IBM Tivoli OMEGAMON® vs. BMC MainView® – Family Comparison

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Executive Overview

Mainframe systems still process a large percentage of the world's critical business transactions. Customer facing web front ends are becoming more ubiquitous, but these are still being serviced by what are normally referred to as "legacy" systems. These systems are literally running the critical business processes and logic that generate profits for the parent companies.

For example, more than 75% of the world's top 25 companies listed in the Fortune 100 entrust their business to IBM's Information Management System™ (IMS) on z/OS® and IMS serves over 200+ million users each day. In another example, a single customer processes over $3.0 trillion USD in transfers every day using IMS. Yet another customer manages over 500 million accounts. It is not uncommon for IMS to process over 46,000 transactions per second at other customer locations. In the words of IBM customer Trevor Rowe, an Enterprise Architect at Bell Alliant, *"We haven't seen anything that can process as much data, with as much reliability, as IMS."*

IBM DB2® for z/OS can also cite impressive statistics comparable to IMS. Business data must be constantly available to be processed quickly and reliably. Businesses rely on DB2 on z/OS. All of the top 66 banks in the world rely on DB2 on z/OS, as do 24 out of the 25 top US retailers. An Asian bank, the largest in the world by profit and market capitalization, stores over 620 million accounts which support over 120 million online users. A large U.K. government department that runs the world's largest known transactional processing RDBMS with over 40 terabytes of data, also puts their trust in DB2 on z/OS. Finally, the world's largest known peak RDBMS workload (1.1 billion SQL statements per hour) happens at one of the world's largest shippers, using DB2 on z/OS.

As is evident, z/OS and subsystems such as IMS, DB2 and CICS® are key to the financial health of a company. The "health" of these systems, and that of the subsystems running those business processes, is therefore key to the success or failure of these businesses. For this reason, mainframe monitoring solutions are still of the utmost importance to mainframe data centers. There are a few key vendors that are considered best-of-breed and therefore control the vast majority of the market share. The main market players in this area are IBM, BMC, CA, with ASG being more of a niche player. IBM, through the acquisition of Candle Corporation in 2004 became the leader in the performance management market share with about 34.9% while BMC's market share stood at 19.9%. This data was reported by IDC in 2010.

In this white paper we focus on IBM and BMC and perform a high level competitive analysis from the product family perspective.

Figure 1 – Performance Management World Wide Market Share 2009

For most datacenters, ISV software licenses and maintenance cost is often a large component of the IT budget. Mainframe software along with monitoring tools are a good example of what are often called the "cash cows" of these ISVs and customers and vendor agreements are typically for terms of at least five year contracts. ISV vendors are, however, beginning to charge customers in different ways from the past. One example is a metrics based method based on customer's business activity. In Germany, BMC offered an insurance customer a pricing scheme based on the number of insurance policies sold.

Customers become locked into these high ISV costs that inflate the overall IT budget of the mainframe systems. For BMC the MainView line of products belongs to the Mainframe Service Management segment which represented $829.8M or 42.4% of their total software revenue. BMC is aware that these software tools provide a significant software margin. Bob Beauchamp , BMC's CEO recently stated, "BMC's Mainframe business remains very profitable with operating margin of 61% for 2011."[3] The challenge for customers today is to decipher how to lower the total cost of ownership of the tools they need, while still enabling critical systems to be appropriately monitored so their business requirements and service level agreements are met.

[3] BMC Software's CEO Discusses Q2 2012 Results – Earnings Call Transcript - http://seekingalpha.com/article/302584-bmc-software-s-ceo-discusses-q2-2012-results-earnings-call-transcript.

Company Overview – BMC

BMC Software, Inc. is an American company specializing in Business Service Management (BSM) software. Headquartered in Houston, Texas, BMC develops markets and sells software used for multiple functions including IT service management, data center automation, performance management, virtualization lifecycle management and cloud computing management. The company name "BMC" is taken from the last names of its three founders: Scott Boulette, John Moores, and Dan Cloer.

Employing over 6,500, BMC is often credited with pioneering the BSM concept as a way to help better align IT operations with business needs. In 2011, the company recorded annual revenue of $2.1 billion, making it the 20th largest software company in terms of revenue for that year.

The following data was obtained from Securities and Exchange Commission (SEC) reports filed by BMC and IBM. In 2012 although total revenues were 5.1% higher than 2011, the net earnings decreased by 12.1%.

