



Configuration Management Explained

1. Introduction

The Basics of Configuration Management

Effective, reliable and flexible IT services are more and more critical to the success of business initiatives today. Enterprises are increasingly seeking to transform IT from a traditional technology provider to a reliable, low-cost IT service provider. How can an enterprise safely transform its IT organization? Many IT departments are turning to IT Service Management (ITSM) for answers. When practiced effectively, ITSM focuses on delivering and supporting IT services that are appropriate to the business requirements of the organization, and they achieve this by leveraging IT Infrastructure Library[®] (ITIL[®]) based best practices that promote business effectiveness and efficiency.

However, ITIL practices are only guidelines to help people to understand the core processes, while leaving the implementation issues to the practitioners. Most of these issues will include process policies, roles and responsibilities, technology usage and more as implementation will demand far-reaching changes that affect people, processes, and technology.

Configuration Management is one of the most important processes in ITIL and has been proven to be invaluable to organizations around the world as they seek to understand their people, process, and technology problems and to consider possible solutions.

The Service Driver for IT

The last eighteen months has seen the rise of the concept of IT being delivered as a service rather than as a product. And certainly as a service differentiator. This broad move towards Cloud Computing is unstoppable, but it could take years to achieve. Similarly, managing 'IT as a service' is the new mantra for IT departments, and their business owners, and although 'Cloud Computing' is predicted to take ten years to achieve, it is already happening now.

Rather than thinking about technology as just a pile of equipment, the IT stack is now being re-imagined as a series of services carefully mapped to the requirements of the business, ensuring the organization is more flexible and responsive.

By applying a more service-oriented approach to the way they think about IT, today's agile businesses are starting to leapfrog the competition.

Defining Configuration Management

Configuration Management, which appears in ITIL V3 under 'Service Transition' is the process responsible for maintaining information about the Configuration Items (CI) required to deliver an IT Service, including their relationships. This information is managed throughout the lifecycle of the CI within the organization.

In the last few years, the growing understanding of software development as a collection of interrelated processes has influenced work on Configuration Management. This means that Configuration Management is now also considered from a process point of view. In fact, Configuration Management is a process that focuses on ensuring consistency between the functional and physical attributes of items that support a business service, and their requirements, design, and other pertinent information.

Configuration Management is about managing change of the multiple items comprising an information system and provides a mechanism for identifying, controlling and tracking the versions of each software item. In many cases earlier versions of items that are still in use must also be maintained and controlled. So Configuration Management offers unique identification, controlled storage, change control, and status reporting of selected intermediate work products and components during the lifecycle of a system. Configuration Management centers around managing the assets involved in the organization and essentially consists of four tasks:

- ❖ **Identification** – the specification, identification of all IT components and their inclusion in a database, the Configuration Management Database (CMDB). The CMDB is more than just an 'asset register', and contains information that relates to the maintenance, movement, and problems experienced with the Configuration Items.
- ❖ **Control** – the management of each of those Configuration Items, specifying who is authorized to 'change' it.
- ❖ **Status** – the recording of the status of all Configuration Items in the CMDB, and the maintenance of this information.
- ❖ **Verification** – the review, auditing and updating of information contained in the CMDB. The CMDB holds a much wider range of information about items that the organization's IT services are dependent upon, including hardware, software, documentation and people.

2. Providing the Glue

Supporting Business Processes

Configuration Management is the glue that bonds good service into supporting the business's processes.

Business processes are an often-overlooked element of the CMDB. The omission of business processes further exacerbates the "us and them" division between IT and the business. Inclusion of business processes ensures more business relevance to the CMDB and enables user cases to have more value to business service management efforts. The result will help change the language from "us and them" to just "us" in a unified journey toward business execution excellence.

Configuration Management shouldn't be seen in isolation. How do you know that you have delivered a good service to the business? Is your IT aligned to the business? With the right service management tools in place, IT departments can claim to be delivering near 100 percent customer satisfaction and in many cases they achieve their goal. But the ability to improve IT services and really achieve effective satisfaction levels is only really tested by the input the business has in their review and implementation. So when is the service good enough and how do you know you are delivering what the business needs? How are service improvements justified and can there truly be a collaborative approach between the business and IT? Is there a need for a common sense approach to improve delivery and meet organizational goals and objectives and what role do standards and best practice play in all of this?

