



Maximizing Monitoring of Custom Applications



White Paper

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The purpose of the document is to highlight the strengths of the product BMC® Performance Manager Monitoring Studio by Sentry Software™ and demonstrate how this product is best suited to maximize the monitoring coverage of custom applications and components for which there are no out-of-the-box solutions within the BMC Performance Manager environment. The document details the various options available for custom application monitoring, then gives a brief window into the features of BMC Performance Manager Monitoring Studio and illustrates how it allows the customer to rapidly setup the monitoring of various diverse custom applications. A comparative analysis illustrates how this solution fares compared to the other available solutions from a feature, cost and R.O.I. point of view.

Situation Overview

In today's tough business environment, the use of custom or non-standard applications is a common way to gain an edge over competitors. As these applications are often intrinsically linked to critical business services, it is vital to monitor their health and availability just as you would do for any standard packaged application. In addition, it is often essential to monitor certain basic system elements or processes, monitor and analyze files, folders, databases, or other diverse infrastructure components.

The difficulty

Monitoring, and managing the monitoring of diverse components, applications, processes and technologies is easier said than done. The vast range of applications, solutions, technologies and platforms that an IT environment is composed of makes the monitoring coverage a real challenge. The higher the monitoring coverage, the more secure and efficient is the IT environment and its linked business-services. The stakes are high but the harsh reality is that every organization faces either crunches and/or restraints whether budgetary, time-related or human-resources related. Constraints translate into making choices, and the net result often leads to gaping holes in the monitoring coverage. Generally, it is custom applications and non standard technologies that find themselves in these "holes" as they the ones often left un-monitored owing to the difficulty in finding the right solutions within reasonable costs.

Challenges easily overcome by BMC Performance Manager Monitoring Studio

Effective monitoring management of in-house applications, or setting-up custom "watches" on critical components requires an easy-to-use, flexible, scalable and integrated solution. This solution should ideally be able to consolidate several monitoring needs and be able to automate systems management such as through-recovery actions, and reduce trouble-shooting time by clearly identifying problem areas so that administrators can devote more time to strategic tasks.

BMC Performance Manager Monitoring Studio is such a solution. It enables the monitoring of any custom application, device or IT components for which there is no out-of-the-box monitoring solution available on the market AND it helps consolidate diverse monitoring needs within just one solution. It is a multi-platform solution with which you can monitor diverse applications and technologies. This results in fewer tools, fewer consoles, and lesser monitoring management issues and mainly, no more "holes" in your monitoring coverage.

The Environment

In order to ensure the availability of their IT infrastructure, mid-sized and large organizations use

professional IT management tools. BMC Software is the market leader in this area with its solution BMC Performance Manager, which is based on two different technologies: the BMC PATROL framework and BMC Portal. BMC PATROL and BMC Portal can be described as frameworks accompanied by sets of technical solutions dedicated to the monitoring of a given piece of the IT infrastructure. Here are a few examples:

- BMC Performance Manager for Servers is comprised of the PATROL Agent (the core layer of the PATROL framework) and several modules dedicated to various aspects of the UNIX and Windows operating systems
- BMC Performance Manager for Exchange is dedicated to the monitoring of the Microsoft Exchange Server email servers
- BMC Performance Manager for Internet Services is dedicated to the monitoring of various Web servers and associated technologies
- Others



In BMC PATROL's terminology, a solution based on the PATROL Agent dedicated to the monitoring of a specific component is called a Knowledge Module (KM).

While similar frameworks are available from BMC Software's competitors (notably from HP with OpenView, IBM with Tivoli, CA with Unicenter as well as other open-source solutions), it does not make sense for an organization to consider the complete implementation of an alternate IT monitoring framework in order to cover a specific monitoring need. One of the key advantages of deploying such frameworks is the ability to facilitate the monitoring management by addressing all needs, or as many as possible, through the same framework – which ultimately results in lower costs and higher levels of productivity and performance. Most organizations tend to implement a single monitoring framework to monitor all of their IT infrastructure and applications for obvious economical reasons and for the sake of compatibility, interoperability and efficiency.

Since this document is about the product BMC Performance Manager Monitoring Studio, which is specifically designed uniquely for the BMC Performance Manager (also known as PATROL) environment, it focuses only on this environment.

It studies solutions compatible with the BMC Performance Manager framework that allow its users to monitor their customer applications or other components of their IT infrastructure that are not covered by out-of-the-box solutions. As such, this document only applies to organizations already using the BMC Performance Manager/BMC PATROL framework to monitor their IT.

