

DCML - The Standard that Enables ITIL Compliance

white paper

The Data Center Markup Language is the emerging standard that will enable IT organizations worldwide to successfully adopt and enforce an ITIL-compliant environment for improved operations, lower cost of management and increased service quality.

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Introduction

IT organizations, today, are struggling with how to decrease costs and increase service levels simultaneously. Implementing the ITIL process is a way to achieve these cost and service levels goals. This paper describes how IT organizations can use the Data Center Markup Language (DCML) to facilitate low-cost, standards-based implementation of IT Infrastructure Library (ITIL) processes. ITIL defines a set of IT processes for service support and service delivery, providing a framework for best practice IT management. IT organizations must find a way to take these guidelines, adapt them to their own environment, and make them actionable. DCML defines a standard messaging model for the exchange of information about IT infrastructure elements, applications, policies, best practices and standards. Together, DCML and ITIL can be used to achieve standard, best-practice IT management.

Implementing each ITIL process often requires many IT management systems and organizations to communicate. ITIL processes themselves must communicate with one another to achieve maximum benefit. While ITIL defines the processes and corresponding information flow, ITIL does not define what information flows where, how to represent information, or the method of communication. This has resulted in a wide collection of ad hoc and proprietary messaging strategies that are expensive to implement, support, and scale.

By using DCML to formalize the data format used for ITIL communication, ITIL implementation becomes easier. Software vendors can create management systems that are ITIL-ready out of the box. This enables easy integration between various systems and facilitates a smooth implementation of ITIL. IT professionals can learn standard skills that are applicable to different environments. DCML enables either internally developed or externally licensed management systems to achieve fully functional interaction immediately, providing data center operators the opportunity to achieve the cost and efficiency benefits of a unified IT architecture.

IT Under Pressure

Businesses continue to demand new and enhanced services from their IT organizations while simultaneously reducing the management resources available to IT. At the same time, IT is being crushed by the weight of the systems it has already deployed. According to a recent Gartner study, 80% of IT expenditures are non-discretionary, spent merely to keep existing systems up and running. In addition, the pace of technology change and upgrade marches on, leaving IT with data centers containing a fast-growing mix of heterogeneous equipment, ranging in age and functionality, with ad hoc management methodologies, and little or no automation.

As a result, IT complexity has exploded and data centers using traditional management methodologies are struggling to keep up with the demands of their users. Many IT organizations have turned to automation to provide the operational agility and efficiency required to better meet those demands. Ad hoc management methodologies, while effective for a relatively small number of servers, are no longer viable for achieving the efficiencies man-

dated by today's business requirements. While automation may solve part of this need, there needs to be more. In order to achieve maximum benefit from automation, IT organizations must have well defined change processes to automate. In order for IT organizations to be effective, they must move away from ad hoc, manual management, and towards a unified IT management model, combining automated management with specific operational best practices and processes.

ITIL

The IT Infrastructure Library (ITIL) is a collection of books that define approximately ten IT processes for IT service management and their operational characteristics. ITIL service management processes are broken down into two broad areas: IT service support and IT service delivery. ITIL processes require the support of and communication among Operational Support Systems (OSS) such as call center, ticketing, billing, provisioning, and monitoring. Addressing processes at the service level, ITIL provides a high-level description regarding how IT processes should meet service requirements, but does not

address the specifics of how those services are implemented or delivered. As a result, implementations of ITIL processes are subject to the inconsistencies of subjective interpretation.

Communication and ITIL Processes

All ITIL processes have a similar understanding of data center infrastructure with each process managing a different aspect of IT operations. The service desk process manages how users report problems and how those problems are analyzed and corrected. The release process manages how new infrastructure and applications are introduced into the IT environment. The change management process manages how and when changes to the IT environment are approved, implemented, and tracked. Other processes manage other aspects of IT service support and delivery.

To be effective, these processes require communication and support from the various Operational Support Systems (OSS) that own the required data. For example, the monitoring system knows which servers must be monitored, the provisioning system knows what



Figure 1: The DCML-ITIL Value Proposition

infrastructure has been provisioned, and the billing infrastructure knows who uses specific parts of the infrastructure. All these systems have their own area to manage and often need to interact with peer systems in order to complete their mission. For example, in provisioning a new business service, one must deploy new infrastructure and ensure the new infrastructure is monitored and billed appropriately. To achieve this, the provisioning system must communicate with the monitoring system and the billing system.

