

I D C V E N D O R S P O T L I G H T

Managing Operational Change Through ITIL and a Configuration Management Database (CMDB)

February 2007

Adapted from: *ITIL Penetration Is Moving Faster than You Might Think: Some Results of the System Management Software Strategies Study*, by Frederick W. Broussard, Stephen Elliot, Tim Grieser; IDC #3499

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Problem, change, and incident management are three of the most popular IT Infrastructure Library (ITIL) processes deployed today by enterprise IT operations teams. Just under 35% of survey respondents from organizations with 10,000+ employees are using a process framework such as ITIL. By 2009, IDC expects this to grow to 50%. IT and business executives are implementing technology strategies and projects that enable faster business value that complements the need to reduce and maintain costs. Operations teams have tactical, and increasingly strategic, responsibilities to drive business alignment with technology investment, often positioned through SOA-based projects. To meet business demands, these teams are establishing Change Advisory Boards (CMDBs) and cross-functional teams of IT and business professionals to improve their effectiveness for delivering technology with business impact. The ability to effectively and efficiently deliver IT services depends directly on an IT's organizational capability to manage change. Managing infrastructure change to an application, server, network, and storage infrastructure requires complex tasks that are often fraught with human error, high costs, weak processes, and poorly defined staff responsibilities. Most enterprise IT organizations make hundreds, if not thousands, of infrastructure changes everyday. IT organizations are under pressure to reduce capital expenditure costs and limit hiring, while business managers ask for higher performing, more secure IT services. One successful strategy to meet these objectives is to gain control over infrastructure change. This paper suggests what IT organizations should consider when creating a short list for ITIL and CMDB products, the Opware ITIL and CMDB solution, and implementing change, compliance or configuration management processes.

Introduction

IT organizations are accelerating their adoption of change, configuration, and compliance management solutions to enhance their ability to improve change and configuration workflows and processes, reduce compliance finger-pointing with auditors, lower operations costs via tool consolidation, and reduce downtime due to poor configurations. IDC has defined this market as the System Operations Software Market, notably the submarket called Change and Configuration Management Software (see Table 1).

IT organizations are evaluating solutions that enable cross-silo teams to standardize and automate change and configuration management processes improving business and IT alignment. Business demands are driving IT to have increasing control and management over infrastructure changes and cross-functional processes that span infrastructure responsibilities (network, server, storage management responsibilities) to assure compliance, meet dynamic business requirements, and create a more agile and secure infrastructure. Business projects that utilize technology to improve

change management are increasingly common avenues to garner budget dollars and reduce risks. Budget allocations for ITIL standardization and CMDBs are often tactical in nature and address key IT operations requirements; however, there is a larger opportunity to define the long-term business implications that these projects solve. Examples include compliance reporting utilizing accurate, consistent data, lower IT service availability costs, and tighter business and IT alignment through standardized processes.

Table 1

Worldwide Change and Configuration Management Software Revenue, 2005-2010 Forecast

	2005	2006	2007	2008	2009	2010	2005 Share (%)	2005–2010 CAGR (%)
Geographic region								
Americas	1,191	1,312	1,426	1,545	1,671	1,806	50.5	8.7
EMEA	722	784	848	914	981	1,053	30.6	7.8
Asia/Pacific	445	481	521	557	590	624	18.9	7.0
Total	2,359	2,578	2,795	3,017	3,243	3,483	100.0	8.1

Source: IDC, 2006

The intersection of server provisioning, problem, change, compliance, and configuration management is a notable emerging requirement for IT. As IT organizations and business leaders consider emerging Service-Oriented Architectures (SOA) and evolve from static-component monitoring to dynamic, real-time management of holistic IT services, new technology and process considerations must enter the discussion. This intersection and associated considerations will have a dramatic impact on the speed and ability of a business to respond to new demands, utilizing IT infrastructure as its core delivery platform. To accelerate the transition, IT organizations must consider solutions that offer strict change, automated auditing and remediation, configuration, and access controls for application, server, network and storage infrastructures based on staffing roles, change procedures/policies, and service-delivery expectations.

