Vision for Dynamic Business Service Management

JANUARY 2008

Don LeClair, Louis Blatt, Chris Craddock

CA RESEARCH AND DEVELOPMENT

Table of Contents

Executive Summary

Challenge

Today businesses expect IT to be not just a technology provider but also an engine for growth. This expanded role challenges IT to deliver high-quality, business-oriented services while coping with escalating technology complexity and diversity and driving down costs. IT needs a unified management approach that directly links IT to the business and increases efficiency through well-controlled automation.

Opportunity

IT can move beyond technology-centric management to *Dynamic* Business Service Management (BSM). This dynamic BSM links IT services to business priorities, ensuring that IT priorities and investments are aligned with business goals.

This alignment can be achieved through a unified approach that delivers business-level insight, built on a unified service model and an integration platform that provides intelligent automation for the entire service life cycle. This model enables IT organizations to manage services, and not simply the underlying assets — thereby dramatically increasing the utilization and performance of the infrastructure and enabling dynamic allocation of resources to meet business demands.

IT organizations can start to reap the tactical and strategic advantages offered through initiatives that focus on consolidating infrastructure management, implementing service management best practices, improving application performance and service levels and automating the data center.

Benefits

By applying new levels of consolidation, automation and insight, dynamic BSM delivers improved service levels, business alignment and cost controls. BSM also provides the ability to manage service at the transaction level, which enables you to better manage user experience and provide more relevant business information.

Dynamic BSM automates both the processes of IT management and the life cycle of each service. These improvements in insight and automation free up resources for strategic IT projects and enable IT to become an engine of business growth, agility and innovation.

SECTION 1: **CHALLENGE**

The Need for Insight and Automation

Markets are changing faster than ever. At the same time, businesses have become more dependent on information technology than ever. The success of any business is therefore to a large degree contingent on how agilely it can apply technology in order to respond to and take advantage of market change.

The Business Need for Agility

Companies like Google, eBay and Amazon, are creating business models that leverage technology to interact with their customers in entirely new ways. The ability to change rapidly is a new requirement for doing business. Companies that cannot keep up may not survive. In fact, half of the top 20 Fortune 500 companies that existed 40 years ago aren't in business today.

Many people think that Amazon's transformation of the retail book industry is one of the greatest examples of Internet adoption. However, enterprise agility, not simply the ability to sell books online, has become its core competency. Amazon set new benchmarks for cost efficiency, but has taken it a step further by making its horizontal business and technical capabilities — including billing, fulfillment and even data storage — available via Web services interfaces that can be easily orchestrated or changed. This has given Amazon an unprecedented agility to enter new markets and continues to serve the company well as it continues to innovate and grab market share in a fast changing industry.

In varying degrees, all companies need IT to deliver the flexibility to respond to business changes and market dynamics.

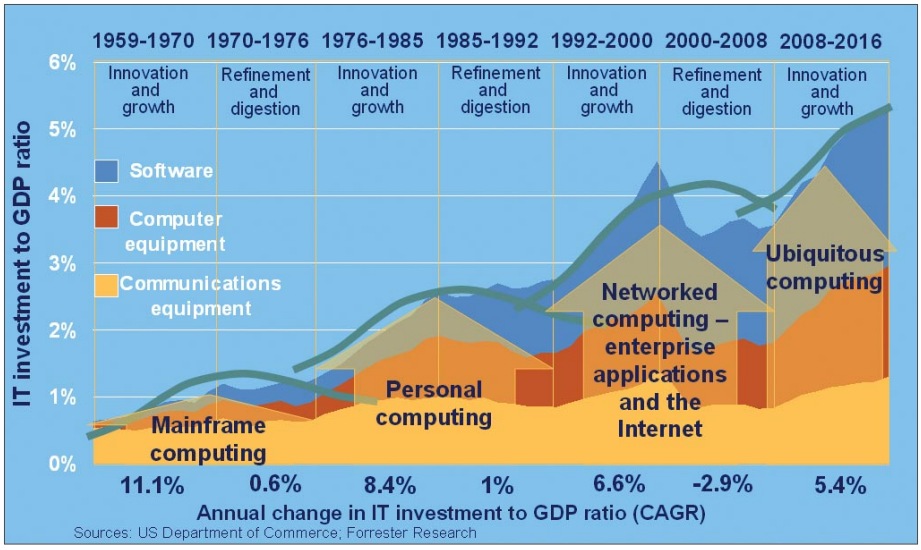
IT: The Engine of Business Agility

For the business to be agile, IT has to deliver a flexible, dynamic infrastructure that enables business change in an environment where the computing infrastructure results from different generations of IT technology. Your success will be determined by the ability to leverage what you have and use it in new ways.