Another example might be a company's monthly billing cycle. During the month, a customer's business needs change, increasing and/or decreasing the resources they use. To bill correctly, the billing system must communicate with the appropriate peer processes, like the metering system, which tracks usage of resources, or the change management system, to aggregate the appropriate information.

Data centers looking to achieve the benefits of

best practice operations have the option of in-house implementation or outside license of process-specific management systems. To work together to implement ITIL processes, these systems must communicate. Traditionally systems have communicated in non-standard ways, typically using individually crafted Perl scripts and/or ad-hoc CSV-driven data exchange. This non-standard generic communication between management systems severely inhibits the benefits of a unified data center architecture and hampers the implementation of ITIL.

Without a standardized communication protocol, the interfaces between peer management systems cooperating to implement an ITIL process are unique, ad hoc entities. For the data center, this translates into expensive operational overhead and the inflexibility of management system lock-in. For data center operators who want the flexibility to pick "best of breed" solutions from a robust multi-vendor market of ITIL-based management systems, a

standardized communication mechanism is required. Only then can the true potential of ITIL be realized.

DCML

Recognizing the need for a common data format among IT management systems, the IT industry created the Data Center Markup Language (DCML). Standards-based and defined in human and machine readable XML, DCML promotes data center automation by providing a uniform way for data center automation and system management solutions to exchange information about the IT environment. The key benefits of DCML to data center operators are:

- DCML enables ITIL implementation by providing a formal syntax and semantics around the inter-system messages that define best practices for IT operations. By formalizing the messaging for ITIL best practices, DCML gives IT organizations a tangible step to take towards a unified data center architecture helping them to implement best practices and automate data center operations.
- DCML allows for an open and competitive market for products that conform to ITIL best practices. As a standards-based technology using XML, IT technology vendors are migrating their products to support DCML. As a result, data center operators will be able to:
 - Choose best of breed applications and avoid being locked in to high overhead and/or inefficient proprietary or ad hoc tools.
 - Increase the quality and reduce the overall costs of IT operations.
 - Have access to a larger community of trained IT staff.
 - Reduce the need to develop in-house applications to support ITIL processes.

DCML provides interoperability and renders proprietary approaches obsolete by defining a systematic, vendor-neutral way to communicate the environment and policies governing the construction and management of IT infrastructure. Managed by the Organization for the Advancement of Structured Information Standards (OASIS),

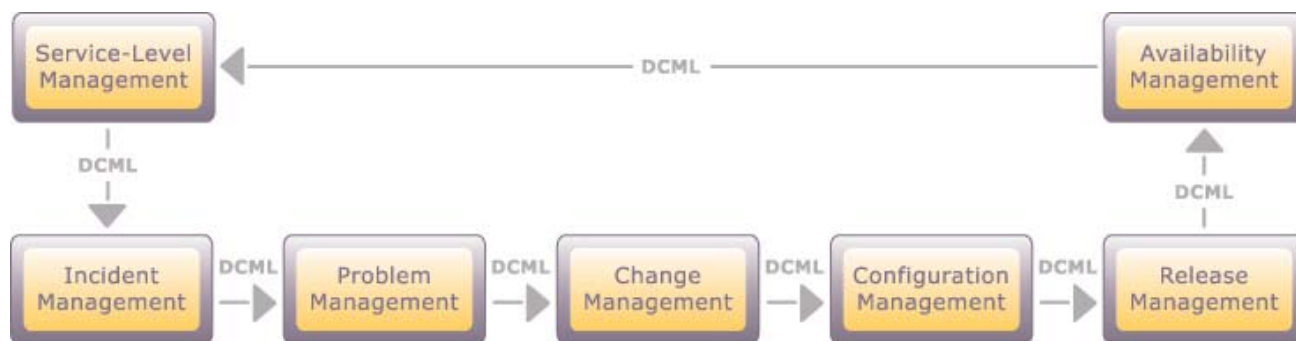


Figure 2: Common ITIL Processes for service support

the DCML initiative is currently backed by over sixty IT users and vendors including Computer Associates, EDS, Opsware, TIBCO, BEA, and Mercury Interactive.

Use Cases

Perhaps the best way to understand how DCML enables ITIL implementation is to examine some detailed use cases. The following sections do just that for some common ITIL processes, drilling down on how DCML is used to facilitate ITIL and the benefits achieved.