Triggers for Change

There are some common drivers that are influencing change within IT departments and these are:

- ❖ **Reining in costs** – the price/performance ratio of technology is of ever-increasing importance. IT costs have continued rising faster than hardware and software investments over the past 10 years, clearly showing that IT services as a whole have not improved process-wise and still require as much man-power, if not more, to operate as they did in the past. The key to increased business productivity is to carefully bring down the costs of doing business and IT is part of these costs. As companies spend most of their IT budgets on maintenance and support, they will naturally invest in solutions that will reduce this part of the budget.
- ❖ **Increasing efficiency** – IT managers are constantly seeking efficiency improvement, flexibility, integration and business alignment, with reporting and IT intelligence being a top priority.
- ❖ **Following a Regulatory Agenda** – the need to become compliant is fuelling best practice initiatives within organizations. Failing to integrate usage and inventory data to manage software assets can cause companies to overbuy licenses by up to 60 percent of their software portfolio. According to Gartner*, during the late 1990s, license fees were being sold at a premium, and many companies bought more application software licenses than they could possibly use to achieve greater volume discounts. With millions of dollars in license and maintenance fees expended, often for the entire enterprise, IT budgets for new modules of on-premise software became scarce. Also, more often than not, given the enormity of the deployments, the result was unused software that sat on the “virtual shelf,” and the term “shelfware” was born.

Traditionally, service management has focused on managing the lifecycle of an incident. Responding when problems occur, and then matching workflows to each incident type, escalating where appropriate and publishing knowledge articles, problems and known errors. Integral to the provision of good service management is IT Asset Management (ITAM) which covers the inventory and lifecycle management of an organizations’ IT assets – from delivery through to retirement, including the planning, procurement, deployment, monitoring, fixing and retirement. Those assets include a range of items: desktops, software, infrastructure, printers, mobiles, PDAs, essentially any items which adds tangible value to the IT organization.

At the same time, service management also encompasses change management, which provides a structure or framework for when you are going to change something or when there has been a request for change. It enables organizations to define the change process, taking change through a clear approval workflow, ensuring the appropriate impact and risk assessment is carried out and managing the forward schedule of change deployment.

The Importance of Process Design

Having an effective vision for IT knowledge management is important, especially as organizations move from following the evolution from ITIL V2 to ITIL V3. ITIL V3 calls for the creation of an enterprise model that drives the full life-cycle of provisioning IT services to the business.

The CMDB model defined by ITIL describes a basic repository of IT infrastructure components and their relationships, but now it also expands into a bold vision for IT knowledge management within the organization.

What the move from ITIL V2 to ITIL V3 has done is place a large emphasis on transitioning IT from a “systems” management perspective to one of “service” management. This requires a change in mindset from one driven by an IT technology view to one of business process. The new version places the emphasis on using a lifecycle approach (i.e. from planning to disposition), and this brings the ITIL CMDB more into the enterprise architecture arena.

The Configuration Management process is now part of the Service Asset and Configuration Management (SACM) process within the ITIL V3 Service Transition phase. It has been integrated with asset management to provide more comprehensive management of service assets and service management processes. In ITIL V3, Configuration Management is defined as a set of tasks under the bigger SACM process, which now oversees a broader array of assets, defined as service assets.

Configuration Management has a tight relationship with all other ITIL processes. Indeed all ITIL processes will access the infrastructure configuration data. So incorrect or badly managed configuration data will lead to wrong decisions in problem solving, capacity planning and availability design, resulting in lower service levels than agreed with customers, and higher service cost. With budgets still stretched within organizations, higher costs are not what executive management wants to hear.

The Configuration Management environment enables the tracking, recording, and reporting of elements. For today’s IT organizations that means managing complex technologies across multiple domains where the ability to collect and present infrastructure data is challenging. That is why organizations are looking for integrated solutions that can make this discovery task as easy as possible.

Beijing Union University for the 2009 International Symposium on Web Information Systems and Applications examined the key considerations for designing and implementing Configuration Management.