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Monitoring Custom Applications Within the BMC Performance Manager Framework

Available Options

BMC Performance Manager framework offers various options for monitoring custom applications and components or technologies:

- Through BMC Performance Manager for Servers itself
- Through custom development of KMs using PSL (PATROL Scripting Language)
- Through BMC Performance Manager Monitoring Studio

When an IT infrastructure states that it is using the BMC Performance Manager framework for monitoring, it automatically implies that it is using BMC Performance Manager for Servers (since it is the main product) and then, in addition, there would be other different KMs according to their specific needs.

BMC Performance Manager for Servers

This solution is comprised of the following components:

- The PATROL Agent (core layer and required component to any PATROL-based solution)
- The PATROL for Windows KM to monitor Windows performance metrics as well as specified processes and Windows services
- The PATROL for UNIX KM to monitor UNIX performance metrics as well as specified processes
- The PATROL for Log Management to monitor log files

Acquisition of BMC Performance Manager for Servers brings not only the monitoring framework, but also a few monitoring tools to help monitor custom applications. These features come for free and include:

- Processes and Windows services monitoring
- Log files monitoring

PROS - Most applications generate log files to record operations and errors. Checking the presence of the various processes and parsing log files for errors is often considered as an alternative way of monitoring an application without developing a custom KM dedicated to it. This feature is free.

CONS - Relying only on information gained through processes and log files monitoring features of BMC Performance Manager for Servers is more than often considered as a non-ideal solution because of several limitations:

- **General:** Inability to group the monitoring of processes, services and logs application-wise under a single icon in the Console prevents rapid problem-identification. Several alerts could be raised, but the operators have to study each alert in thorough detail to know which applications they stem from.
- **Process:** Inability to efficiently monitor processes of Java applications, or ensure that some

processes are running as a specified user.

- **Log:** Inability to analyze files with multi-lines entries or search for complex regular expressions. It has also great difficulties dealing with very large log files. Another limitation of this log file monitoring feature is that it does not allow the administrator to raise alerts to the operators with the actual content of the log file in the event, thus leaving the operator with a meaningless event stating that “an error” was reported in the log file. The only way to find the root cause is for the operator to sift through the log file line by line to see what the problem is.
- **Log:** Relying only on log files can be dangerous: for instance if nothing is recorded in the log file, it could either imply that everything is working properly or that the application is completely frozen.
- **General:** Relying on processes and log files monitoring leaves out more recent applications composed of a Web front-end, a database back-end and often a Java Application Server in the middle. Such applications do not have specific processes and most often do not produce any log files. Ensuring the availability of the Web server and the database server does not necessarily mean that the application based on those infrastructure components is running properly (a dropped table in a database, for example, can cause an entire application to fail while the Web and database servers are just running fine).
- **General:** There is no easy way to duplicate the monitoring setup for one application on one server to another server running the same application, especially with the monitoring of processes. Things get even worse if the said application is installed in another directory than the original one.
- **General:** Log files and processes monitoring do not allow administrators to monitor performance metrics and response times related to an application, which means that even a huge slow-down of an application or other IT component being monitored will not be reported.

These limitations in BMC Performance Manager for Servers often lead IT administrators to consider the development of custom monitoring solutions in order to be able to properly monitor applications for which there no KMs are available in the BMC Software’s catalog. This option is described in the following section.

Developing Custom Solutions

The BMC PATROL framework provides the ability to the administrators to create custom monitoring solutions to cover their specific needs. This can be achieved with the BMC PATROL Developer Console that lets the user develop what is called a custom KM written in PATROL’s own scripting language: PSL.

- PROS** - Developing a custom KM with PSL is logically the most flexible solution in order to cover a custom application because the developer has the liberty to tailor a monitoring solution that is specific to his custom needs. It can be done in-house and at any time.
- CONS** - Developing a custom KM cannot really be considered as THE obvious choice because of several issues, besides, although at first it may seem more economically viable, on a deeper project planning, the hidden costs are revealed. In addition, a large and complex environment may require many such custom KMs....Here are some of the commonly stated difficulties encountered by customers who have ventured on this path, and no longer wish to repeat the experience.
- **Human resources:** Developing a custom KM with PSL obviously requires developer skills, deep knowledge of the PATROL Agent’s internals and PSL skills, which means having people dedicated to the task. Apart from the cost of man-hours spent on the development, it is a fact that people with good PSL skills are hard to find as PSL is now considered as an aging technology and hence few developers invest in learning PSL.

