

White Paper



Auto Discovery

The potential to be a Key Component of Change and Configuration Management Strategy

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Abstract

Under increasing pressure to define and control IT services, IT organizations are trying to identify, define and control the elements which combine to deliver IT services to business. These elements are combination of Hardware, Software, Business Processes and their linkages.

Despite the value that Configuration Management provides, the sheer number of IT Assets, their complex relationships and the frequent changes that they undergo has made the update and maintenance of Configuration Management database a Herculean task. The ideal CMDB for most organizations remains on paper and information continues to be recorded and tracked in individual non-interlinked sources. This puts an organization at risk of not being able to accurately record, track and report on their IT Assets. This inability apart from increasing IT management costs also has a ramification on the Compliance and Regulatory posture of the organization.

With this background, there is a requirement of automating the process of updating and maintaining the Configuration Information about IT components. Auto discovery/inventory is one such automation which helps in identifying and populating parts of Configuration Management database. Today's auto discovery solutions make it possible to discover and populate the Asset and their Relationship Information thus assisting the enforcement of Change and Configuration Management processes. But given the current technology landscape, there is only so much that can be inventoried using such solutions.

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This white paper attempts to study the current context in which Auto Discovery solutions are being proposed and used in large organizations, and the potential areas where they can automate the collection and update of Configuration Information. The white paper also highlights the areas which are still left unanswered or need improvement for Auto Discovery to truly become the key piece enabling Change and Configuration Management.

Introduction

In a recent survey done by the Forrester group, building a sound Configuration Management capability figured as one of the key areas for Infrastructure spending in 2005¹. There are many drivers for the increased focus on this particular area:

- With increasing reliance on IT for almost all Business Processes in a company, IT organizations are trying to transform themselves as Service Delivery units. The drivers for this transformation are to reduce IT costs, increase efficiency and to make IT more visible to business. As a result IT organizations are trying to align to industry best practices in the area of Service Management like ITIL. Configuration Management is a foundation of Service Management and an accurate and comprehensive Configuration Management database is a pre requisite for defining, managing, controlling and reporting of IT services and their components.
- Recent virus attacks and the crippling affect that they had on all types and sizes of organizations have made proactive patch and anti virus management a necessity and not a choice. But any Proactive or Reactive Security Incident Management relies heavily on an Accurate Asset Inventory
- In wake of recent legislation and compliance acts like the U.S. Public Company Accounting Reform and Investor Protection Act (Sarbanes–Oxley, or SOX), IT is under pressure for the documentation and implementation of internal controls for the IT environment and its constituents^{2,3}.

Understanding Asset and Configuration Management

Configuration Management covers the identification recording, and reporting of IT components, including their versions, constituent components and relationships⁴. The goal of Configuration Management is to provide enterprise capabilities to accurately map and report on all IT assets, their constituent relationships and linkages to IT Services. Asset Management is a sub set of Configuration Management and has a financial and contractual focus. Asset Management maintain details on assets above a certain value, their business unit, their location and other attributes⁴ which are required for the financial and vendor contracts processing. Most of the organizations start with Asset Management and then move towards Configuration Management. The core of the Configuration process in the Configuration Management Database (CMDB) which stores details of IT Assets and their relationships to each other and to the Business Processes that they support. The illustration below represents a logical view of Configuration Management and some of the relationship mapping between IT components.