It found that organizations’ top concerns are the ability to:

- ❖ Assess the impact of a service failure quickly.
- ❖ Identify the components that make up a service so that Service Levels can be agreed with the customer and availability measurements can be identified.
- ❖ Assess the risk associated with the implementation of a change to the production environment.
- ❖ Cost and price IT services accurately.

The Configuration Management process, with the aid of related business processes, and the correct level of staffing (see section 6), enables organizations to address these concerns effectively.

Moving Beyond the CMDB towards the CMS

The CMDB is fundamental in taking organizational processes to the next level by bringing asset and service management together and informing Configuration Management. Configuration Management identifies who uses what PC, which server the PC is assigned to and which applications provide particular services to the business.

The CMDB provides a database which defines all the Configuration Items, incidents and requests in your IT estate, working out how they all relate and impact on each other. For example, if you raise an incident in the service desk, typically Configuration Items are identified in the CMDB and there might be a period of unavailability. The CMDB brings up a graphical map to show the applications, clients, servers and services affected enabling the IT Manager to inform the business and put in place a proactive strategy. So if the server crashes, it logs an incident against this, advising that there will be a period of unavailability and at the same time it will also tell you what other services will be impacted by this.

The CMDB can graphically model all of this information, which is particularly helpful when looking at change management. If you have Change as part of the configuration, then the CMDB can look at planned changes and understand the impact/relationship this will have on services, applications, individual users or whole departments.

ITIL V3, however, has redefined the CMDB, describing the concept of a Configuration Management System (CMS). The ITIL V3 glossary definitions say the following:

CMDB – (Service Transition) A database used to store Configuration Records throughout their Lifecycle. The Configuration Management System maintains one or more CMDBs, and each CMDB stores attributes of configuration items, and relationships with other items.

CMS – (Service Transition) A set of tools and databases (i.e. CMDB) that are used to manage an IT Service Provider's Configuration data. The CMS also includes information about Incidents, Problems, Known Errors, Changes and Releases; and may contain data about Employees, Suppliers, Locations, Business Units, Customers and Users. The CMS includes tools for collecting, storing, managing, updating, and presenting data about all Configuration Items and their Relationships. The CMS is maintained by Configuration Management.

In other words, the CMDB is a database only, while the CMS includes the tools and databases to manage the data. The CMS maintains one or more CMDBs, and the CMS is used by all IT Service Management processes. The CMS concept builds on top of the CMDB concept.

In ITIL V2, the CMDB evolved into a repository of Configuration Items, which are the components that make up the IT infrastructure. The CMDB held relationship and dependency information needed to perform analysis to solve system problems quickly, prevent outages, and provide visibility into the impact of changes. What ITIL V3 does is elevate the CMDB to the more

business-aligned CMS by focusing on business value rather than infrastructure components.

The rationale behind the CMS is that the CMDB, when used as a part of an overall system, goes beyond storing Configuration Items and actually supports business strategy. So the business value is not in a database of Configuration Items on its own, but rather in a system where the database of Configuration Items is considered with processes that leverage that data in support of the business. The CMS is more than the CMDB and reflects the infusion of good IT Service Management (ITSM) practices. Relationships are at the heart of the CMS. The CMDB was often viewed as a repository of attributes. The CMS is a force to break this cycle by mandating the relationships necessary to make the raw data meaningful.

3. Making Configuration Management Tick

So what makes effective Configuration Management tick?

It is simply the quality of data within the CMDB that contains all relevant information about the components of the information system used in an organization's IT services and the relationships between those components. That truly affects the efficiency of the entire corporate IT Service Management strategy, as all processes utilize and feed into Configuration Management.

As defined by ITIL, Configuration Management is more than a simple registry of physical assets; it includes documentation, service level agreements, service Catalogs, warranties, and knowledge - lots of it - that enables the organization to manage the evolving relationships of those assets with customers, internal departments and locations, other organizations and external suppliers.