- **Re-inventing the wheel with repetitive basic coding:** Gathering the information needed to check the health of an application or other IT component often requires the KM developer to re-create code that has already been done many times by other professional developers. Having to re-invent the wheel to collect monitoring data is the most pitiful time wasting issue when developing a custom KM. For example: Executing an SQL query, sending an HTTP request or listening to SNMP traps, all generally considered as basic tasks, but which nevertheless require hundreds of well-thought lines of code, especially when using PSL.
- **GUI and Packaging:** The pure PSL coding part is sometimes not the most time-consuming step when developing a custom KM. For proper use in production, a custom KM needs to be packaged for the various components of the PATROL framework (consoles, agents, Console Servers, Web Console, etc.). The packaging of a KM often implies dealing with time-consuming tasks such as creation of suitable graphical user interface, the icons, online help, proper platform targeting, etc. None of these tasks are automated in the PATROL framework and require a thorough knowledge of the packaging and installation systems.
- **Testing:** The testing of a custom KM is extremely important before deploying it into production. To be valid, testing and debugging need to be done in a proper test environment once the package has been created and installed on the test servers. A poorly designed KM can cause the targeted application to crash or can consume 100% of system resources. It can also simply fail because the packaging was done incorrectly. Once problems have been detected in the test environment and bugs have been identified and resolved, the whole fixing, packaging, testing and deployment process cycle starts all over again. This needs to be repeated as many times as necessary in order to get a fully functional yet non-problematic custom monitoring solution.

- **Deployment:** Once a custom KM has been successfully validated, it needs to be deployed into production, which again is not an easy task depending on the deployment tools being used, and which involve time and risks. The main issue with deployment is that it's a recurring issue: each new custom KM needs to be packaged and deployed into production while other standard solutions (like the Log Management KM described above) need to be deployed only once on a server.
- **Solution upgrades and release management:** The development process is an interminable cycle. Once a custom KM is released, the developers continually face requests from users and administrators: new bugs to be fixed, small feature improvements, performance improvements, and updates to keep in step with the application's releases, as well as other brand new features that were not planned during the development process. Once these requests are legitimated, the development cycle restarts all over again. In addition, the alteration of the code of an existing custom KM is possible or easier when done by the team that worked on its creation... however it seems that PSL developers rarely spend more than 2 years in the same PSL development position. So it's back to square one – trying to find the suitable human resources for the project.

Although on one hand custom KMs seem like the most flexible and viable solution at the outset, it is proven in today's world of fast-changing technologies, that in the long run, it turns out it is economically more viable to purchase a ready KM specifically designed to deal with complex and diverse monitoring needs; one that is regularly upgraded and maintained by professionals bound by terms of contract.

BMC Performance Manager Monitoring Studio

BMC Performance Manager Monitoring Studio is a KM for PATROL and is also available as an agent-less solution for BMC Portal. It enables administrators to set up the monitoring without coding, of almost any application for which no standard monitoring solution is available. In a few clicks, and thanks to intelligent wizards, it can cover up to 100% of critical applications within your BMC Software monitoring environment. This is a monitoring toolbox that offers diverse monitoring tools.

Centralized monitoring management: BMC Performance Manager Monitoring Studio not only allows consolidation and centralization of diverse monitoring needs through one solution, but it also offers the ability to group the monitored objects application-wise or as best suited to the organizations specific monitoring-management needs. This renders the monitoring management far more efficient and productive.

Monitoring basic yet critical system elements: Effective monitoring of an application or any part of an IT infrastructure cannot ignore monitoring the basic system elements: processes or Windows services, file systems used by the application (often critical), its folders (directories) and its most critical files. BMC Performance Manager Monitoring Studio allows administrators to set up the monitoring of these "basic system elements" in a very easy, yet effective way.

Retrieving valuable information using standard but diverse technologies: Getting valuable information through diverse means such as JMX, SNMP, WBEM, Windows performance counters and Windows event logs is often essential, especially if there is no monitoring solution for a non-standard or customized software application. Monitoring Studio enables the administrators to gather information using the SNMP protocol (polling and trap listening), WBEM and WMI queries, Windows performance counters and event logs. The JMX polling feature of this product facilitates monitoring of JBoss, JOnAS, WebLogic, WebSphere or any generic JMX-enabled Java application under a single icon. There is no need to interrogate these diverse application servers through their respective interfaces. Also, just as for any "information source", advanced string searches and numeric values extraction can be performed easily.

Fine-tune the monitoring with powerful string and numeric value searches: The intelligent wizards of the product ask for details on the information sources you would like to monitor: multi-line LOG files, scripts

and commands output, HTTP requests, database queries or WBEM and WMI queries. Administrators then specify what they are looking for within these sources, strings to be found or not, numeric values to be extracted, etc. Once an “information source” is defined, a detailed string search can be set up using the following options:

- Regular expressions
- Combination of two regular expressions with and/or/not
- Where to search in the line (which column, offset)

BMC Performance Manager Monitoring Studio offers one of the fastest and most advanced string searches available on the market. The product is proven to be able to handle 4 gigabytes of XML-formatted log files at once in less than 10 minutes, without even taking the monitored system down.