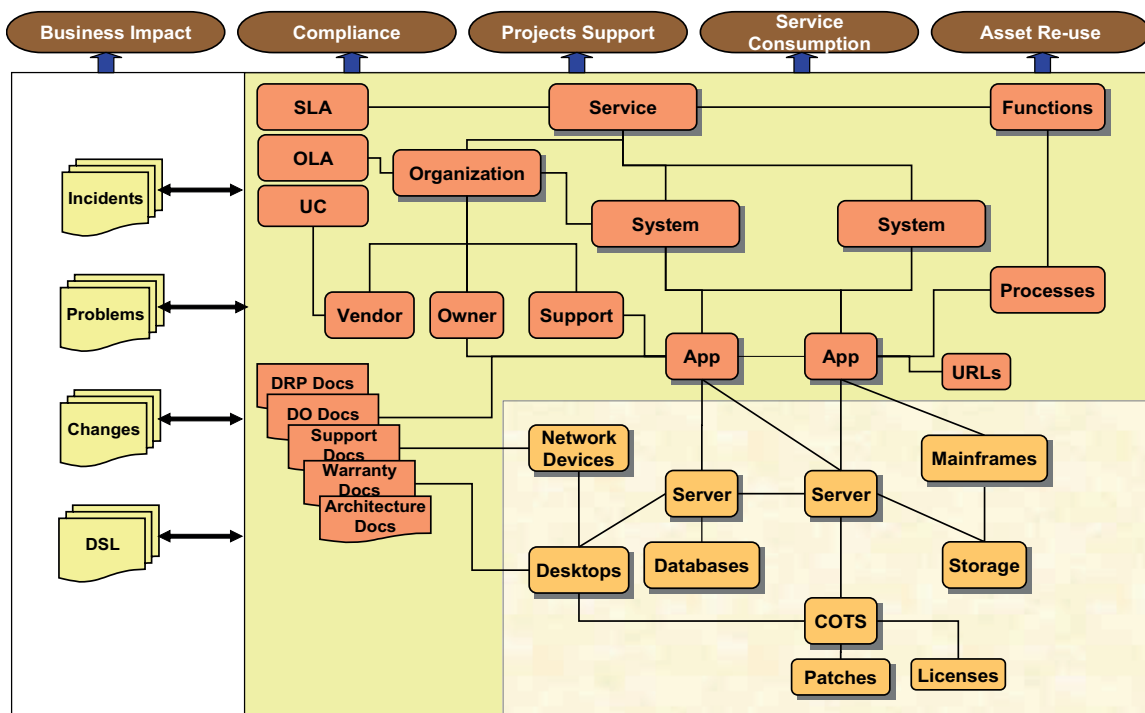


Figure 1: A holistic view of Configuration Management

Configuration Management contributes to the economic and effective delivery of IT services by:

- Asset-Risk Analysis and Security Incident support
- Business and Service Impact Analysis and better Implementation of Changes
- Faster resolution of Incidents and Problems
- Reduced Project and Change Lifecycle
- Accurate Billing and Charge back processes
- Effective reuse of IT Assets and supports Technology Consumption Management.
- Facilitate adherence to SOX, Software compliance and other legal obligations

There is a strong linkage between Change and Configuration Management and Change Management ensures that any change to Configuration Items (CIs) is carried out in a planned and approved manner.

Drivers for Automation in Asset and Configuration Management

Despite the core role that Configuration Management plays for IT Service Management, most of the organizations struggle for an accurate and integrated view of their technology components and how these components link together to deliver Business Services. Information continues to be maintained in several disparate non interlinked repositories and spreadsheets. The other bane for Configuration Management is the challenge to keep the repository information up-to-date and accurate.

ITIL best practices recommend that the information in Asset and Configuration Management database should be managed through a controlled Change Management process⁴. However a manual change management process puts a huge burden to update the Asset information.

Typically the number of assets in an organization with 10,000 employee base ranges from 1.1 to 2 assets per user (desktops, workstations, laptops, servers, network devices, mobile devices etc.). On an average the number of changes range for 5 to 15 changes per device per year and these changes put a huge load on the process to keep the information updated manually. Bypass in manual processes lead to asset information being out of sync from the actual environment and such repositories often lose faith with business and end user population.

While an effective Change Management process is a pre requisite for Configuration Management, it also raises the question that what if the Change process in the organization isn't mature enough either in its coverage or scope so as to ensure accurate update of IT Asset information. In wake of legislations, compliance issues and security threats IT Organizations no longer have the luxury to wait for years before such processes can be defined and implemented to ensure organization wide coverage of IT Assets.

With advancement in vision and the technology of auto discovery, it has the potential of becoming a key component of Business Service Management. If conceptualized and implemented properly it can significantly augment the efficiency of Change and Configuration management by automating key aspects of the process some of which are:

- Collect a subset of asset and relationship information
- Maintain history of changes to an Asset information through its lifecycle
- Reconciliation of CMDB data
- Change Support by providing data for Change Impact Analysis and Change Audit Trail

Types of Auto discovery solutions

Auto discovery solutions also referred to as Auto Inventory have a long history and started with the network and system domains where tools were designed to record the technical information about the network and system components. These solutions were designed almost entirely to collect technical information about specific domains like network or system information. Over years the solutions in this space have matured considerably with the current generation of tools offering the capabilities to discover all types of asset information and link them together to form a Service map.

