a clear sign of an organization that takes monitoring seriously.

Next, let me walk you through the 9 criteria you need to examine to select the right APM solution.

## CHAPTER 1:

### Architecture

#### The primary reason why some APMs fail

The APM solution you are going to select must have **robust** architecture. Keep in mind that APM, for the most part is a number crunching game. The system must process millions of data points in few seconds to produce meaningful metrics. The architecture of the APM solution must allow for scaling easily. But at the same time, you do not want architecture with 10 disparate subsystems.

Here are the questions you must ask regarding the architecture of an APM solution.

- a. Does the architecture rely on numerous hardware/software subsystems? Do you foresee any **single point of failures** in the APM architecture?
- b. Is the Architecture **easily scalable**? The ideal scalability is of a setup where simply increasing the processing power increases the throughput
- c. Is the APM solution easily **extensible** through Plugins? (For example: **An Analytics Plugin**)
- d. Does the architecture support **high availability (clustering)**
- e. Is the Architecture **flexible**? Does it pin you down to proprietary hardware?
- f. Is there a documented **limit** to the number of Metrics/Applications the tool can handle?
- g. Does the architecture rely on a **third party hardware/software** that could be a potential 'weak link' in future?

Learn as much about the architecture of the tool before you proceed.

“Not able to handle the growth in the amount of Metrics is one of the primary reasons some APM tools fail. Make sure the hardware requirements are acceptable and that they can be easily scaled, when required.”

## CHAPTER 2:

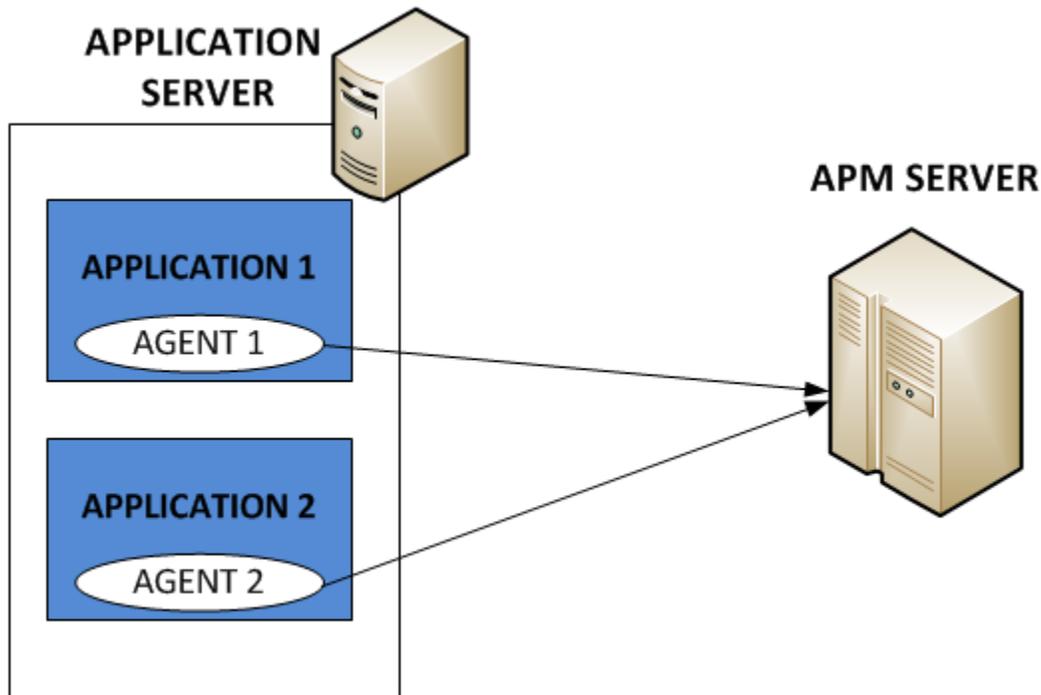
### Load exerted on the monitored Application or Server

#### Blame the monitoring agent

Most of the modern APM tools use some sort of agents for collecting performance data. You must make sure the load exerted on the monitored Application is next to nothing. 2 to 3 % CPU utilization overhead is generally acceptable. Also ensure that the agent is not too intrusive (i.e), you don't want to be modifying your code to accommodate the agent.

Here are the questions to ask when evaluating the load on the monitored Applications and Servers.