FIGURE A

Evolution to ubiquitous computing.

WAVES OF IT TECHNOLOGY



FOUR GENERATIONS OF IT Forrester Research identified four main waves of IT in the illustration above.[1] Each of these waves of IT technology are all in use today:

- Mainframe Computing in which dedicated and static computing assets are deployed to support extremely high availability and scalability.
- Personal Computing in which more dynamic applications are deployed to focus on department level efficiency.
- Network Computing which introduced more dynamic applications whose value extended from the enterprise and connected organizations across entire supply chains.
- Ubiquitous Computing in which wireless connectivity, miniaturization and extremely high bandwidth enables new applications that will pervade every aspect of our lives. This drives exponential increases in the number of computing devices that can access business systems.

This ubiquitous era introduces valuable technologies for both the consumers of applications and the IT organization which hosts them.

- Consumer Advances Web 2.0 brings the ability to construct your own applications, such as with Mashups, and access them anywhere any time through wireless devices. Gartner predicts that, "By 2010 Web Mashups will be the dominant model (80%) for the creation of composite enterprise applications."[2] Further, Gartner predicts that, "By year end 2008, 75 percent of Enterprise software companies will have a Web-based software-as-a-service delivery model that includes Web APIs to create mashups."[2]

1 Forrester Research, Chris Silva, "802.11n: Too Early For The Enterprise?", 8 February 2007
2 Gartner, Inc, Cearly, D. and Claunch, C. "Top 10 Strategic Technologies for 2008". ITxpo, October 2007.

- IT Technology Advances The virtualization of storage, networks and servers has laid the groundwork for a highly flexible infrastructure. Applications themselves are now composable into new services using SOA techniques for capabilities that agile companies can leverage for growth. The ability to leverage virtualization to drive an enormous increase in server utilization will be fundamental to keeping data centers running, not just for cost savings and Green IT initiatives. In its Top Predictions for IT in 2007, Gartner noted, "By 2008, nearly 50% of data centers worldwide will lack necessary power and cooling."[3]

While new technologies such as virtualization and SOA offer the promise of unprecedented IT infrastructure flexibility, they also add complexity and new management needs. For IT to serve as the engine of business agility, you need to integrate IT management across the entire infrastructure and align management of this converged environment around the business services they support. This requires:

- Insight Complete visibility into every aspect of managing IT — for both physical and virtualized environments — that is fully aligned with the business services that IT supports.
- Automation Flexible automation that orchestrates the best practices for driving dynamic changes in the infrastructure rapidly and with complete control.

This all leads to a fundamental change in the way you mange IT. The next generation of Business Service Management (BSM) must:

- Align all management activities with the services provided to the business
- Break down the complexity of getting to BSM into key areas of value creation
- Provide deep insight into how the infrastructure supports business services — then keep up with a state of constant change in a controlled manner
- Use a portfolio approach to managing services and include a focus on user identity and security
- Provide a complete 360-degree view of all attributes of a service — not just the assets

It is a new era, and we are ready for a new vision of BSM: Dynamic Business Service Management.

SECTION 2: **OPPORTUNITY**

The Vision for Dynamic Business Service Management

CA's vision is to deliver Dynamic Business Service Management that will enable you to manage change better than your competitors by leveraging insight and automation in the context of business priorities. Specifically, Dynamic BSM will enable IT to be an engine for agility by providing:

- Insight through a Unified Service Model, based on a CMDB, which connects all aspects of service definitions across management and security tools and across IT disciplines. This enables people to make informed decisions on the change process and supports automation.
- Intelligent automation that supports delivery of a dynamic self-configuring infrastructure. Self-configuration comes from using performance-based changes to drive infrastructure allocation based on business priorities. This includes self-healing capabilities for disaster recovery, and demand spikes, where capacity must be shifted from low priority services to meet service level agreements for more important ones.