Incident Management

ITIL requires the change management process to communicate context and change information to a monitoring system responsible for monitoring the data center environment. The mission of the monitoring system is to ensure that the data center infrastructure is operational and functioning properly. If an issue arises with a server or application, it is the monitoring system's responsibility to identify the issue and report it to the network operations center (NOC). IT personnel (or in some cases automated systems) then determine the cause of the incident and the required fix. An important step in the process is determination of the incident's root cause whether there is a systematic change that can be made to prevent the incident from happening again.

Today the typical messaging architecture between these IT processes is often either embedded in ad hoc Perl scripts or vendor proprietary products. DCML allows data

center staff to choose change management and monitoring applications from different vendors, freeing them from internal development or lock-in to a single proprietary vendor. Moreover, IT product vendors will have to compete for the data center's change management and monitoring system business by lowering prices and increasing functionality in an open standards-based marketplace. This will result in increased quality and reduced costs to the data center in implementing automated mechanisms supporting the change management and monitoring functions.

Operationally, NOC personnel can use DCML-encoded context information provided by the change management system to help deduce the likely root cause for an outage. Such information might include the owner of an application service, the time and date the last change to the service was made, and the versions of various installed OS and software application components. Using DCML, NOC personnel can populate a trouble ticket to track and resolve the incident, listing the required fix or work around along with other relevant information such as the current context of the machine. In determining the root cause of an outage and subsequently ensuring that similar incidents do not occur, IT administrators can access information from other ITIL processes to augment their own internal information. In this way, the proper information is brought to bear easily from a number of ITIL-based applications, improving the decision making process and speeding time to repair.

Configuration Management Database

A key component of ITIL is the central Configuration Management Database (CMDB), used for enterprise reporting and decision support, by storing a variety of Configuration Items (CIs) about the IT environment. The information required to populate the CMDB resides in various management systems across the enterprise, used for different purposes such as purchasing, ERP, monitoring, asset management, ticketing, and provisioning.

Under traditional non-standard messaging architectures, the interfaces to these systems are either proprietary or developed ad hoc by the IT staff. Interfacing to them is typically time-consuming, non-scalable, and costly, requiring the development of unique integration software. Because of these limitations, while a CMDB is helpful in achieving important business goals, the overhead involved in its implementation often makes its development too costly to be practical.

With DCML-compliant management systems, a standard mechanism for gathering CMDB information can be put in place. The popularity of ITIL and the CMDB, a marketplace for DCML-compliant CMDBs from third party vendors is emerging. In a DCML standards-based world, CMDB-based enterprise reporting and decision support solutions:

- are available at a lower cost;
- require a significantly lower learning curve to install, integrate, and operate;
- are available as either a standalone third party application or third party integration

components that ease the development of specific in house applications; and

- are useful for sharing information with partners and suppliers.

Service Desk

The service desk within a data center is often "the canary in the coal mine," giving IT staff its first indication of problems with the services they provide. In hindsight, many organizations who have suffered significant outages can go back, review the service desk requests, and see the seeds of those problems in their logs.

To minimize these disruptions, many expert service desks conduct root cause analysis on the requests they receive during problem management and try to correlate those requests to identify related problems. The goal of this exercise is to prevent future incidents by removing the root cause(s) of problems. Much of the required information resides within different IT systems, making the effectiveness of root cause analysis dependent on the breadth of access to these diverse applications. The quality of root cause analysis is directly related to the available budget for management system integration. With proprietary and/or ad hoc messaging architectures, integration is costly, time-consuming, and non-scalable. As a result, non-standard messaging architectures severely restrict the quality of from the resulting root cause analysis.

With the adoption of a DCML-compliant IT infrastructure, a standard messaging interface is available for every ITIL application, greatly reducing the cost and increasing the effectiveness of root cause analysis. A DCML-compliant infrastructure provides the root-cause analysis function with access to a unified information repository, allowing efficient correlation of commonly occurring incidents. With access to all the pertinent facts, a root cause analysis function can provide a high quality resolution to an incident quickly and effectively and do so at low integration cost.

Capacity Planning

Capacity Management is an ITIL service delivery function that ensures IT organizations provide sufficient computing resources to meet the needs of a given business service.

With IT budgets under the microscope, many organizations have reduced IT expenditures over the past several years, even as the number of applications hosted or supported has grown tremendously. Faced with reduced headcount and decreasing or flat budgets, CIOs are under tremendous pressure to use their existing equipment to the fullest. In order for an organization to use its resources effectively, it must manage those resources in real time, always knowing which resources are available, in use, and scheduled to be available at a future date and time.