	Year Ended March 31,				
	2012	2011	2010	2009	2008
	(In millions, except per share data)				
Statement of Operations Data:					
Total revenue	$2,172.0	$2,065.3	$1,911.2	$1,871.9	$1,731.6
Operating income	$543.9	$532.8	$506.1	$367.8	$357.5
Net earnings	$401.0	$456.2	$406.1	$238.1	$313.6
Basic earnings per share	$2.36	$2.55	$2.21	$1.27	$1.59
Diluted earnings per share	$2.32	$2.50	$2.17	$1.25	$1.56
Shares used in computing basic earnings per share	169.9	178.7	183.1	187.1	194.8
Shares used in computing diluted earnings per share	172.8	182.4	186.8	190.2	199.6
	At March 31,				
	2012	2011	2010	2009	2008
	(In millions)				
Balance Sheet Data:					
Cash and cash equivalents	$1,496.9	$1,660.9	$1,368.6	$1,023.3	$1,288.3
Investments	138.7	95.6	127.9	145.9	186.9
Working capital	767.3	877.1	561.2	239.4	532.7
Total assets	4,864.4	4,485.4	4,137.6	3,697.5	3,345.5
Long-term borrowings	821.6	335.6	340.9	313.6	9.2
Deferred revenue	1,993.9	1,955.5	1,823.1	1,787.9	1,779.4
Stockholders' equity	1,445.8	1,662.9	1,387.7	1,048.5	994.5

Figure 2 – BMC Earnings Information

BMC's fiscal year ends on the third calendar quarter of every year. Here is some key third Quarter 2012 data:

- BMC reported revenue of $548.2.7 million, an increase of 1.5% as compared to 3Q11.
- BMC reported net income of $119.9 million, an increase of 19.9% as compared to 3Q11.

Breakdown of total revenues:

- License revenue: $225.0 million, a decrease of 4.1% as compared to 3Q11.
- Maintenance revenue: $272.3 million, an increase of 5.0% as compared to 3Q11.
- Services revenue: $50.9 million, an increase of 10.7% as compared to 3Q11.

Mainframe Service Management (MSM, where the MainView line of products fall into)

- Licensing: $91.3 million, an increase of 6.5% as compared to 3Q11.
- Maintenance: $124.6 million, an increase of 4.4% as compared to 3Q11.

Enterprise Service Management (ESM)

- Licensing: $133.7 million representing a decrease of 10.2% as compared to 3Q11.
- Maintenance: $147.7 million representing an increase of 5.6% as compared to 3Q11.

Bookings: For the quarter ending December 31, 2011, total bookings decreased by 11.7% from the prior year quarter to $524.4 million. Within the first nine months of fiscal 2012 (actually in the first half of fiscal 2012), one large transaction generated total bookings of over $100 million, principally related to its MSM business. Total MSM bookings for the trailing twelve months increased by $169.0 million (a 22.2% increase), while ESM license bookings for the quarter decreased by $37.1 million, or 22.7%.

A company's commitment to further developing and improving their products can be judged by their investment in Research and Development (R&D). During 2010 and 2011, IBM invested $6,026 and $6,258 (in millions) into overall R&D.

IBM Tivoli OMEGAMON Family – Product Architecture

The OMEGAMON family of products is based on the IBM Tivoli Monitoring architecture to provide the infrastructure for effective, reliable and efficient monitoring of not only the z/OS environment but also enterprise-wide monitoring.

IBM Tivoli Monitoring monitors and manages system and network applications on a variety of platforms and keeps track of the availability and performance of all parts of the enterprise. IBM Tivoli Monitoring provides reports that can be used to track trends and troubleshoot problems.

IBM Tivoli Monitoring can be used to perform the following tasks:

- Visualize real-time monitoring data from the operating environment
- Monitor resources in the environment for certain conditions, such as high CPU or an unavailable application
- Establish performance thresholds and raise alerts when thresholds are exceeded or values are matched. This is done via visual rules called “situations”.
- Trace the causes leading to an alert
- Create and send commands to systems in the managed enterprise by means of the Take Action feature. This is often referred to as “reflex automation”.
- Use integrated reporting to create comprehensive reports about system conditions

IBM's commitment to the OMEGAMON family of product has been solidly demonstrated through a substantial investment into the OMEGAMON version 5.1 products. OMEGAMON V5.1 provides significant customer value to reduce costs with a new, simplified product architecture developed for the 3270 "power" users giving them unprecedented ease of use and maintenance.