Graphical visualization of numeric values monitored: Problems with an application are not always as simply represented as a sentence stating “an error has occurred.” At times, an application reports its health by providing critical numbers, like those of the number of waiting customers, queued requests, processing time, etc. Perhaps it is helpful to know and be alerted on the number of clients are waiting to connect to an application or how many jobs still need to be processed. Number searches allow administrators to extract actual values in a given text and build graphs from these values with alert thresholds. This can be done with most of the Monitoring Studio tools such as file-analysis, database queries, SNMP polling, etc.

Automated alert acknowledgement: Event-driven monitoring (like SNMP traps, LOG files or Windows events) rarely integrates with icons that are supposed to show the current state of a monitored object. This is what acknowledgment is all about. On detection of a failure, the icon of the monitored object should ideally reflect an alarm state, but then reverting to the normal state often necessitates a manual action. This is annoying if the average frequency of alerts is relatively high. BMC Performance Manager Monitoring Studio features automatic acknowledgement capabilities. Alerts triggered by an event can be automatically cleared by either another event or a timeout. This way, no manual operation is required. More intelligent automation translates into optimization of resources and higher productivity.

Specific automated recovery actions: The administrator can select the type of specific actions to be taken when an alert is triggered (application failure occurs etc.). With Alert Actions, it is possible to either customize the way a notification is performed for an application alert, or specify execution of a recovery action when a problem occurs:

- Trigger a PATROL event
- Run a command line
- Send an SNMP trap
- Write to a LOG file

PROS - Monitoring Studio KM for PATROL offers an impressive panoply of monitoring tools and offers a fairly good amount of flexibility to the administrator during set-up of the monitoring of a custom application without all the difficulties related to custom KM development.

- No coding, rapid mass deployment and easy set-up
- Consolidates diverse monitoring needs through one solution
- Eliminates need for multiple tools and consoles
- Supports all platforms supported by PATROL
- Full integration with the BMC® Software framework: PATROL Central, PATROL Configuration Manager, BMC Performance Manager Distribution Server, BMC® Portal, etc.

CONS - This ease and large range of tools comes with a price, i.e. the cost of the license and the flexibility level cannot compare to that offered through a custom developed KM.

However, in terms of ROI, it turns out BMC Performance Manager Monitoring Studio fares very well as compared to the difficulties that custom KM development entails. The next section compares the 3 available options in term of features and cost.

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BMC Performance Manager Monitoring Studio offers one of the fastest and most advanced string searches available on the market. The product is proven to be able to handle 4 gigabytes of XML-formatted log files at once in less than 10 minutes, without even taking the monitored system down.

Graphical visualization of numeric values monitored: Problems with an application are not always as simply represented as a sentence stating “an error has occurred.” At times, an application reports its health by providing critical numbers, like those of the number of waiting customers, queued requests, processing time, etc. Perhaps it is helpful to know and be alerted on the number of clients are waiting to connect to an application or how many jobs still need to be processed. Number searches allow administrators to extract actual values in a given text and build graphs from these values with alert thresholds. This can be done with most of the Monitoring Studio tools such as file-analysis, database queries, SNMP polling, etc.

Automated alert acknowledgement: Event-driven monitoring (like SNMP traps, LOG files or Windows events) rarely integrates with icons that are supposed to show the current state of a monitored object. This is what acknowledgment is all about. On detection of a failure, the icon of the monitored object should ideally reflect an alarm state, but then reverting to the normal state often necessitates a manual action. This is annoying if the average frequency of alerts is relatively high. BMC Performance Manager Monitoring Studio features automatic acknowledgement capabilities. Alerts triggered by an event can be automatically cleared by either another event or a timeout. This way, no manual operation is required. More intelligent automation translates into optimization of resources and higher productivity.

Specific automated recovery actions: The administrator can select the type of specific actions to be taken when an alert is triggered (application failure occurs etc.). With Alert Actions, it is possible to either customize the way a notification is performed for an application alert, or specify execution of a recovery action when a problem occurs:

- Trigger a PATROL event
- Run a command line
- Send an SNMP trap
- Write to a LOG file

PROS - Monitoring Studio KM for PATROL offers an impressive panoply of monitoring tools and offers a fairly good amount of flexibility to the administrator during set-up of the monitoring of a custom application without all the difficulties related to custom KM development.