ITIL process improvements generate real return on investment (ROI) but they cannot be achieved without an integrated view of the IT ecosystem which the CMDB provides. In other words, the CMDB represents the current known functional status of the IT environment and is intended to be a controlled repository of information components that are essential for running your business. There also needs to be confidence in the data within the repository – confidence that it reflects the real world.

Network discovery tools can uncover reams of information about elements on your network, including PCs, laptops, routers, servers etc. For each item discovered, you can also get details down to which versions or patch level of operating systems and applications are installed.

The problem is most of that information is not relevant to managing a service where you may need the answer to the question "the power to rack X in the data center has gone down – which services are affected?" If you put all that unnecessary information into a CMDB (which some organizations have done) you only make it far too complicated and larger than it needs to be, and more difficult to navigate etc.

These huge CMDBs do consume vast amounts of data and sometimes can give back out-dated, inconsistent and partial results – which means they quickly fall into disuse. However, organizations have an overriding need to know which versions or patch level of operating systems and applications they are using and are resident on their network.

The Importance of Service

We've defined Configuration Management as a process that focuses on ensuring consistency between the functional and physical attributes of items that support a business service, and their requirements, design, and other pertinent information. But what is a service?

A service is defined as a means of delivering value to customers by facilitating an outcome that the customer wants to achieve without the ownership of specific costs and risks. But it is only classed as a service if the organization deems it necessary to support the business.

Everything starts with service, whether you have paying customers or not. Most organizations share similar services and then additional services usually come based on your vertical. Defining your services however can be a challenge. There are two approaches: top down and bottom up. Top down means determining all of those business services you offer and then the items that support those services. Bottom up means identifying all of your servers, databases, applications and build your business services based on these. That means you are already starting to think about Configuration Management.

A Service Portfolio contains all the details of all the services in the organization. All services have a lifecycle: a service pipeline, or an idea for a service you will provide support for; a Service Catalog – 'the friendly face of IT' which is the current list of services that a business customer can request; and retired services that are no longer available to be requested.

Any organization that offers service or a list of services they provide could use a Service Catalog to manage requests. Whether or not these services can be purchased or acquired determines whether or not a Service Catalog is appropriate for the organization.

Why is the Service Catalog important? A CMDB should list the items that support your business services and a Service Catalog is a public facing way to allow your customers to request those services. They are tied together by the business service. Provision of a Service Catalog provides cost savings and efficiency, elevates the customer experience and demonstrates business value, getting a handle on what IT does, where it spends money and allocates resources.

The CMDB offers significant benefits.

A CMDB facilitates impact analysis of proposed changes for better decisions. By establishing and using a single source for Configuration Management to manage critical system information, you align your organization's business and IT strategies, resulting in improved productivity and profitability.

The problem that many people find with Service Asset and Configuration Management is that they attempt to cram their Configuration Items into a database and forget they are trying to implement a process. Strong integration with change management is vital. The change process should drive CMDB updates, not the auto discovery tool. Where auto discovery should help is with verification and auditing.

4. The Numara Software Approach to Configuration Management

The Relationship between the CMDB and the Service Catalog

A CMDB should include the items that support your business services and a Service Catalog is a public facing way to allow your customers to request those services. They are tied together by the business service as one module in Numara® FootPrints®.

The CMDB is by its very nature focused on assets – the traditional internal-facing view that has characterized IT in the past. And the most common mistake IT organizations make is to articulate their services from an IT perspective, i.e. from the CMDB out. Unfortunately this 'Back Office' approach makes it difficult to present services to business customers in a way that is visible and understandable to them. For example, there is little benefit in describing the server capacity, disk space, and a specified network bandwidth to a user who actually just wants a reliable e-mail solution. There is also some evidence to suggest that asset-driven CMDB projects can quickly become dangerously 'siloed' as independent groups within IT (service desk, data center, etc.) attempt to build their "own" CMDB.

In contrast to the CMDB, the Service Catalog, which Numara® Software has built on top of and integrated with the CMDB, has become the major weapon in addressing the much needed re-alignment of IT to support its business customers. The Service Catalog is a 'Front Office' customer-facing portfolio of services presented to the users through a simple-to-use portal. They need not simply be IT services either. A menu could be equally applicable to HR or Training or Facilities.