The Auto Discovery market has solutions from a number of small and large vendors which use various approaches and claim their own benefits. While most of the vendors have stand alone databases, some vendors have moved ahead and their auto discovery tools have the capability to directly update the CMDB.

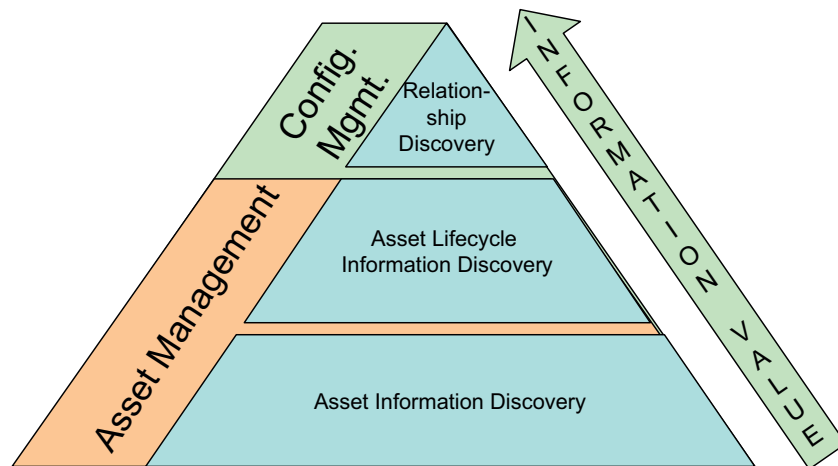


Figure 1: Auto Discovery - Information Value Chain

Agent less Approach

In this approach, a network scan is carried out at periodic intervals and this collects basic OS, hardware and software information about the assets which are connected to the network. The data collected from such a scan can be used to get an estimate of the networked assets, their type and some high level asset information. Data from this type of scan can also be used for analyzing how many assets have agents installed on them.

This mode of data collection cannot cover assets which are non-networked or not connected. Last but not the least this might be the only automated way of collecting asset information about those assets who do not support agents.

Agent based Solution

In agent based solutions, agents are installed on Assets and these agents collect detailed hardware and software information about the Asset. This solution works for networked assets (workstations and servers etc.) as well as for the mobile or handheld assets. Quite frequently vendors bundle the functionality of remote software/patch management and license management to these solutions to enable control on software and patches deployed on assets.

One caveat about discovering software information is that standard naming conventions with unique application signatures should be defined to discover any meaningful software information.

Agent less and Agent based solutions add maximum value when they are used in a complimentary manner. The data collected from a network scan gives important information about the asset landscape and can be used for the initial population of CMDB. An analysis of this data helps in identifying the assets which need agents for collecting the in depth information. On an ongoing basis data from both these sources complement each other to ensure maximum coverage of the CIs present in an organization.

Relationship View

New offerings from some key BSM vendors has gone beyond discovering the hardware and software details to actually building a Service mapping of IT Components. The mapping shows how different hardware and software components are linked to each other in delivery of Business services. A sample Application Dependency map is shown in illustration 3. This mapping shows the dependency of Business Application and Processes on various IT components. Such a mapping enables analysis of component downtime and proposed changes and their impact on Business Processes. For example: In this mapping, if the database server db01.infy.com were to go down, we can tell that the Store Pricing Application used by store abc and the HR Application used for Salary and Benefits processing would be affected. Also for any change in Router rs001.infy.com, business contacts from store abc and from HR would have to be proactively informed.

This ability to discover and map the asset relationships has enabled auto discovery to enter the realm of Configuration and Business Service Management (BSM) as it is the ability to map and report on IT assets and their relationships that differentiates Configuration Management from Asset Management[†].

While this is a new discipline, organizations can expect considerable focus from vendors in this area to enable positioning of Auto discovery as an automated solution enabling Change and Configuration Management processes.