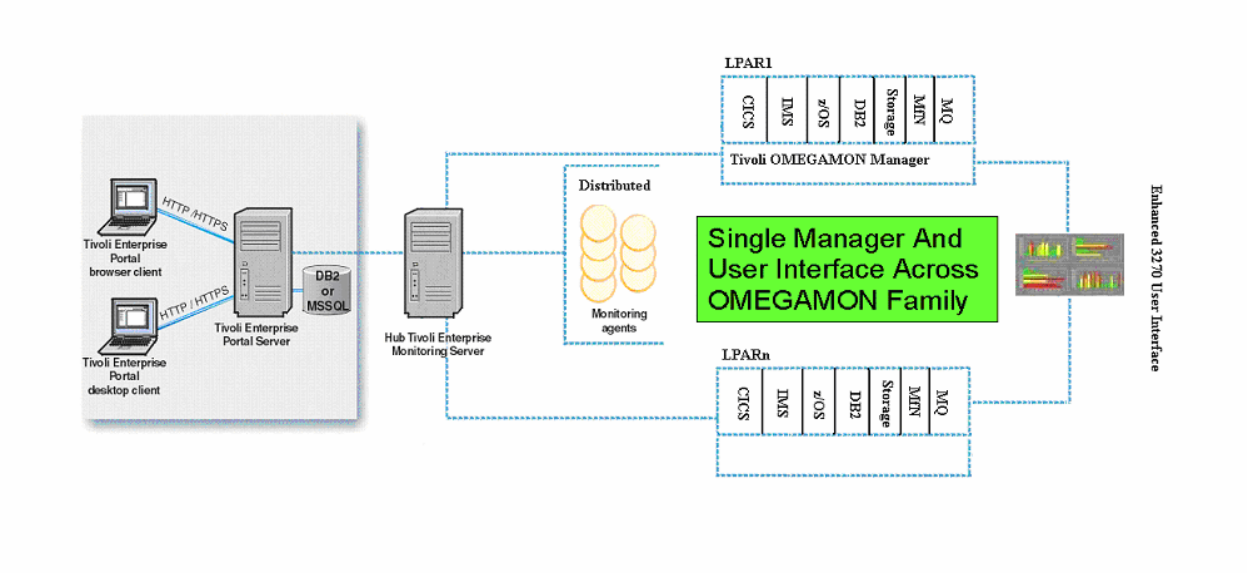

Figure 3 - Simplified Picture of New OMEGAMON Architecture

The benefits of this new architecture include:

Increased System Availability with faster problem resolution

- Enhanced 3270 user interface for subject matter experts
- Built-in Problem Solving Scenarios

Improved Productivity with simplified data

- Faster and simpler Install/Configuration/Maintenance
- zEnterprise monitoring across System z and zBX
- Customizable 3270 displays of critical data

Reduced Costs with decreased resource usage

- Usage of zIIP specialty engines
- Simplified OMEGAMON architecture

Another key feature of the OMEGAMON monitoring architecture is the ability to offer high availability of the monitoring infrastructure to prevent any single point of failure. On z/OS the hot stand-by is implemented as a HA-HUB (High Availability) as described below.

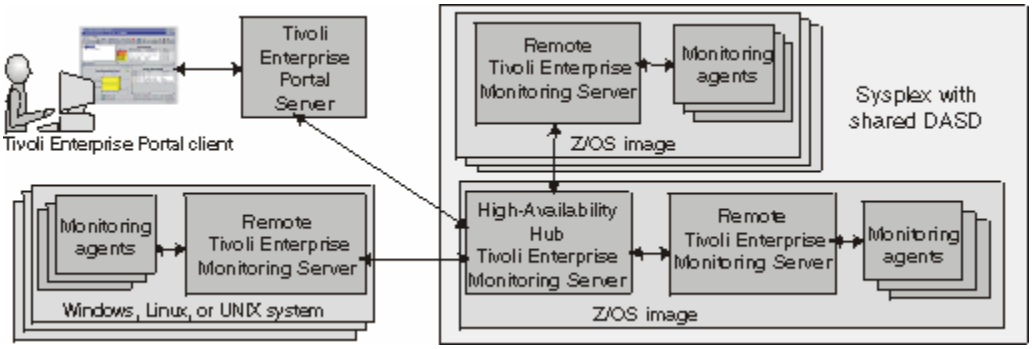

Figure 4 – Tivoli Enterprise Monitoring Server High Availability

Additional information on the z/OS high availability hub can be found at: https://ibm.biz/Bdx2dS.