Business Impact

From a business perspective, compliance regulations continue to pressure IT organizations in having the ability to generate reports that show change impact on financial reporting, security, and IT service delivery. There has never been more of a need for IT organizations to gain control over the changes that take place in the IT infrastructure, as shareholder value, customer security, reputation, and legal ramifications are real risks. The ability of IT to adjust to business demands, deliver new revenue-generating innovation, and impact business processes are dependent on managing change. Line-of-business managers are driving more IT project budgets, and requiring projects that deliver dynamic, real-time management of IT services. But technology itself does not solve these problems. CMDB and server-provisioning projects enable IT organizations to deliver successful results that integrate

people, processes, and technology to meet business demands. Risk mitigation has become a business requirement, one that IT can — and increasingly does — fulfil.

ITIL process acceleration is also a consequence of automating the relationship between collecting, orchestrating, and managing infrastructure change and the CMDB. By implementing technology that triggers and orchestrates automated change and configuration workflows from the infrastructure through to the CMDB, IT organizations can minimize the training often required to get new hires up to speed and comfortable; administrators can utilize the encapsulated and approved processes to reduce downtime occurrences and deliver streamlined, accountable, efficient change management. This drives more efficient IT operations. The automated relationships and the orchestration capabilities enable standardized workflows supporting most ITIL projects.

Product Considerations

Change, configuration, and compliance management is not new to IT organizations; what's new is the ability to automate many of these manual, error-prone tasks. Scripting, disjointed and fragmented tools, and integration headaches lead the list of IT challenges. Next-generation architectures for these tasks bring together an automated approach that addresses key issues such as change tracking, configuration drift management, discovery, and compliance reporting.

It's important to note that there is no "perfect" product or technology, and business managers must carefully consider their goals and create reasonable deployment expectations. Users must understand that the easiest way to reduce costs is to reduce complexity. Automation and tool consolidation have been proven to accomplish and often accelerate this objective. When considering a solution for change and configuration management, enterprise IT organizations should consider the following key functional requirements:

- Role-defined dashboards
- Change-event orchestration; the ability to track and execute changes via an ITIL-defined process from change initiation, CMDB updates, and compliance tracking.
- Infrastructure coverage (server, applications, network, storage, etc.)
- Ability to store, track, and reconcile asset data, configuration data, and operational change activity
- SDKs and APIs for data integration
- Orchestration of events between IT systems to facilitate ITIL
- Federated data model and data auditing
- Configuration item (CI) definitions and relationship mapping
- Configuration auto-discovery
- Diagnostics capabilities and change tracking
- Compare different configurations against each other
- Manage change against baseline configurations
- Enforcement of compliance controls
- Triggers workflow or events (send notification, create incident to investigate)

Configuration management is a process that tracks all the configurations of an IT service. Some additional functional considerations include the ability of a CMDB to track all the configuration items in the system, map dependencies of configuration items (CIs), track the status of configuration items in real time and in a historical sense, and track requests for change for CI verification. This is a process that often utilizes several IT staff located across multiple silos. For success, it's critical that people, process, and technology work in concert to overcome political barriers that often arise among groups. Executive-level support is a necessary factor for a successful deployment.

Market Definition

The worldwide change and configuration software market is a functional market of the worldwide system operations software market. The revenue included in the change and configuration management software market is a subset of revenue already included in system operations software revenue.

In IDC terminology, the system operations software market includes those tools routinely used in IT operations or by end users to manage day-to-day operations of their computer systems. The system operations software market is made up of three functional markets: job scheduling software, output management software, and change and configuration management software.

Change and Configuration Management

Change and configuration management software provides management of system and peripheral hardware and software assets, but not network devices. Software for planning, tracking, and applying system hardware and software changes is also included, as is software distribution, license management, and auditing.