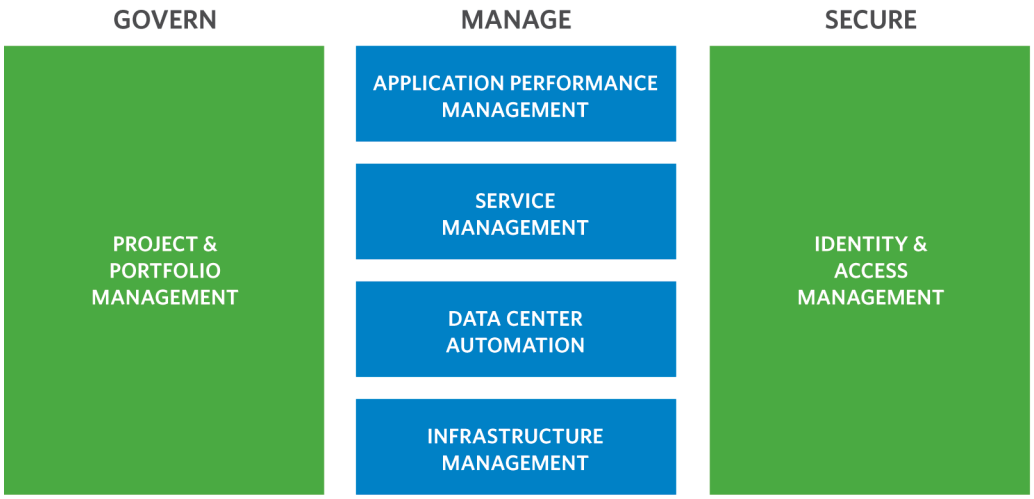
3 Gartner, Inc., Ken McGee. "The Gartner Scenario: The Current State and Future Direction of the IT Industry". ITxpo, October 2007.

The Dynamic BSM vision is extended by integrating with IT Governance and Security.

FIGURE B

Business Service Management with Governance and Security.

UNIFYING MANAGEMENT



Traditional management tools cannot fully support the service life cycle. To succeed, IT also needs governance and security solutions and must leverage:

- A CMDB With a Unified Service Model and a Platform for Intelligent Automation These innovations help your IT organizations support the business and avoid a technology-centric focus. They also provide deep insight into how the infrastructure aligns with processes and maintain accurate service definitions while enabling dynamic changes in the infrastructure.
- Well-defined Initiatives to Start the Process of Evolving Toward Dynamic BSM IT organizations should focus on incorporating BSM into key areas of value creation, including optimizing infrastructure management, automating the data center and key processes, streamlining service management, and ensuring optimal service levels and application performance. These areas are interrelated aspects of BSM and all gain value by leveraging the CMDB and platform.

Goals

The goal for Dynamic BSM is to transform IT into a flexible engine for growth. Dynamic BSM is focused on the ability to:

- Leverage integrated insight into business service to ensure that 99% of service performance and availability incidents are detected before your customers report them
- Prioritize generated incidents based on their service impact and automate escalation of key issues with seconds

- Correlate and de-duplicate the event streams from domain managers by 99.99%, leaving just the 10-20 events that require administrator intervention, and prioritize those based on business impact
- Increase average server utilization by 400%, while simultaneously increasing availability
- Fully automate the repetitive IT processes to increase administrator span of control by 400%
- Eliminate 95% of the outages caused by making unplanned changes that failed to account for the impact of change on key business services
- Automatically detect and eliminate "drift" from best practice configurations
- Move from managing a business process through the supporting infrastructure to managing the SOA-enabled and orchestrated business process itself

Vision for BSM in Action

As an illustration of the vision for Dynamic BSM, consider a fictional financial service provider named Forward, Inc. Forward provides a full array of financial services to gain a "stickier" relationship with its customers and support growth in a highly competitive market targeted to baby boomers. They found a strategic growth opportunity in providing retirement services. Some of the key use cases where Dynamic BSM has transformed its IT infrastructure in support of their new retirement services include:

- Dynamic Workload Automation When Forward ran a successful television promotion, the resulting unplanned increase in demand caused performance problems with the retirement service. New server provisioning used to take weeks. Now, the company can leverage virtualization and data center automation technologies to automatically detect the increase in demand and make the changes required to meet the demand without any problems in meeting service levels.
- Dynamically Prioritizing and Fixing Problems The combination of a denial-of-service attack and a memory leak are threatening the company's ability to meet service levels. Priority handling is assigned to incidents related to strategic systems. Since IT is able to correlate the memory shortage problem denial-of-service attack as affecting the retirement planning service, this issue moves to the top of its queues. The relationships between the impacted items, tracked in the Unified Service Model, enables discovery of the problem's root cause, instantly finds all instances of the faulty or problematic configuration in the infrastructure, and fully automates the changes needed to eradicate the problem.
- Dynamic Service Level Management The service catalog tracks IT resources consumed by all aspects of a service: creation, maintenance and usage. Measuring actual user performance and even transaction value means SLAs can be managed from the business point of view, tied to transaction value, and the direct impact on the business can be monitored. Also, since the SLA defines the policy for managing the service, potential compliance problems can trigger dynamic capacity changes. IT can bill the business unit for the entire service cost, not only the underlying assets, and continuously review the value of the service and report in a way that delivers business insight to the company.

- Optimized Infrastructure Management The retirement planning system is supported by a complex, multi-platform infrastructure that can't operate in a lights-out mode because thousands of management events come in daily from network, systems and storage domain management tools. The company's infrastructure management initiative enables IT to prioritize events based on the services they impact, remove duplicates and adjust for planned out-of-service conditions, then escalate and document only the items that need intervention. Simple corrective changes are initiated automatically, and formal change requests are generated when the causes are well known.
- Manage the Business Process A televised promotion during the World Cup drives demand for retirement planning services beyond all available capacity. The management system detects that no other capacity is available. IT leverages the understanding of the business process to ensure that the available capacity is initially allocated to platinum level customers by routing transactions based on their content. This new level of business process management is greatly simplified by the fact that the SOA orchestration used to define their processes allows management tools to leverage data from within the process for insight and to drive automation.

These separate but related instances are examples of an organization handling change with the speed required for the next generation of business. A completely unified approach would also integrate good IT Governance and Security best practices with BSM:

- Govern Investments The decision to build the new retirement planning system and address a strategic market opportunity had to be made in the context of all the projects being delivered by IT. The company was able to leverage its IT governance solution to make the business case for the retirement planning service and make the portfolio-aware tradeoffs to maximize their returns. Once the retirement planning service was approved, it provided visibility to both business and IT leaders on every step of the development process, including deployment. Afterwards, IT can determine whether the costs and benefits met the expectations of the business plan.
- Control Identities and Access The retirement planning system houses confidential information for customers. Complete control over the access of customers and employees through the life cycle is critical. The identity and access management solution ensures that only the proper access is provided automatically when the service is first deployed from the service catalog, and updates are provisioned as roles change. Full auditing of access ensures compliance with internal process and government regulations.

Key Enabling Management Technologies

Success in Business Service Management requires the ability to integrate across the full range of management and security domains. The key technologies to unify these domains include a CMDB in support of a Unified Service Model and an SOA-based Integration Platform that enables you to integrate across service-enabled management solutions and deliver intelligent automation.

CMDB AND THE UNIFIED SERVICE MODEL The CMDB serves as the starting point for defining and maintaining the holistic view of a service across many management tools. The CMDB is the hub of a Unified Service Model[4] that integrates information from diverse domain managers to create a 360-degree view of a service. It does this by leveraging the service definition that is maintained within the CMDB itself and federating with the rich management data repositories housed in CA and third-party solutions.