- a. What is the typical % CPU overhead due to the monitoring Agent?
- b. Is the Agent too intrusive?
  - a. Does it change the application code on the fly? (Java Byte Code instrumentation is acceptable)
  - b. Do you have to update your code to make the agent work?
- c. Are the hardware requirements for the Agents acceptable? (requiring 5GB per application vs 100 MB per application)



© Karun Subramanian

“By comprehensive testing, ensure that the load exerted on the monitored Application or Server is negligible. You don’t want the monitoring agent to be the root cause of any issue”

## CHAPTER 3:

### User Interface

#### Needle in a haystack? Or Solution in Seconds?

A versatile, intuitive, fast and easy to use user interface is a MUST for an APM solution. If you are going to have your IT Operations team monitor the Dashboards 24X7, then the need for a dependable user interface is of utmost importance. APM tools literally handle millions of metrics. It is the presentation of those metrics in meaningful yet simple way is the real 'value-add'.

Here are the questions to ask when evaluating the user interface.

1. Is the Interface fast and **versatile**?
2. Is there **drill-down capability** to navigate from top-to-bottom with ease?
3. Is there ability to create **Custom Dashboards**?
4. Does the interface **cater to various audiences**? (IT Operations vs Senior Management Vs Developers). Which type of audience is going to use the user interface the most?
5. Is the user **interface mobile-friendly**?
6. Is the interface **web-based or desktop application**? (Either is fine but consider the amount of work involved in upgrading or patching the desktop application)



“The user interface is the face of the APM solution. It must be rich, fast, versatile and intuitive, with drill-down capabilities ”

## CHAPTER 4:

# Maintenance

## The ugly hidden cost

Rolling out a new APM solution is one thing. But maintaining the APM solution is entirely a different thing. You really want 'zero' (or almost 'zero') maintenance on your APM solution. While there will be \*some\* maintenance required, you cannot have several members of your team spending most of their hours in just maintaining the solution. I have seen companies spend more in maintaining the tool than the cost of the tool itself; and it is not very productive for the organization.

Here are the questions you must ask when evaluating the Maintenance.

1. How easy is it to **add new Applications/Servers** to the Monitoring?
2. Is **dynamic instrumentation** possible? Or a 'restart' is required for every change?
3. Can the routine activities be **automated**?
4. Is there a **command line interface/API** to develop scripts/programs that can be used to save time?
5. How often the system needs to be **patched or upgraded**?



“Maintaining the APM solution can be a big hidden cost. Estimate the effort required to support the solution”

## CHAPTER 5:

### Implementation Timeline

#### Value from Day One? It better be.

The APM solution should add value to you from day-one. You cannot take weeks and weeks just to get the System up and running. Modern APMs can deliver value in as little as few hours. In order to deliver results in short time, it is imperative for the APM solution to provide solid automation capabilities, such as scripting the agent's installation. You must also consider the amount and type of hardware/software the APM solution requires for full functioning.

Here are the questions you must ask when evaluating the Implementation Time Line.

1. What is the Average time required to get the System fully functioning?
2. Can the agents be **remotely** pushed/pulled?
3. Can the installation activities be **automated**? (Silent install?)
4. Is there **special hardware/software** required by the APM solution?
5. Is there **production down-time involved** in rolling out the APM solution?



“Modern APMs can deliver value from day one. Carefully analyze the work involved in getting the system fully functioning”

## CHAPTER 6:

### Intelligent Alerts

#### Guess who found the issue first? Your Client.

There is nothing worse than having your client inform you that your site is down (or the orders are not processing, or the transactions are slow, - you get the point?). One of the primary reasons I encourage organizations to invest in APM is to protect and enhance their credibility. But if the APM solution you have does not catch an issue **before** it gets worse, it is of no use. The APM solution must have capabilities to baseline the metrics and automatically alert upon breached thresholds based on **'learned'** behavior of the application. It should also let you manually set a static threshold if applicable.

Here are the questions to ask when you evaluate Alerting.

1. Does the APM solution have the capability to **'learn' application behavior** and alert you automatically when an issue starts to rise?
2. Is there provision to set **static thresholds** easily?
3. Can the Alert messages be **customized**?
4. Can the Alerts be sent **in various ways** (Page,Text,Email etc)?
5. Can you have the system **'take action'** upon a breach of threshold?(for example, can it restart an instance upon 5 consecutive 'OutOfMemory' errors?)