- No coding, rapid mass deployment and easy set-up
- Consolidates diverse monitoring needs through one solution
- Eliminates need for multiple tools and consoles
- Supports all platforms supported by PATROL
- Full integration with the BMC® Software framework: PATROL Central, PATROL Configuration Manager, BMC Performance Manager Distribution Server, BMC® Portal, etc.

CONS - This ease and large range of tools comes with a price, i.e. the cost of the license and the flexibility level cannot compare to that offered through a custom developed KM.

However, in terms of ROI, it turns out BMC Performance Manager Monitoring Studio fares very well as compared to the difficulties that custom KM development entails. The next section compares the 3 available options in term of features and cost.

Features Comparison

Monitoring Studio vs BMC Performance Manager for Servers

The table below recapitulates the monitoring features usually required in order to monitor a custom application or any IT component for which no standard monitoring solution already exists. The table shows whether a feature is available in each solution and its capability if present.

Features comparison between BMC Performance Manager for Servers and Monitoring Studio

Feature	BMC Performance Manager for Servers	Monitoring Studio
Process monitoring	-	★★★
Filesystem monitoring	★★☆	★★☆
Folder monitoring	-	★★★
Log file parsing	★★☆	★★★
SNMP polling	★★☆	★★☆
SNMP trap listening	-	★★☆
WBEM polling	★★☆	★★★
HTTP requests	-	★★☆
JMX polling	-	★★★
SQL queries	-	★★★
Windows EventLogs parsing	★★☆	★★★
Windows Performance Counters	★★☆	★★★
Commands execution and analysis	★★☆	★★★
String searches	★★☆	★★★
Multi-line parsing	-	★★☆
XML parsing	-	★★☆
Numeric value extraction	-	★★★
Per-application grouping	-	★★☆
Recovery Actions	★★☆	★★★

Feature	BMC Performance Manager for Servers	Monitoring Studio
Custom monitoring deployment	☆☆☆	☆☆☆

- **Feature not present**

- ☆☆☆ **Basic**
- ☆☆☆ **Good**
- ☆☆☆ **Advanced**

As the table clearly shows, Monitoring Studio provides a much more complete feature set regarding standard needs in order to monitor a custom application. On the other hand, the purpose of the BMC Performance Manager for Servers solution is to ensure that the underlying operating system (Windows, UNIX, Linux or OpenVMS) is functioning properly and is not meant to provide a simple way to monitor anything running on this operating system. What BMC Performance Manager for Servers does offer however is the ability to develop a custom monitoring solution using PSL.

This is a completely different task that is covered in the Monitoring Studio vs. Development of a Custom Solution section.

Monitoring Studio vs. Development of a Custom Solution

The table below recapitulates the monitoring features usually required in order to monitor a custom application or any IT component for which no standard monitoring solution already exist. The table shows whether a feature is available in each solution and its capability if present.

Features comparison between a custom KM and Monitoring Studio

Feature	Development of a custom KM	Monitoring Studio
Process monitoring	☆☆☆	☆☆☆
Filesystem monitoring	☆☆☆	☆☆☆
Folder monitoring	☆☆☆	☆☆☆
Log file parsing	☆☆☆	☆☆☆
SNMP polling	☆☆☆	☆☆☆
SNMP trap listening	☆☆☆	☆☆☆
WBEM polling	☆☆☆	☆☆☆
HTTP requests	☆☆☆	☆☆☆
JMX polling	☆☆☆	☆☆☆
SQL queries	☆☆☆	☆☆☆
Windows EventLogs parsing	☆☆☆	☆☆☆
Windows Performance Counters	☆☆☆	☆☆☆

Feature	Development of a custom KM	Monitoring Studio
Commands execution and analysis	★★★	★★★
String searches	★★★	★★★
Multi-line parsing	★★★	★★☆
XML parsing	★★★	★★☆
Numeric value extraction	★★★	★★★
Per-application grouping	★★★	★★☆
Recovery Actions	★★★	★★★
Custom monitoring deployment	★★☆	★★★

- *Feature not present*

★★☆ *Basic*

★★★ *Good*

★★★ *Advanced*

The above table indicates that every monitoring feature in BMC Performance Manager Monitoring Studio can be present and more powerful in a custom KM...as long as you accept all the hidden costs, time taken and resource allocation required for custom development, the possibilities are endless. From a pure features point of view and without taking into account the time taken to develop it, a custom KM could certainly have more (or less) capabilities than Monitoring Studio KM. A custom KM is only what you make it. The fact that one custom KM with so many features may take 1 year to develop is not shown in this table.