IBM Tivoli OMEGAMON Family – User Interfaces

With the simplified OMEGAMON 5.1 family of products, the user interfaces, for z/OS based monitoring agents, as well as distributed environments, have been simplified. The main interfaces are the following Tivoli Enterprise Portal and the Enhanced 3270 User Interface (e-3270).

Tivoli Enterprise Portal

The Tivoli Enterprise Portal (TEP) is a browser based user interface. Tivoli Enterprise Portal is the interface where a customer monitors their products. The TEP consists of the Tivoli Enterprise Portal Server and one or more clients.

The Tivoli Enterprise Portal Server (referred to as the *portal server*) manages data access through user workspace consoles (the portal clients). The portal server connects to a hub monitoring server; it retrieves data from the hub in response to user actions at a portal client, and sends the data back to the portal client for presentation. The portal server also provides presentation information to the portal client so that it can render the user interface views suitably.

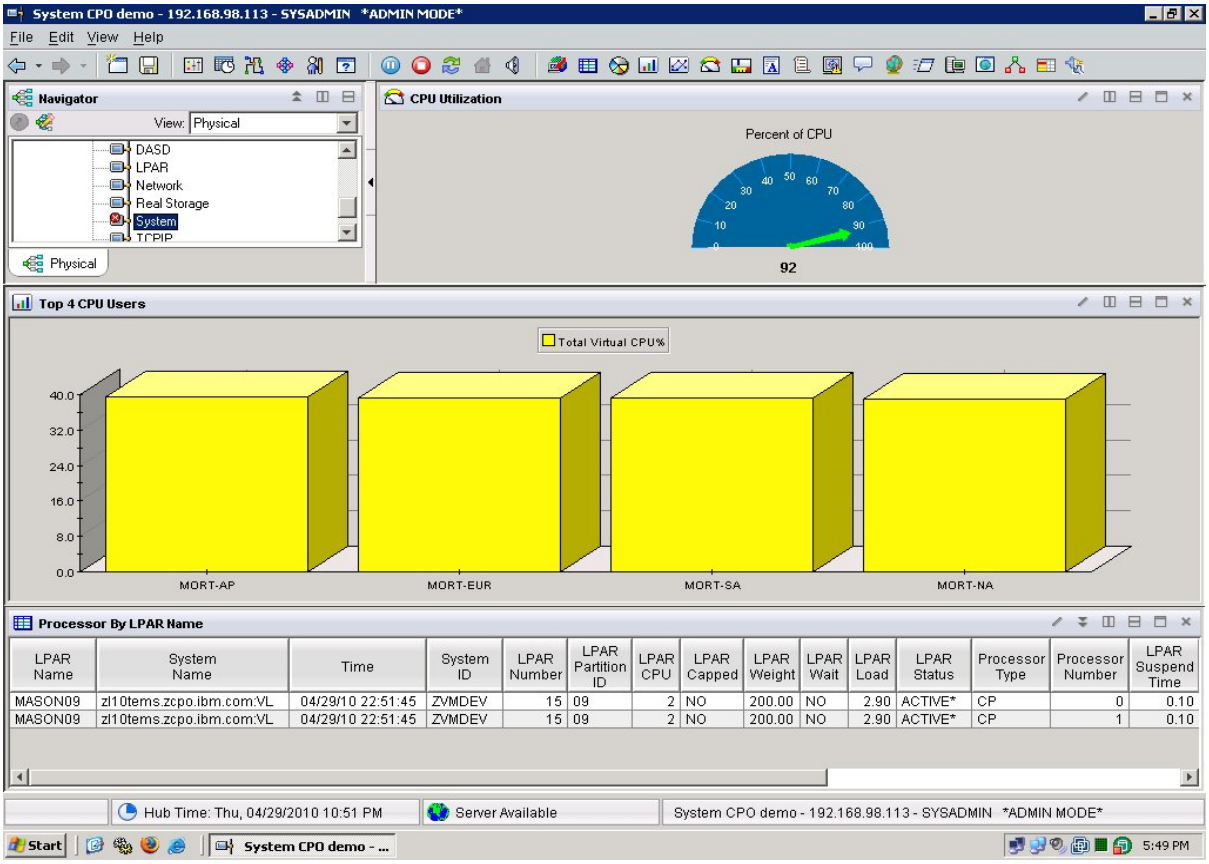

Figure 5 – Tivoli Enterprise Portal Server Interface

The Enhanced 3270 User Interface (e-3270)