“The APM solution must learn the behavior of the application over time and automatically alert in case of anomaly”

## CHAPTER 7:

### SECURITY

#### Yes it is mostly performance data. No you cannot let everyone access it

**Security is something that cannot be taken lightly when it comes to APM.** Note that you will most probably have the monitoring agents running inside your application. **The agent has access to every line of your code.** On another level, the collected monitoring metrics, even though they should not contain sensitive data, are not for everyone's access. Security becomes more important when your APM solution relies on several third party hardware/software. You must consider the amount of work involved in periodically patching all the components involved in your APM solution.

Here are the questions to ask when evaluating Security.

1. Can the APM solution be integrated with corporate Directory and **roles** configured?
2. Does the tool allow for **fine grained permissions** to the various roles? (Operator, Developer, Tester, Administrator etc)
3. Does the vendor periodically provide **security updates**?
4. Does the APM solution require third party hardware/software for full functionality? If yes, do they weaken the security?
5. Does the APM solution allow for **encrypting** sensitive files?



“The APM solution must allow role-based security and capable of handling fine-grained access through Security Policies”

## CHAPTER 8:

### Pricing

#### The right solution is not necessarily the cheapest solution

At the end of the day, you are trying to reduce the costs and **increase the profits** for your business. While APM solutions provide tremendous returns in terms of **reducing the MTTR** (Mean time to resolution) and **increased credibility**, you will need do your due diligence in weighing various pricing options. Pricing of APM Solutions can be confusing. With wide range of options such as 'fee per server', 'fee per instance', 'unlimited site license', 'fee per Processing Unit', 'fee per month', you want to carefully analyze all the options.

Here are the questions you must ask when evaluating the Price.

1. Is the pricing **flexible**? i.e (per month vs per server vs site license)?
2. Is the price **competitive**?
3. Is Support included? **What kind of Support?** (24X7 by email, 4 hour SLA etc)
4. Are there discounts for bulk orders?
5. Which are the **features of the product that cost extra**?



“The APM solution must provide flexible subscription mode that suits your organization. Try to reduce the cost by avoiding features that you don't need”

## CHAPTER 9:

### World Class Support

#### The Difference Maker

You have to have world class support from the APM vendor, right from the POC (Proof of Concept stage). I cannot stress this enough. Most of the **engagements fail because of the lack of support**. The APM vendor must act like a **partner** rather than a service provider. A world class support team can make even a poor product into a winner. But a sloppy support team will make an excellent product into a failure. It is all about getting the right help at the right at time from the APM vendor.

Here are the questions to ask when you evaluate the support.

1. What kind of support subscriptions available (Gold, Platinum etc) and is there one that suits your organization?
2. Do they provide **24X7 support** at a reasonable MTTR
3. Is there **an active community online** that can be used to tap knowledge?
4. Are all the documentation and knowledgebase **readily available**?
5. Is **the product documentation** of supreme quality?
6. Are there **free/discounted training available** for your employees?



“The Quality of the Support from the APM vendor can make or break the deal. The vendor must act like a *partner* rather than *service provider*”

## CHAPTER 10:

### Conclusion

#### Producing Results is the **ONLY** way to GROW

The right APM solution can literally **revive your IT Operations**. The economic value the right APM solution provides is fantastic and easily **quantifiable**. IT infrastructure has grown so complex that the traditional SILO-ed approach doesn't work any longer. I've seen organizations having up to 30 different monitoring products deployed. In most cases, they can be brought down to 4 or 5 thereby reducing cost and increasing value. If you have not taken a look at your existing APM in recent times, start looking at it right now to avoid pressure later. And if you don't have an existing APM solution, it is time to pick up the phone and call few APM vendors to setup POC (Proof of Concept). It will cost nothing up front and the vendors will be eager to show you what their product can do for you.

**Start by clearly defining your requirements**, do your research, evaluate the 9 criteria I have presented and add your own if appropriate. Perform rigorous POC with the help of the Vendor and work with at least 2 or 3 vendors before deciding on a solution.

Remember, we are in the business of adding value. And the right tool is your biggest arsenal.

**Let's get started.**

Good Luck.

## About the Author

### Karun Subramanian

#### Application Support Expert and Productivity Enthusiast

I am always in the lookout for tools and processes to increase the productivity of IT support engineers. In my years of experience as a consultant, I have helped several fortune 100 companies run their mission critical applications at its peak performance, securely.



[www.karunsubramanian.com](http://www.karunsubramanian.com)