Monitoring Studio vs BMC Performance Manager for Servers

The table below recapitulates the monitoring features usually required in order to monitor a custom application or any IT component for which no standard monitoring solution already exists. The table shows whether a feature is available in each solution and its capability if present.

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Commands execution and analysis	★★☆	★★★
String searches	★★☆	★★★
Multi-line parsing	-	★★☆
XML parsing	-	★★☆
Numeric value extraction	-	★★★
Per-application grouping	-	★★☆
Recovery Actions	★★☆	★★★
Custom monitoring deployment	★★☆	★★★

- **Feature not present**

★★☆ **Basic**

★★☆ **Good**

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Multi-line parsing	★★★	★★☆
XML parsing	★★★	★★☆
Numeric value extraction	★★★	★★★
Per-application grouping	★★★	★★☆
Recovery Actions	★★★	★★★
Custom monitoring	★★☆	★★★

Feature	Development of a custom KM	Monitoring Studio
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deployment

- *Feature not present*

☆☆☆ *Basic*

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Costs Comparison

BMC Performance Manager For Servers vs. Monitoring Studio

Since the PATROL Agent, part of BMC Performance Manager for Servers, is a requirement in order to install and use Monitoring Studio KM for PATROL, Monitoring Studio represents an additional cost of license. Any organization that is considering the monitoring of a custom application of any IT component for which no out-of-the-box monitoring solution already exist will have to evaluate the following equation:

$$Cost_{BPM\ for\ Servers} + Cost_{Monitoring\ Studio} < Cost_{BPM\ for\ Servers} + Cost_{Application\ Failure} \times Probability_{Application\ Failure}$$

Whenever this equation is true, the purchase of Monitoring Studio actually turns out to be an economically viable. The biggest problem relies in the evaluation of the cost of a given application failure as well as its probability (in a 3-year period for example).

Monitoring Studio vs. Development of a Custom solution

As it has already been shown by many studies, the development cost of any software solution is an exponential function of the difficulty involved, multiplied by the number of features required and augmented by the time needed for the packaging and development. This does not even take into account the time involved in getting a developer skilled enough in the specific domain of PATROL, PSL and general monitoring understandings.

$$Cost_{KM\ development} = Cost_{Dev\ Day} \times \left(\left(\sum Feature^{Difficulty} + Package \right) \times (1 + Coef_{Errors}) + Deploy \right)$$

What this somewhat intimidating equation shows is, that there are many factors that can dramatically increase the cost of a custom development, and some of these factors are rather hard to predict. The most costly factor in this equation though is the number of features and their difficulty to implement. The typical scenario implies that an organization having chosen to develop a custom KM to monitor a custom application already considered the monitoring through features provided by BPM for Servers. Having decided to go for custom development means that the features in BPM for Servers were not advanced enough to serve the multiple and/or complex monitoring needs of the organization.

In order to illustrate the development costs of some examples of commonly used monitoring features, the table below shows how long it took to highly trained, experienced PATROL developers at Sentry Software to integrate these features in Monitoring Studio. The numbers below must certainly be multiplied by a factor of 1.5, two or even more if the development is made by a person less experienced than the developers at Sentry Software.

Feature	T.T.R. (Time To Release)
Simple log files parsing	10 days
Huge log files parsing	25 days
JMX polling of Java applications	45 days
SQL queries (per DB type)	10 days
Graphical interface wizard	4 days
HTTP requests	20 days
Timeout on a command	5 days
Folders monitoring	15 days
Auto-clear of alerts	15 days

Experience shows that a typical custom KM development project involves an incompressible period of 25 days followed by a recurring period of tests, validations and qualification depending on the quality of the development made. This number of typical 25 days also means that custom KMs often drop most interesting features because they cost too much to implement and never fit in the budget. Typically, no custom KM will ever be able to correctly deal with JMX-instrumented Java applications because it is difficult to implement, involves different technologies and great deal of testing on different platforms.

The next table summarizes the typical steps to produce a valid monitoring solution for a custom application and compares how long it takes from the specifications stage to deployment into production.

Time Taken to Produce a Valid Monitoring Solution

Step	Development of a custom KM	Monitoring Studio	BMC Performance Manager for Servers
Solution specifications	5 days	5 days	5 days
Development	25 days	1 day (configuration)	1 day (configuration)
Packaging	2 days	–	–
Testing	5 days	1 day	1 day
Debugging	5 days	–	–
Packaging	1 day	–	–
Deployment	3 days	0.5 day	1 day
TOTAL	46 days	7.5 days	8 days

The comparison gets even worse if the specifications are not taken into account and costs of support, maintenance and new features are added to the total.