With the simplified OMGAMON architecture, the main interface is now the e-3270 user interface. The e-3270 is the new user interface that was developed for version 5.1 of the OMEGMON products. It is often referred to as a "GUI on a green screen". It gives the user the ability to:

- Customize 3270 screens to display critical system/subsystem data
- Understand transactions across multiple sysplexes
- Use color coding to provide ability to find and resolve problems quickly
- Eliminate the need to move between multiple screens and monitors

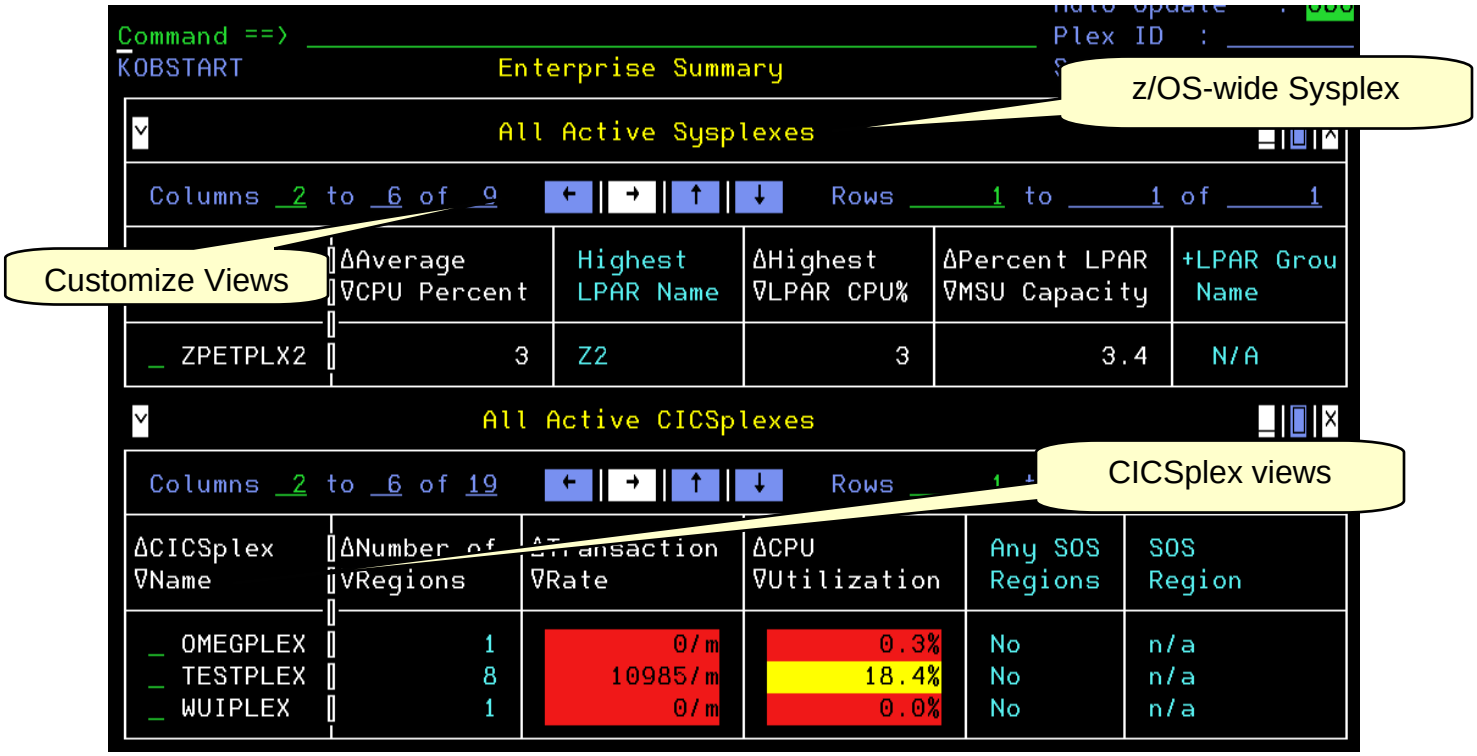

Figure 6 – OMEGAMON e-3270 User Interface

Clabby Analytics, an independent technology research and analysis organization recently reviewed the OMEGAMON V5.1 product set and stated the following to summarize the offering:

"As for product shortcoming, we found few. Although we don't like 3270 interfaces in general, we really like this 'graphical' 3270 implementation. We found many similarities in how a graphical user interface would display data (in columns with red, yellow, or green shading) and how OMEGAMON's new graphical 3270 screens display the same data. As for knowledge management, we liked the way IBM has created built-in problem solving scenarios. These represent a step in the right direction toward a

knowledge management database. In the future, we'd like to see IBM build a knowledge management repository that can capture knowledge about how various mainframe managers have solved problems over time in their mainframe environments. We think this will be necessary for 'passing the baton' to the next generation of mainframe managers.

In the end, this whole report has been about efficiency and productivity improvements that IBM has made to its OMEGAMON product set. IBM is a recognized leader in APM. This product gives IT managers greater visibility into mainframe operations and tuning — and simplifies workflows, leading to greater manager/administrator productivity. Further, it gives these managers and administrators greater insights into business process flows, enabling IT to better serve business needs (this alignment is also called business service management). Finally, although this is hard for us to say, we really liked IBM's new graphical 3270 environment. This interface provides a path to faster monitoring and problem management and leads to reduced costs, higher availability and improved productivity."[4]

[4] OMEGAMON V5.1 Review: Client-driven Redesign of Mainframe Performance and Availability Monitoring - http://clabbyanalytics.com/uploads/Omegamon_5.1.pdf.

BMC MainView Family – Product Architecture

The MainView family of products is a suite of monitoring and automation solutions designed to help operations, and the IT staff, monitor and operate mainframe operating systems and the subsystems that run in it. The integration of the MainView products allows access to its various components via a common terminal session. BBI is the technology that allows such integration.

The BBI architecture is the common communication component that all MainView products connect to in order to allow access to all Mainview products across multiple systems and/or locations. Through a single terminal session BBI enables monitoring and management of various z/OS subsystems such as CICS®, DB2, IMS, MQSeries®, VTAM®, IP, WebSphere® and the z/OS operating system itself. There are various BBI address spaces, or started tasks, that enable such integration and also provide data collection functions. They are:

- User Address Space (UAS)
- Product Address Space (PAS)
- Coordinating Address Space (CAS)

System management and monitoring functions such as entering commands on multiple systems, filtering performance data, viewing historical data across systems, and others are made possible through the communication between these various address spaces, across multiple systems and locations.

BMC MainView Family – User Interfaces

MainView can display performance data through various user interfaces. The traditional 3270 interface seems to still be favored by most mainframe administrators, but a graphical GUI is also available. Both the 3270 and the graphical user interface, are described below from a high level perspective.

MainView Explorer®

The BMC MAINVIEW Explorer offers web browser access to the BMC MAINVIEW products, and is included with each BMC MAINVIEW product at no additional charge. At the click of a button, you can see how your z/OS systems and associated subsystems are performing and any exception conditions that might be occurring. With BMC MAINVIEW Explorer, you can view system information with easy-to-read charts and graphs. You can easily print and export BMC MAINVIEW Explorer view data as well as "publish" views as HTML pages

This graphical interface allows for a rich set of features which include:

- Displaying performance data in bar charts and histograms
- Displaying topology diagrams
- Access performance data via Windows like tree navigation
- Create and save personal profiles to display only data of interest
- Execute MainView product commands
- Context sensitive Help displays

The MainView Explorer graphical interface is supported by the following components:

- **Client**
  The client runs as a Java applet in the web browser. By clicking on a MainView Explorer icon or hyperlink, this Java applet is executed and it sends the request for data to the host server.

- **Host server**
  The host server is a z/OS address space that uses TCP/IP to communicate with the graphical user interface clients. When a graphical interface user requests some data to be displayed the request flows to the host server to the CAS component. The CAS in turn communicates with the PAS which collects the data requested. The PAS sends the data back to the host server and from there it is displayed back in the web browser of the user. In a multiple system environment, the CAS components communicate with each other to send data across systems.