The implementation of a Service Catalog should be started early in the process of adoption, either in parallel or before the introduction of the CMDB as a means to overcome this hurdle. This approach entails using the Service Catalog to first define what services are to be offered to IT's business customers and the user community, and then integrate the Service Catalog with the CMDB so that each compliments the other. This is what Numara Software has done.

Creating an actionable and customer-centric Service Catalog is a much faster process than creating a CMDB, especially when using a packaged software application and concentrating first on the highest priority services. Experience shows that an interactive and transactional Service Catalog can be enabled in weeks or months rather than in years. Indeed, one large grocery retailer in the US, after realizing that its CMDB implementation was going to take two years, decided to create the Service Catalog as a 'quick win'.

So Service Catalogs are becoming more and more popular as IT tries to rein in spend and better demonstrate value back to the business. The Service Catalog is an ideal way to do this, and is often the first step in transforming an IT organization into a service-oriented model.

Each item is self-contained, and that you can measure its consumption. You'll need to work with the business to set SLAs for each service, and ensure measurement tools are in place to monitor and report performance. Once the Catalog is published, it's important that you monitor and refine your services and SLAs based on customer feedback and usage patterns.

Again, there are many technology options for building a Service Catalog, so it's important to select one that fits with your organization and easily integrates with the rest of your ITSM infrastructure. In particular, your Service Catalog should:

- Be an easy-to-configure, one-stop shop for all of your services.
- Allow you to create, publish and offer customized menus of services to internal and external customers based on their role, department, location etc.
- Allow customers to select the right fit and type of service that meets their specific needs and submit requests 24/7 through various channels.
- Automate workflows from the point of request or purchase through the approval process, and track activities and trends with comprehensive reporting.
- Gather business intelligence on which services are actually being requested and used.
- Provide transparency of service costs to your customers by integrating with your Financial Management system.
- Be flexible enough to handle non-IT service requests, such as human resources, marketing or training, so you can maximize ROI.

By enabling your customers to easily view and understand IT services, you'll be able to more clearly set business expectations and reduce costs without reducing service quality.

The Benefits of Integration

Numara Software offers a practical and painless approach to Configuration Management thanks to its tightly integrated Configuration Management module which links the Service Catalog with the CMDB to help speed service delivery.

Configuration Management serves as a foundation for successful IT Service Management because of its ability to maximize efficiencies, bridge IT and business silos, ensure configuration compliance, and speed up problem solving efforts via integration with the service desk. What Numara FootPrints Configuration Management establishes is a single source to manage critical system information, so you can align your organization's business and IT strategies – ultimately resulting in improved productivity and profitability.

Using Numara FootPrints Configuration Management enables organizations to gain control over their business services, increase visibility of their IT service offerings, manage risk with impact analysis, align the organization's business with IT strategies and so improve productivity and profitability.

You can manage any configuration item you chose, including IT software and hardware, or other business services outside the IT department. The ability to integrate with auto discovery tools provides an easy way to discover and populate your configuration items.

Some of the key features that make the Numara Software CMDB valuable include reconciliation – you always know the true state of Configuration Items – and the ability to limit access to the CMDB with user roles. Fundamentally the Service Catalog is tightly integrated with the CMDB and the ability to enable that Service Catalog for customers encourages customer self service, resulting in significant time and cost savings.

Integrating the Service Catalog with the CMDB can also help speed service delivery and provisioning because having a clear view of what items are involved means a service delivery model and workflows can be structured to be more effective.

Some Key Points to Remember

- You implement a Service Asset and Configuration Management Process, but you don't implement a CMDB. The CMDB is just one part of the process.
- Don't put everything in your CMDB!
- Get an assessment of who is currently capturing what data, how it is stored, and how accurate it is.
- Start with one business service and all the items needed to support that or maybe start with one particular type of Configuration Item.
- Many people attempt to get all their Configuration Items into a database and forget they are trying to implement a process.
- What is the process for updating the CMDB data as well as the structure? Strong integration with Change Management is vital, as is integration between the CMDB and Service Catalog.
- A Change Process should drive CMDB updates, not an auto discovery tool. Auto discovery should help with verification and auditing.
- Integration with other processes is the biggest benefit of the CMDB. It only provides minimal benefit on its own.