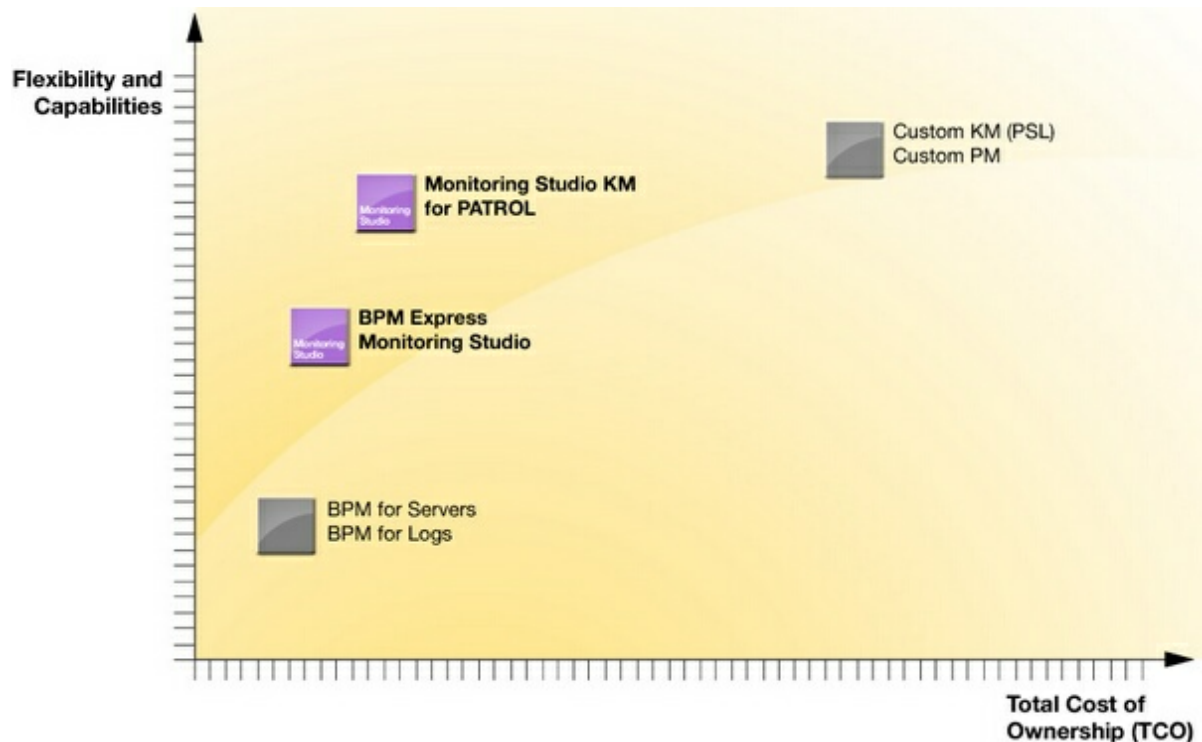
As explained before, developing a custom monitoring solution allows for the greatest flexibility but this flexibility has a great cost, not just from a pure price point of view, but from a planning point of view. While a BMC PATROL administrator team can respond in less than 3 days to product a valid monitoring solution once it has received the specifications when they use Monitoring Studio, it would take them more than 40 days to do it from scratch!

Conclusion

Faced with a frequently occurring situation PATROL administrators need to find a monitoring solution for applications/devices/technologies not covered by their regular tools, they have to make a choice between three solutions:

- Use BMC Performance Manager for Servers (logs, processes) – it is the least expensive solution but is rather poor when monitoring a custom application and in terms of features offered.
- Use Monitoring Studio KM for PATROL – it has a license cost overhead but allows great flexibility with ease-of-use and rapid deployment
- Develop a custom KM – this is the most flexible solution but it can be so expensive and heavy on resource consumption that often a compromise has to be made on the number of features and capabilities offered.

The picture below recapitulates the comparison of each solution from both a feature and costs point of view.



It appears, there are only two cases where it is not recommended to purchase, install and use Monitoring Studio KM for PATROL to setup the monitoring of a custom application or an IT component for which there is no KM that already exists:

1. The organization has only applications that produce fairly simple log files. The monitoring of all past,

current and future applications can be done with log files analysis and process monitoring.

2. An application has complicated monitoring needs not covered by Monitoring Studio and the organization is ready to invest enough time and expertise in order to create the “perfect” customized monitoring solution.