Application Dependency Map

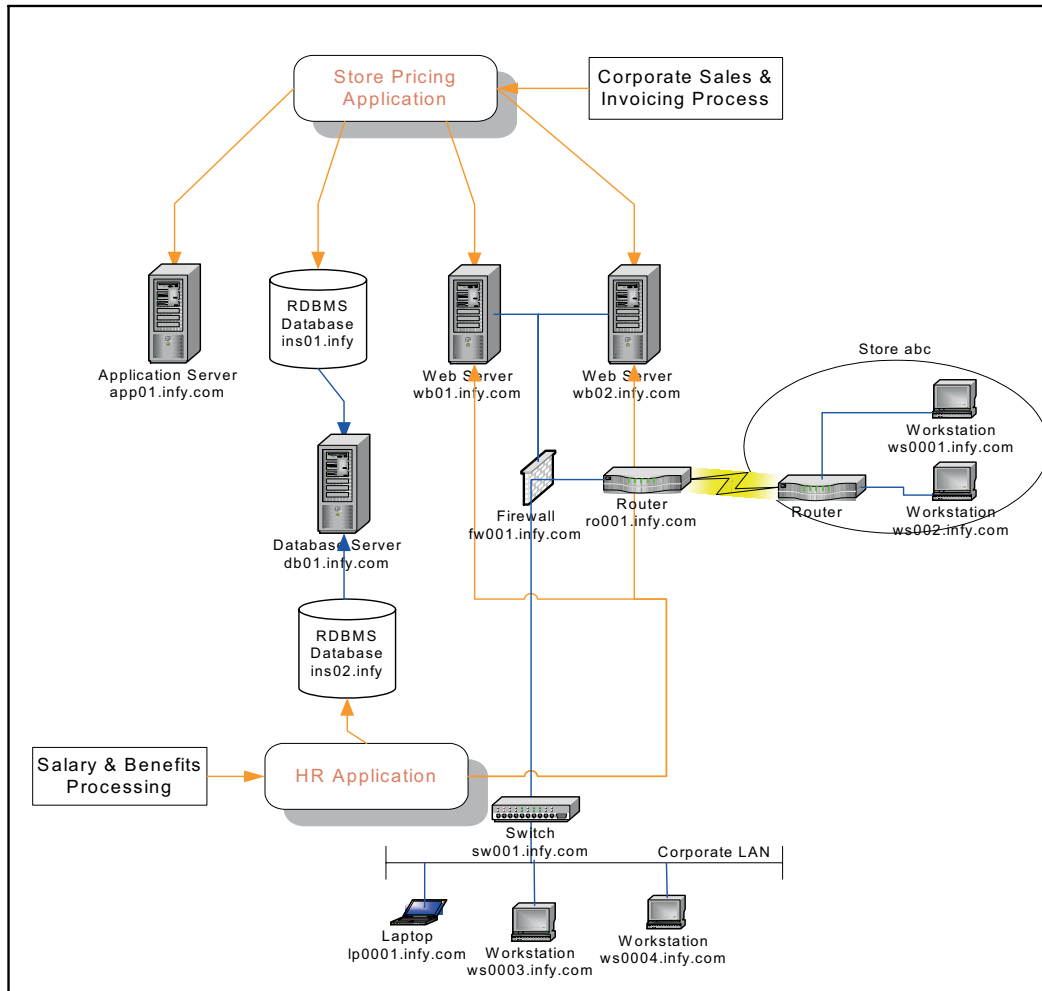


Figure 2: Mapping Application Dependency using Auto Discovery

Implementation Approaches

Organizations can decide to implement Auto discovery solutions using a variety of approaches. Any solution that is chosen should be dependant on the maturity level of the current processes and the future plans for Change and Configuration processes.

Stand alone or Point solution

During the initial stages of Change and Configuration Management process implementation, auto discovery can be used as a tactical and interim solution to gather basic software and hardware information about the assets and for the initial population of the CMDB. With this approach the data from Auto Discovery tools has very limited integration with Change and Configuration process. While the value that such a solution provides is limited, a repository of accurate Asset information will go a long way in gaining commitment and buy-in for a more mature Configuration

Management solution. Agent based and agent less scanning can be used in a complimentary manner to collect information which covers most of the organization assets.