For a more detailed description of MainView Explorer and other BMC solution components please see the document at http://documents.bmc.com/products/documents/71/92/107192/107192.pdf

3270 User Interface - Windows mode and Full Screen Mode

MainView's windows mode user interface is based on 3270 TSO/ISPF. With this mode of operation, multiple 3270 "windows" can be displayed on a single 3270 session. Windows mode allows for quick access to multiple MainView products at the same time. Each window is identified by an information line at the top of the window.

Windows mode allows a user to:

- Combine multiple systems into a single display
- Capture performance data to be printed or saved on a dataset
- Use hyperlinks and menus for navigation inside a product or across systems
- In one row, display data summarized from multiple resources
- Open a maximum of 20 windows each with different performance data
- Present historical data for analysis

Similar to the MainView windows mode, the full-screen mode is also a 3270 TSO/ISPF® interface. Just like any standard TSO 3270 application, splitting, switching, scrolling backward and forward is performed via standard PF keys.

IBM Tivoli OMEGAMON and BMC MainView Product Mapping

Both IBM Tivoli OMEGAMON and BMC MainView cover the most critical z/OS subsystems such as CICS, IMS, DB2, etc., as well as the most recent versions of the z/OS operating systems where those subsystems typically run. However, for all the monitored objects (i.e. operating systems as well as subsystems), only IBM is able to provide Day 1 Support, which gives users the ability to exploit new features of the operating system or subsystem on the day they become available. Although this may not seem like a big differentiator, in reality it can be. IBM product development is driven by customer needs. When new versions of software, such as CICS, contain new features and functions based on critical customer requirements, Day 1 Support can mean the difference between allowing the customer to run and monitor that new version and meet business requirements or not. Without Day 1 Support, most vendors offer what is called "toleration mode", which gives users the ability to monitor the new version of the subsystem but they will be unable to exploit or monitor the new features. All IBM Tivoli OMEGAMON products offer Day 1 Support.

The following is a table showing the product mappings between OMEGAMON and MainView. Note that in some cases more than one MainView product is required to accomplish the same functionality offered by a single OMEGAMON product. This can translate into increased licensing costs, increased maintenance and complexity.

IBM Tivoli OMEGAMON

z/OS	CICS	IMS	DB2	TCP	Storage
OMEGAMON XE on z/OS	OMEGAMON XE for CICS on z/OS	OMEGAMON XE for IMS on z/OS	OMEGAMON XE for DB2Performance Expert on z/OS	OMEGAMON XE For Mainframe Networks	OMEGAMON XE for Storage on z/OS
	IBM CICS Performance Analyzer for z/OS(1)	IBM IMS Performance Analyzer for z/OS(1)			Tivoli Advanced Reporting for DFSMShsm

BMC MAINVIEW

z/OS	CICS	IMS	DB2	TCP	Storage
MainView for z/OS	MainView for CICS	MainView for IMS Online	MainView for DB2	MainView for IP	MainView for SRM Reporting
MainView for Unix System Services		MainView for IMS DBCTL		MainView for VTAM	MAINVIEWSRM Automation
		MainView for IMS Offline			

(1) Only if accounting and chargeback is required

High Level Family Comparison – Strengths and Weaknesses

An analysis of both families of product was performed for this white paper. The research consisted of public documentation analysis as well as interviews with installers and administrators that were familiar with both families of solutions. The table below shows the objective opinion of the author of this whitepaper based on the documentation that was able to be obtained.

	IBM Tivoli OMEGAMON Family	BMC MainView Family
System z/OS Support	✓	✓
Subsystem Coverage	✓	✓
Ease of Installation	✓	X
Day 1 Support	✓	X
Support Satisfaction	✓	✓
User Interface - Ease of Use	✓	✓
Address Space(s) Quantity to Support Solution	✓	X
zIIP Exploitation	✓	✓
Lower Monitoring Overhead	✓	X
Infrastructure Maintenance	✓	✓
Infrastructure High Availability	✓	X
Lower Total Cost of Ownership	✓	X
Overall Customer Satisfaction	✓	✓

Conclusion

At the family level, it is fair to say that both solutions can effectively manage and monitor the critical business systems and subsystems. Most areas where one product excels over the other are, at the end of the day, of somewhat minor importance. Users that were accustomed to a particular way of performing a task with a particular monitor will eventually learn and get used to doing the same task a different way on a different monitor. The two categories that are of major importance when considering which product family to invest in are ***Total Cost of Ownership*** and ***Company Commitment to a Solution.***

Independent software vendors, like BMC, usually offer customers a long-term capped capacity agreement at significant discounts over nominal list prices. However, unplanned growth can result in significant upgrade charges for new capacity and continuing MLC charges as well. IBM's Eagle TCO team has performed hundreds of cost studies and many of these cost studies show significant expense reduction when switching to equivalent IBM software.