User Benefits and Recommendations

IT organizations must heed caution as they decide which ITIL/CMDB solution to deploy, as the wrong decision can cause spiralling cost over-runs, internal political struggles, and a lack of teamwork. Worse, failed deployments decrease IT's credibility with the business. To increase the success of choosing the "best fit" product, organizations should consider the following purchase criteria and develop an expected benefits and pitfalls analysis. Recommendations include the following:

Benefits Analysis

- **Compliance reporting and reconciliation.** The ability of a solution to report, in granular fashion, on configurations with an impact assessment of real-time and historical configuration comparisons
- **IT service availability improvements.** Enhancements in change and configuration management processes via automated workflows and integration across multiple data sources in a federated fashion
- **ITIL acceleration.** The orchestration of change and configuration management workflows enables IT organizations at various title levels to encapsulate previously manual tasks and utilize standardized ITIL processes, speeding up adoption and business-impact analysis
- **Lower operations cost.** The development of a "single truth source" for provisioning and compliance tasks that enables auditing and in-depth tracking, streamlining processes and bringing cross-silo teams together to reduce human-operator errors

- **Increased ITIL adoption.** Change, configuration, problem, and incident management-based process adoption from the Information Technology Infrastructure Library (ITIL), a framework of best practice approaches intended to facilitate the delivery of high-quality IT services
- **Process and workflow encapsulation.** Dependency mapping of Configuration Items (CIs) that map back to business impact assessment, service desks, and event management consoles.

Business Benefits

- **Faster time to market.** Streamlined provisioning and change management of new application services based on standardized configurations
- **Lower hardware costs.** Server repurposing to deliver reduced capital expenditures
- **Compliance reporting and assurance.** Granular configuration tracking, reconciliation, and auditing capabilities speed and enable faster audits via historical change tracking, point-in-time references, and remediation capabilities
- **Reporting.** Ability to report accurately in real time on current state of the environment, and perform trending analysis on change activity based on CMDB data
- **Day-to-day process impact.** Faster time to ITIL adoption drives standardization of tasks and workflows to various IT stakeholders at all levels; team communications improve faster, and operational costs decrease quicker

Potential Pitfalls

- **Integration.** The lack of solution integration among a vendor's own products and with third-party tools
- **Cross-silo configuration.** Limited configuration capabilities (network, server, applications, storage, etc.) that span multiple silos without a federated data schema
- **ROI articulation.** Limited ROI discussion, with a narrow perspective on short-term cost savings
- **Lack of executive sponsorship.** Executive visibility and leadership buy-in essential for decreasing political and silo concerns
- **Deployment and professional services costs.** Planning sessions considering deployment timelines and key ROI objectives, with a quarter-to-quarter perspective and focus on the role of integrators for deployment customization and data, event, and interface integrations
- **Poor ITIL alignment.** Opportunities to deliver process standardization based on ITIL-defined process workflows to increase the definition of changes and their impact on IT services, and "closed-loop management processes"

During the next three years, many IT organizations will initiate the deployment of a CMDB; some have already started. The acceleration of ITIL and related process frameworks has enabled many organizations to lower operations costs and drive compliance visibility while increasing levels of change control, assuring IT service availability and more secure operations.

Technology Trends

As with any high-growth market, there are a plethora of solutions available being driven by a broader focus on datacenter automation, process and technology standardization, and improved business alignment. Some major market trends include:

- **Datacenter consolidation.** Datacenter consolidation, server repurposing, change management process standardization, software path and release management, and upgrades are driving the need for standardized technologies and processes to improve task transparency and service availability
- **Change and configuration management process adoption.** Enterprise IT organizations are developing more standardized processes to improve control and lower the cost of infrastructure change
- **Compliance and government regulations.** An increasing need to deliver the right data at the right time for the right executive, as it pertains to compliance assurance
- **Service-oriented architecture developments.** IT organizations are evolving from basic monitoring to more dynamic business and technology requirements that look at IT services, rather than at static components

IT organizations should consider the breadth and depth of capabilities that a CMDB delivers, and what this means to the firm's particular tactical and strategic needs. IT organizations must determine considerations such as deployment, project focus, auto-discovery, integration, the role of change and configuration management, cross-silo data collection, and the importance of broader role-based reporting for various constituents.