Organizations must also anticipate future resource demand based on trends defined by past usage and new requirements.

Most organizations today do not have tools that can deliver true Capacity Management functionality. ITIL calls for a Capacity Database (CDB) function that acts as a Decision Support System (DSS) for capacity planning. IT organizations utilizing these tools today are often locked into a single proprietary solution that often does not integrate with the Definitive Software Library (DSL), Definitive Hardware Library (DHL) and/or other components of ITIL. The result is that IT professionals are left to performing this integration by ad-hoc means. Proprietary CDB vendors have also been slow to incorporate support for newly released server and network components into their products.

Using DCML as the standard data format IT organizations can ensure that the right data is stored in and accessible in the CDB. Powerful DCML-compliant capacity modeling tools and/or pluggable modules are emerging to work with the CDB. This will ensure that IT organizations will:

- have many CDB vendor choices,
- be able to leverage data regardless of where it resides in the IT environment, and
- easily model the effects of the removal of legacy equipment along with the addition of newer infrastructure.

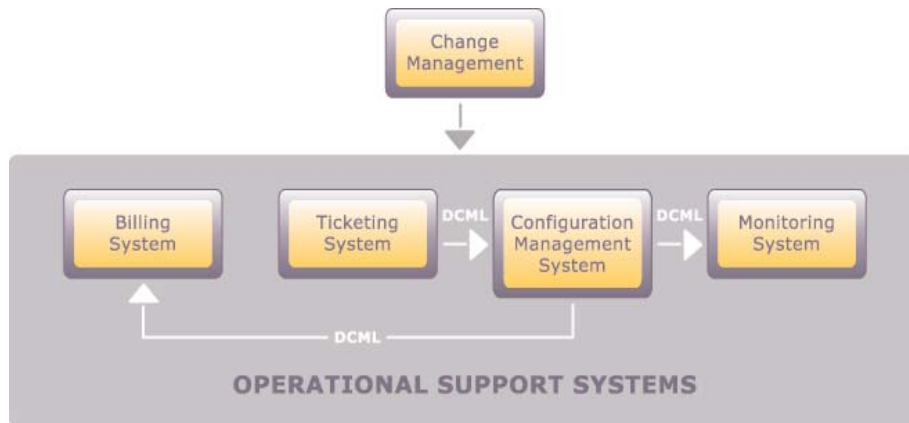


Figure 3: More in-depth breakdown of how DCML benefits a common ITIL Process

Conclusion

To keep their companies competitive, IT managers are under tremendous pressure to increase efficiency and lower the cost of IT operations. By defining a set of operational processes, the IT Infrastructure Library (ITIL) is quickly becoming the basis for IT managers to achieve best practice operations. A best practices guideline, ITIL allows data center operators to begin realizing the efficiencies of a unified data center architecture. ITIL is the best choice available to IT managers to reduce their overall costs while simultaneously increasing service levels.

ITIL defines data center operation as a federated group of cooperative processes working together to achieve common goals. Because ITIL does not define a standard messaging protocol, communication between ITIL-compliant applications is through either ad hoc or proprietary mech-

anisms. This adds significant implementation cost overhead and severely limits IT organizations in their technology choices. This lack of standards-based communication inhibits the move to process automation, further hampering overall IT performance and efficiency.

DCML significantly eases ITIL implementation by formally defining the syntax and semantics of applications supporting the ITIL process. By standardizing the data format among management systems integral to ITIL processes, an open and competitive market for those systems is emerging - increasing the quality and reducing the cost of implementing data center best practices.

The leading standard for enabling ITIL-defined best practices, DCML is managed by the international standards body, OASIS, user and vendor members. With DCML, IT

and is supported by over sixty active IT applications from an open and competitive market, integrating those applications into their environment out of the box. DCML helps make ITIL a commercial reality, providing IT managers the mechanism to implement best practice operations and achieve the benefits of a unified data center architecture. For more information about DCML, please ask your IT technology vendor about their DCML roadmap or contact OASIS directly for more information about DCML, events, and membership.

About OASIS

About OASIS

OASIS (Organization for the Advancement of Structured Information Standards) is a not-for-profit, international consortium that drives the development, convergence, and adoption of e-business standards. The consortium produces more Web services standards than any other organization along with standards for security, e-business, and standardization efforts in the public sector and for application-specific markets. Founded in 1993, OASIS has more than 4,000 participants representing over 600 organizations and individual members in 100 countries.

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