Even more important than the average cost of ISV tools (like those provided by BMC) is the incremental cost of growth. Most customers don't realize the huge difference between IBM's approach to pricing which discounts with growth and ISV pricing which often doesn't.

Figure 8, shows an example drawn from an IBM Eagle TCO study. It compares the marginal tooling costs of increasing an existing install by a moderate number of MIPS. The IBM Eagle TCO team can be contacted at the email listed below for further details on this and other TCO studies.

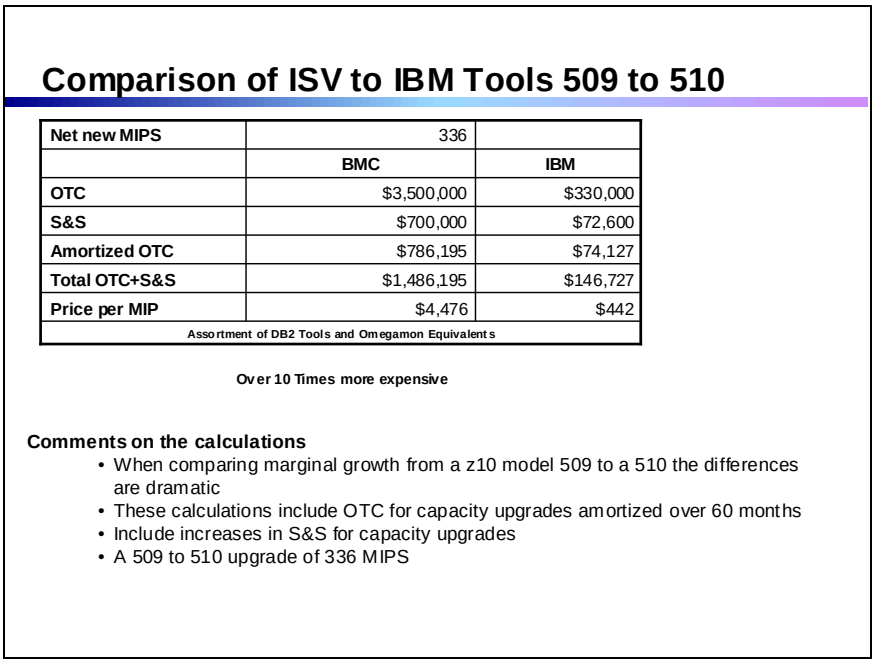

Figure 8 - Eagle TCO Case Study – IBM Tools vs. BMC Tools

IBM's continued investment in the OMEGAMON family of products shows its ***commitment to the product line***.

"IBM OMEGAMON is a strategic part of our ISM solution and strategy. This is demonstrated by the significant investments Tivoli and IBM continue to make in it, as evidenced by the recent release of the OMEGAMON 510 family of products. The OMEGAMON family of products is a key component in the full enterprise integration strategy. It not only features Subject Matter value out of the box, but also the ability to leverage that same product for enterprise-wide infrastructure and platform monitoring and management. This same base allows IBM to offer our Cloud offerings and Day 1 support for new infrastructure and middleware supporting our customer critical applications and business services"

- *Teri Soken – Director, zSeries Product Development*

For customers that are concerned about ISV costs, or mainframe costs in general, the SWG Competitive Project Office can help. We can provide a concise Total Cost of Ownership study that can put costs in context and help customers realize more value from their System z solutions. For more information contact: Craig Bender at EagleTCO@us.ibm.com

Roberto Calderon is currently a Mainframe Evangelist in the IBM Software Group System z Competitive Project Office. Mr. Calderon joined IBM in 1998 as a senior z/OS systems engineer focusing on Tivoli's z/OS systems management portfolio. Prior to joining IBM, Mr. Calderon's extensive z/OS experience ranges from systems operations, application development, systems programming for major transportation and financial organizations. He has also performed development, technical pre-sales and support roles for software vendors. Mr. Calderon holds a Bachelor of Computer Sciences Degree from the University of North Texas.

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