Considering Opsware

Opsware is a change, compliance and configuration management, automation, and provisioning vendor that has experienced significant sales growth during the past three years. The company's product line creates an integrated suite that spans the server, network, and storage domains. The Server Automation System and the Network Automation System are the core of the Opsware architecture, with the Storage Automation System coming in Q2'07. Additional products include the Opsware Orchestrator for workflow management and process coordination between disparate IT systems, the Asset Management System, Visual Application Manager for application dependency mapping, and the Opsware Network, a real-time security and compliance service.

Key Product Features

Opsware has taken an operations-centric approach to the ITIL-CMDB market. Key areas of product focus for change and configuration management capabilities include the ability to report change and configuration drift as it relates to defined IT policies, database integration between network and server infrastructures, workflow encapsulation for change management through Opsware Orchestrator, automated infrastructure discovery, patch management, and compliance reporting. The architecture has been designed to scale and automate the full life cycle of operational tasks to reduce security risks and improve change controls for IT operations teams.

Differentiation

Opsware has the capability of collecting and organizing granular server, network and application configurations and mapping the information to policy requirements using standardized, encapsulated workflows and task automation. The products do a solid job of managing the change, compliance,

and configuration management processes across all platforms, notably in the ability to show configuration drift through audits, track infrastructure changes, provision and patch systems, network devices, servers, and in the near future storage devices, while reporting on a plethora of metrics for heterogeneous environments.

The product architecture has been developed with a strict focus on process and technology integration and maintaining configuration and change management accuracy across a broad infrastructure. The product has utilized a combination of workflows that can orchestrate the change and configuration management processes as defined by ITIL. The change-tracking capabilities enable tracking and management from inception through to the CMDB, maintaining an accurate automation reconciliation of the change. Role-based reporting has also been invested in to meet the information visualization demands of various constituents.

The Opsware Operational Management Database, coupled with Opsware Orchestrator that manages workflows and process automation, is Opsware's complete ITIL/CMDB solution. The focus from an operations perspective is on Opsware's OMDB, or Operations Management Database. The OMDB is based on the need to utilize a CMDB, not only to store and analyze asset and configuration data, but to correlate that data with change activity so every change taking place across the server, network, and storage infrastructure is committed to the CMDB. By also tracking change-activity data, IT organizations using Opsware's OMDB can also generate detailed reports on all change and compliance activities.

The Opsware Orchestrator product, manages and automates workflows between disparate IT systems (e.g., other trouble-ticketing systems, Opsware's change management systems, source control systems) to enable ITIL processes. Opsware's suite of products delivering on ITIL include process/workflow automation (Orchestrator), a central system of record (Opsware OMDB), and the change and compliance management systems themselves (Server Automation System, Network Automation System, Storage Automation System).

Challenges

Opsware faces several challenges as it continues to expand its market presence and product functionality. These challenges include the following:

- Market awareness and the need to expand the sales force account coverage and customer support processes
- Product-breath expansion into emerging areas where Opsware has no technology solutions, such as SOA management and adjacent enterprise management markets
- Increased workflow automation to drive increased encapsulated change processes across multiple IT disciplines, with out-of-the-box integration with event and problem management systems
- Out-of-the-box integration with non-Opsware data schemas and interfaces
- System integrator relationship development
- Growing business model pressure to generate sustainable profitability
- The ability to continue market expansion as larger vendors increase their interest and focus on penetrating the CMDB market

Opsware must continue to address product, sales, and marketing challenges as it attempts to increase market share. As more competitors look to reinvigorate product lines, Opsware will have to further its innovation and capabilities.

Conclusion

Enterprise IT organizations should continue to determine the role that change management, configuration management, and compliance requirements play in delivering IT service management. The opportunity to lower costs by reducing architecture complexity through ITIL/CMDB solutions that utilize standardized reporting, standardized change management, task automation, and workflows is a powerful strategy. Critical functionality that uses policies, access controls, integration, scalability, rules-based auditing, and configuration management should be considered during the purchase selection. Enterprises utilizing provisioning, change, and configuration management solutions provide for themselves integrated workflows that drive teamwork, improved cross-silo communications, and lower operations costs.

A B O U T T H I S P U B L I C A T I O N

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