What it Provides

The CMDB provides the ability to:

- Manage Service Definitions The central repository of blueprint-like definitions of a service is in the CMDB. It contains the Configuration Items (CIs) that support any given service, the inter-relationships between CIs and key CI and service attributes.
- Discover Service Definitions Automate discovery and inventory of CIs and relationships gathered from your own systems, regardless of source format, for faster time to value.
- Track Key Indicators Define additional key indicators, extending the shared data model to more effectively measure the performance of any specific service. Examples of data that can be aggregated for a service include infrastructure availability and performance data, end user application response time data, capital and operating expenses, and service-level key indicators such as SLA/OLA compliance and year-to-date budget variances.
- Federate Service Information Federate data across domain managers and other products, and even other CMDBs, to "connect" the service with all related management information and allow it to be shared through web services.

Benefits

- Improve Service Unlike typical service data models, the CMDB and the Unified Service Model extend beyond tracking configurations and basic hardware to full service mapping to enable informed impact analysis and business decisions.
- Improve Insight Manage service priorities with business priorities. The CMDB models more than just the traditional infrastructure supporting a service. It provides insight into the costs of delivering a service, the people and projects that support it, the service levels, identity and entitlements and more. This 360-degree view provides improved insight to the IT organization and an information framework to improve the quality of automated changes.
- Enable Rapid Change CA CMDB provides the complete blueprints for a service. This allows services to be rapidly deployed into production. Because it records planned changes and captures all dynamic changes in the environment, it also provides the ability to monitor changes to and correct any drift from the approved service blueprints.
- Enable Business Oriented Investment Decisions Meaningful metrics and KPIs are using to make fully informed decisions about costs and investments in new business services.

INTELLIGENT AUTOMATION THROUGH AN INTEGRATION PLATFORM The other key enabler for Dynamic BSM is an architectural foundation, or integration platform, that will integrate your existing management tools and enable delivery of new complementary abilities to govern, manage and secure your enterprise.

4 CA, M. Waschke, M., Scheil, H., Schiavello, D., LeClair, D. Demacopoulos, K. "CA's Unified Service Model" August 2007.

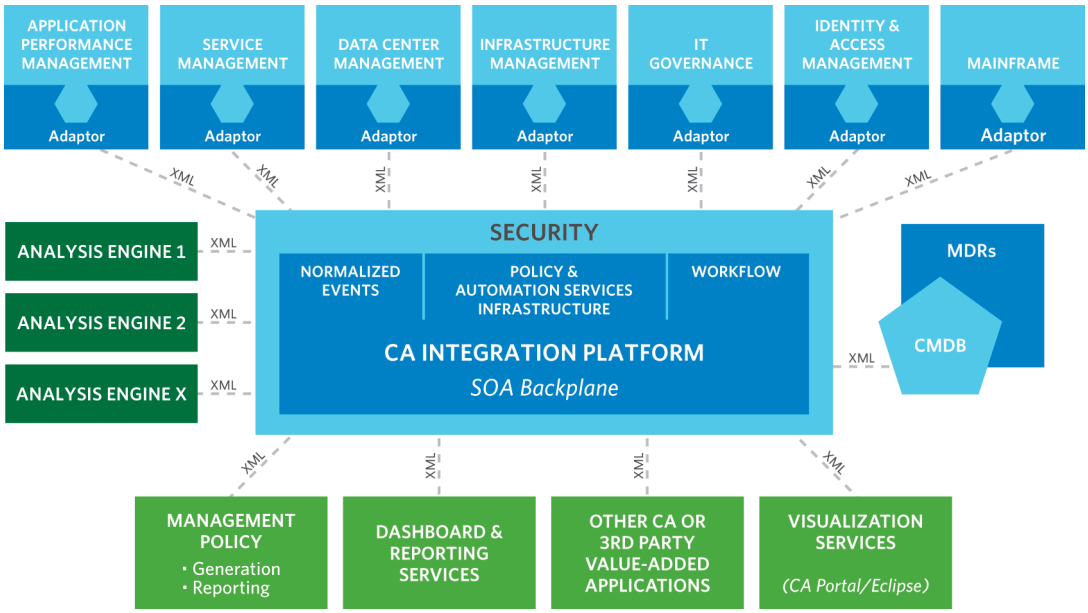
This platform must scale to support the new demands presented by SOA and virtualized environments. CA's Integration Platform is built according to a series of key principles illustrated in the reference architecture — Figure C below:

1. Connect the Existing World Accomplished by providing a series of adaptors that integrate all the existing management tools, repositories (including Configuration Management Databases) and the proprietary events they generate.
2. Leverage Standards To address the problem of translating multiple event formats CA's Integration Platform leverages XML to capture raw events and process or normalize these in a standardized fashion.
3. Highly Secure CA's Integration Platform delivers a layer of security to ensure that all normalized management events, messages and transactions are secured across the distributed enterprise.