What Configuration Management Success Looks Like

- Plan for success. It took one organization 18 months with a team of seven of which three were developers to get a CMDB to manage simply servers (There were 400 servers).
- Remember, incremental improvement is better than delayed perfection.
- If nobody needs the information, you shouldn't be tracking it. Less is better to begin with.
- If a process needs a Configuration Item, it will eventually surface.
- Assign an owner to each Configuration Item who is responsible for keeping it up to date.

5. Conclusion

The Configuration Management process is designed to collect and maintain information about the organization's IT infrastructure. Once harnessed, its insights into the infrastructure are numerous. Configuration Management improves a company's control over its IT assets, and in the long run, implementing the process saves money for the business.

Configuration Management is at the core of effective service management within an organization. And although there are many elements to the provision of good service management, it is Configuration Management that provides the glue, the adhesive that bonds good service into supporting the business's processes.

The move from ITIL V2 to ITIL V3 has transitioned IT from a systems management perspective to one of "service" management. This requires a change in mindset from an IT technology view to a business process view. The new version places the emphasis on managing business and IT services using a lifecycle approach (i.e. from planning to disposal), and this brings the ITIL CMDB more into the enterprise architecture arena.

That is why Numara FootPrints Configuration Management with an integrated CMDB and Service Catalog plays such a key role in helping organizations regain control over business services. Knowing what Configuration Items support your business services and how they relate to one another is the basis of your ability to maintain control, increase service quality, and reduce cost.

6. Top Ten Key Roles for ITIL Configuration Management Best Practice

Many IT departments try to implement ITIL Configuration Management without giving much thought to the staffing of the Configuration Management service. Like any IT task, Configuration Management requires skilled people with standardized processes, but this aspect is often overlooked in the rush to find the perfect CMDB tool.

What makes for the most effective Configuration Management team? The answer will depend somewhat on the size and type/nature of the IT environment. The essential roles, however, are the same whether one expert plays three or four roles or volume dictates that one role requires two or three people. There are lots of creative ways to deploy these roles across an organization, but here are the essential roles you should consider when embarking on a Configuration Management service:

- 1. Configuration Management Architect** – You need one strong technical leader who can be counted on as the expert in Configuration Management.
- 2. Requirements Analyst** – You do have Configuration Management requirements, don't you? This person will help you determine all the requirements needed to configure the environment.
- 3. Process Engineer** – This may be more important at the onset, but Version 3 of ITIL calls for continuous process improvement.
- 4. Logical DBA** – Configuration Management is all about gathering, controlling, and accessing information; of course you need a DBA.
- 5. Trainer** – Someone will need to create training materials and instruct all of your IT staff in how to access and support Configuration Management.
- 6. CM Integrator** – Every CMDB is built from data stored across many sources. The integrator role supervises the reconciliation rules that bring those sources together.
- 7. Tools Support** – Eventually, your entire IT staff will depend on information in the CMDB, and thus on the availability of the tools.
- 8. Impact Manager** – This role specifically focuses on helping make configuration data intelligible to the rest of the IT organization. The key task here is to make sure relationships between configuration items are well defined, helpful, and accurate.
- 9. Reporting Support** – Because the CMDB is a database, many users will want to create custom queries and specialized reports. Someone who understands the data deeply will help make this possible.
- 10. Data Quality Analyst** – ITIL rightly points out that the best practice in Configuration Management is to constantly verify data and audit the database.

Not many organizations are large enough to have a dedicated 10-member team for Configuration Management, but anyone serious about building an effective Configuration Management service should consider who will accomplish these 10 key functions.

Source: Larry Klosterboer, IT Leadership Blog, Tech Republic

Who are we?

Numara Software is a leading provider of integrated IT management solutions for Desktop Management, PC Lifecycle Management, Security & Compliance, Help Desk and Service Desk. Designed to optimize IT management, Numara FootPrints and Numara Track-it! collectively support more than 50,000 customer sites and nearly 20 million IT assets worldwide.



freedom
to simply **choose**
the right solution for you