As a matter of fact, most organizations that have tried the Monitoring Studio KM are now phasing out their existing custom KMs with Monitoring Studio because they realize that the cost of Monitoring Studio is even less than just the cost of the maintenance of the custom KMs. According to current users, BMC Performance Manager Monitoring Studio turns out to be an ideal way to maximize the monitoring coverage of custom applications.

About Sentry Software™

Sentry Software is the developer of the software product licensed under the name BMC Performance Manager Monitoring Studio. This licensed product allows usage of two technologically different solutions of the same product:

1. **Monitoring Studio KM for PATROL:** A monitoring solution based on the PATROL Agent of BMC Software
2. **BMC Performance Manager Express Monitoring Studio:** An agent-less version of the above product designed for the web-based BMC Portal environment. The features available are currently slightly fewer than those available in the KM in keeping with the capabilities offered by the current version of the Portal.

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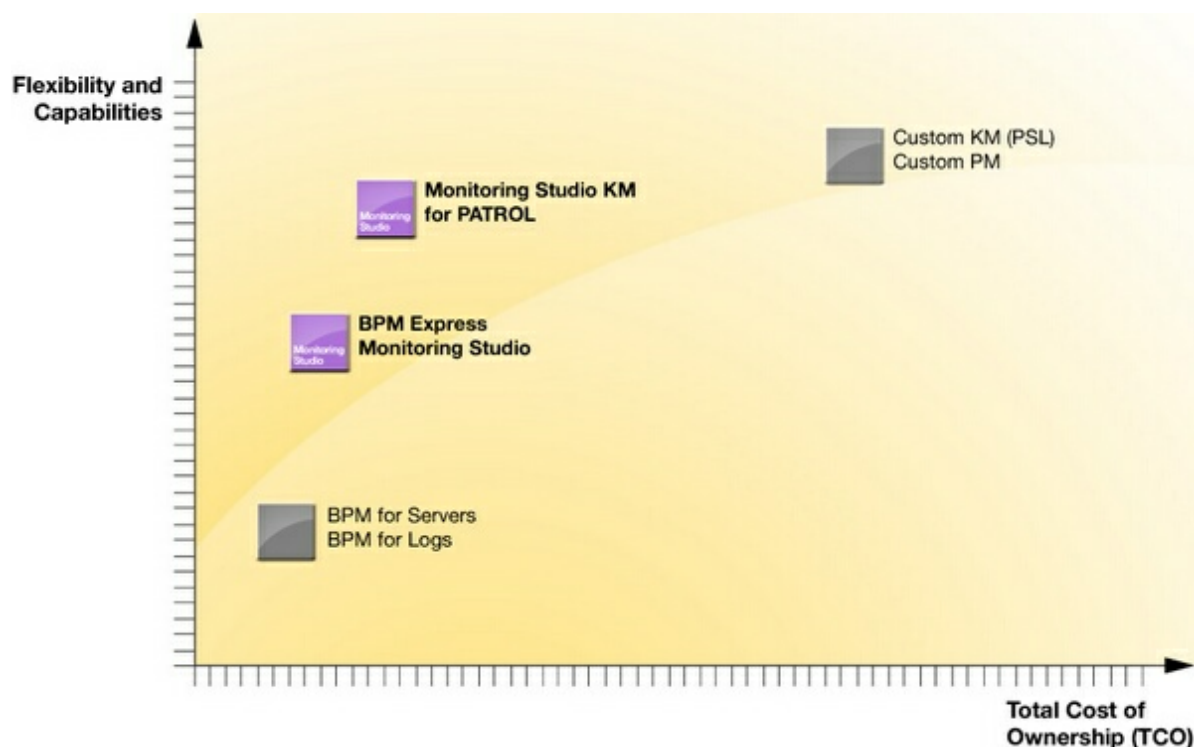
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Conclusion



About BMC® Software

BMC Software, Inc. NYSE:BMC, is a leading provider of enterprise management solutions that empower companies to manage their IT infrastructure from a business perspective. Delivering Business Service Management, BMC Software solutions span enterprise systems, applications, databases, and service management. Founded in 1980, BMC Software has offices worldwide and fiscal 2004 revenues of more than \$1.4 billion. For more information about BMC Software, visit www.bmc.com.



About Sentry Software™

Sentry Software, a strategic Technology Alliance Partner of BMC Software, provides key monitoring solutions specifically designed to expand the capabilities of BMC Performance Manager, thus enabling up to 100% coverage of any infrastructure. Sentry Software specializes in single solutions for multi-platform monitoring of hardware, custom applications or any IT component, and blackout windows. Sentry Software products are deployed in 45 countries across the globe and lead the list of BMC Software's third-party product sales. For more information about Sentry Software, please visit www.sentrysoftware.net.