FIGURE C

Integrating Management solutions to enable BSM.

PLATFORM FOR INTELLIGENT AUTOMATION



What it Provides

Intelligent Automation is based on SOA principles. SOA has been defined by Judith Hurwitz of Hurwitz & Associates as "an architecture for building business applications as a set of loosely coupled black box components orchestrated to deliver a well-defined level of service by linking together business applications"[5].

The flexibility and strengths of the SOA model can be applied to support both traditional and SOA-based infrastructure, and in the opinion of industry analyst Robin Bloor "doesn't just provide a basis for unification and simplification (of IT management), but also for extension".[6]

5 Hurwitz & Associates, Judith Hurwitz, "The Movement Towards Service Oriented Architectures"
6 IT-Director.com, Robin Bloor, Partner, Hurwitz & Associates, "CA, Rolling Thunder and the Integration Platform" 7 May 2007.

Enterprise IT management is itself a business critical application. By creating an appropriate set of SOA adapters for existing technology and augmenting them with a common set of policy and automation capabilities, CA can flexibly integrate, re-combine and automate our IT management products and enable interoperability with other vendors' solutions. This approach, which CA calls "Intelligent Automation," incorporates three fundamental elements:

- Standards-based Infrastructure In the past, vendors sought market differentiation through proprietary specialization. Today, vendors can gain market advantage by offering ease of use, flexibility and interoperability with other vendors' solutions. There are now well formed industry standards for a wide range of technology requirements. In particular there are standards for Web services and exploitation of Web services in management, policy, process design and orchestration, etc. The CA infrastructure is based on these standards, and specialized adaptor interfaces make it possible to "plug-in" new and existing CA products as well as products from other vendors.
- Policy-based Management In SOA, business functionality is made available (published) to its consumers as shared, reusable services. They may be comprised of traditional software application logic, Web services, or a combination of both. Services can publish and/or subscribe to messages (events) that indicate conditions of interest, and any given service may be composed or orchestrated in multiple different contexts to implement composite business processes.

  In this model, services are stateless, independent entities governed by policies that can be developed by business and IT stakeholders. This offers better alignment between business and IT. More importantly, this model provides the ability to rapidly change the external behavior of the system to respond to changing business conditions, without modifying or reconfiguring the underlying software.

  The automation aspects of CA's policy-based management approach are handled through workflow and process orchestration standards and adaptors/connectors into existing automation technology stacks. This abstraction makes it possible to deliver integrated solutions that span systems and products from CA and other vendors.
- Identity Aware Users of IT services and resources have always had digital identities. CA offers solutions that use security rules (or policies) to control their access to information resources. However, in SOA, the consumers are not necessarily human beings. They may be elements of business logic operating across enterprise boundaries. The identity management model plays an extended role in the architecture of CA's Integration Platform by also managing identities of objects.

The many other elements in the IT environment have always had identities as well, but their identity was typically scoped within a particular domain and somewhat weakly typed. This has made it profoundly difficult to bring those elements together in information repositories like the Configuration Management Database (CMDB.)

CA recognizes that identities need to be modeled and managed at a composite level (see Figure C above). By broadening the notion of identity to include type and role attributes and then instrumenting products and infrastructure to deal with this composite identity, it finally becomes possible to deal unambiguously with entities across silos and management domains.

Composite IDs are especially powerful when they are integrated into the configuration management infrastructure. Since the CMDB generates a unique key for each asset, products that use the CMDB assure reliability and integrity because the product perspective is integrated with the CMDB key. When combined with the other aspects of Intelligent Automation, the CA solution is far more powerful than the sum of its individual parts.