Asset Management Support

At the next level of maturity is the solution where most of the Asset data is auto discovered with a capability of managing the history of asset information in different life cycles of an Asset from Deployment to Maintenance to Disposal. Auto discovery could also be made the master source of data for certain detailed level technical information and directly update CMDB.

The data from the repository could be used for operations support like incident and problem resolution, billing and charge back support, ensuring compliance and other enterprise initiatives like technology refresh.

Service Management Process Integration

Auto-discovery adds maximum value when it is fully integrated with Service Management processes. Accurate and Integrated information from Auto discovery data assists Change Management in Change Impact analysis. It also helps in identifying the changes that are carried out but are undocumented and also building an Audit Trail of Changes to IT components enabling compliance with various regulations.

The Auto discovery data is used to reconcile the information present in CMDB. Integrated tools highlight differences between auto discovered and CMDB data and support a work flow based reconciliation.

Organizations can also leverage the capabilities of some of the solutions for Patch Management, Software License Management and Remote Software Distribution to name a few.

Suggested Areas which would add more value to Auto Discovery Solutions

Over a period of last two years there are many developments in the solutions offered from vendors, there are still some areas where a greater focus would still help to enhance the capabilities of Auto Discovery solutions:

Application Integration

More often than not a complete map of Business Applications and their Infrastructure elements cover most part of the Business Service Impact which so many Application and Infrastructure Managers struggle to create manually. Application and Auto Discovery tool vendors should work together to enhance the information that can be discovered about the application itself and also the application interdependencies like the hardware platform, middleware and databases used etc. While we have seen integration with some major ERP application products to enable to auto discover the application and its dependency details, there is lot more that can be achieved in this area.

Better Change and Configuration Management Integration

Integrated Change and Configuration Solutions which enhance the support of these processes using the Auto Discovered data is another area which needs improvement.

While we have seen this in the future road map of some of the key vendor's offerings, the current offerings barring a couple of vendor solutions, treat auto discovery as just another source of data and the solutions are not fully integrated with Change and Configuration Management lifecycle.

Conclusion

Auto discovery tools market is maturing with tool vendors adding more functionality to these solutions to identify, track and update Change and Configuration information and integrating the solution with Change and Configuration Management process life cycle. As we have seen Auto discovery solutions can support and automate important aspects of Change and Configuration Management process, but they are not the alternative to these processes itself.

Finally we see the Auto Discovery piece of Configuration Management coming of age and it holds a significant promise of making Configuration Management possible in real world.

IT Managers should fully leverage the capabilities of auto discovery tools, but such an implementation should be a carefully thought piece of the entire Change and Configuration Management puzzle.

References

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About the Authors

Adarsh Kumar is a MBA with a major in Information Systems and Minor in Marketing from IMT, Ghaziabad. He started off his career as an Associate in Satyam Infoway Ltd, where he had a multi-faceted experience in diverse areas of technology including Network Management, Information Security, Operations and Helpdesk Management. Currently, he is a Process Consultant in the Infrastructure Management Systems Consulting Practice within Infosys. He has extensive experience in the areas of assessing and implementing ITIL processes across several process consulting engagements in several Fortune 500 organizations in US. He is currently located out of Phoenix, Arizona.

Appendix

Glossary of Terms

Term	Definition
BSM	Entity stands for Business Service Management and is a management concept which advocates management of IT as a business service. It deals with end to end management of IT Services which include their definition, mapping, management and reporting.
CI	CI stands for Configuration Item and Configuration Items refer to any IT Component whether logical or physical information about which is stored in CMDB. Example: Hardware, Software, Process etc.
CMDB	Entity stands for Configuration Management Database and is the central store where CI information is maintained
COTS	Entity represents Commercial Off The Shelf software which is developed by software vendor and is available for user by acquiring the relevant licenses.
OLA	OLA stands for Operation Level Agreement and is a written agreement between an IT Service provider and the internal support groups, defining the key service targets and responsibilities of both parties. written agreement between an IT Service provider and the internal support groups, defining the key service targets and responsibilities of both parties.
SLA	SLA stands for Service Level Agreement and is a written agreement between an IT Service provider and the IT Customer(s), defining the key service targets and responsibilities of both parties.
UC	UC stands for Underpinning Contract and is a written agreement between an IT Service provider and the Vendor Organization, defining the key service targets and responsibilities of both parties.



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