Benefits

The benefits of the integration include the ability to:

- Simplify the Growing Complexity within your IT management environments by adopting a SOA. This will increase business agility and help you to be more responsive to change.
- Protect Your Investments With Open Standards by implementing an Integration Platform. CA's goal is to resolve current technology limitations and establish a new framework for the future. Our solution is an Integration Platform that helps maximize current investments in management technologies, combined with intelligent automation.
- Enable Intelligent Automation with an architecture that extends your investments in CA and third-party management tools.

The intelligent automation and CMDB provide the technical foundation that will support your Business Service Management initiatives.

IT Initiatives for Dynamic Business Service Management

To achieve Dynamic BSM, you need to have enabling technology to share service definitions across all management domains and map them onto the supporting infrastructure. In addition, you will need to intelligently automate management activities in support of your IT services across the service life cycle — activities that span technologies and IT departments. Technology that enables you to control and automate service life cycle management provides a foundation for achieving the goals of Dynamic BSM.

BSM is a broad undertaking that may require incremental steps in one or more of these key areas:

- Infrastructure Management Providing an integrated view of the entire state of the infrastructure is key to optimizing the infrastructure and scaling to enable the business in the future. This ability to manage the service supply holistically provides a solid foundation for BSM by ensuring an optimized infrastructure.
- Data Center Automation Takes your organization beyond software provisioning and job scheduling and helps you deliver true enterprise agility — ensuring that your IT infrastructure is responsive to the demands of your business in real time.
- Application Performance Management Comprehensively addresses quality issues in complex IT services by measuring, reporting and identifying discrete elements within the context of the total customer experience. Application Performance Management can proactively enable an improved customer experience and help increase business success.

- Service Management Focuses on the life cycle efficiencies of the IT service by providing a cohesive set of standards-based IT delivery processes — supported by tools and automation — that comprehensively manage the life cycle of service deployment. By providing an IT service life cycle, value assessment and performance management solution, Service Management enables a comprehensive process to improve IT productivity, manage cost and measure effectiveness of IT service solutions.

Each of these Dynamic BSM initiatives[7] delivers a combination of insight and automation for success, and leverages several management capability solutions. Some of these management solutions, such as Change & Configuration Management and Incident & Problem Management, serve as connection points among the initiatives, ensuring that you can step from the starting point to an adjacent area.

SECTION 3

Conclusions

Dynamic Business Service Management moves beyond traditional BSM to deliver the flexibility and innovation to support the agile enterprise, including:

- Enabling the IT organization to manage across technology silos and focus on the business processes they support, by providing deep insight into how the infrastructure aligns with processes and maintaining this information in a changing environment.
- Identifying key areas within BSM where IT can undertake focused initiatives that can be integrated: optimizing the infrastructure, automating the service life cycle, managing service-to-business priorities and ensuring that service and user experience levels meet business demands.
- Integrating with a portfolio approach to managing service and service-user identities for complete management of the entire service life cycle.
- Reaching beyond an asset-centric view of management to provide a 360-degree view of all service attributes.

7 CA, Donegan, M. and Meyer, S., "Dynamic Business Service Management". December 2007.

SECTION 4

About the Authors

Don LeClair is the Senior Vice President of CA Technology Strategy and is responsible for working across CA to define EITM solution strategy and direction. Don is a 17-year veteran of CA and a Distinguished CA Engineer.

Louis Blatt is the Senior Vice President of Strategy at CA and is responsible for the market success of CA's Enterprise Systems Management products worldwide and has been a driving force behind CA's EITM strategy. Louis received a doctorate and Masters Degree from Boston University where he studied human-computer interaction.

Chris Craddock is a Technology Strategist in the Office of the CTO and a Distinguished Engineer and is responsible for the architecture and design of CA's Integration Platform. He is a frequent speaker at events including SHARE and CMG.

CA (NYSE: CA), one of the world's leading independent, enterprise management software companies, unifies and simplifies complex information technology (IT) management across the enterprise for greater business results. With our Enterprise IT Management vision, solutions and expertise, we help customers effectively govern, manage and secure IT.

WPESMDBSM01E MP324890108