

Automating Continuous Process Improvement in the ITIL Framework

Cohesion Platform Series Whitepaper



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The IT Management Challenge and the Need for Automation

IT organizations from every sector are facing the challenge of meeting exceedingly high standards for systems reliability, cost-effective operations, and customer service. Competitive pressures and customer demand from both internal and external users allow no room for mistakes in IT operations.

To meet this challenge there are several industry-wide efforts to define approaches and standards for specifying best practices for IT management. Foremost among them is ITIL (Information Technology Infrastructure Library)¹ which is a set of books published by the UK government defining best practices guidelines for a wide range of IT management activities from how to run a help desk to how to integrate the configuration management and change management processes. An associated British standard BS 15000 provides a way to certify compliance with ITIL.²

The ITSMF (IT Service Management Forum) is an international user-centered organization providing educational activities surrounding ITIL.³ Microsoft has derived from ITIL their version of best practices called MOF (Microsoft Operations Framework).⁴

Figure 1 shows the key processes defining ITIL along with samples of Key Performance Indicators (KPIs) for each process. The importance of the KPI approach is to be able to measure the quality of IT management and to be able to show the results of continuous improvement processes through specific metrics. The ITIL processes are collectively referred to as Service Management, with two subsets referred to as Service Support and Service Delivery as shown below.

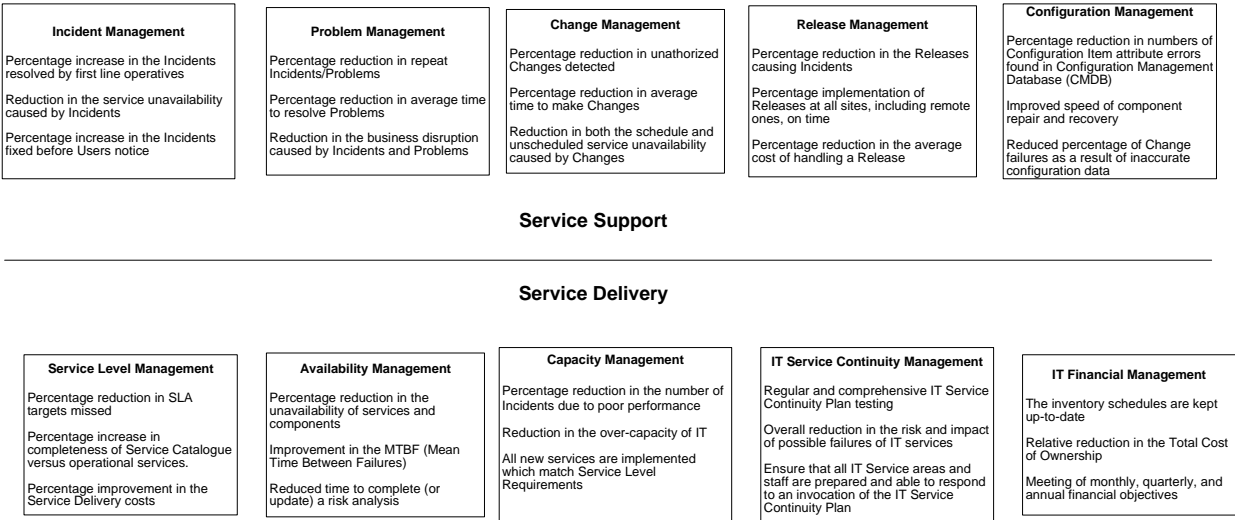


Figure 1 – Sample Key Performance Indicators for ITIL Service Management⁵

Implementing best practices in IT processes such as defined by ITIL requires accurate information and perfect execution across thousands of software components. As such, manual processes are not acceptable – and automation solutions are required.

The Cohesion application management system is an IT automation solution supporting the attainment of many of the Key Performance Indicators recommended by ITIL. This paper will outline the capabilities of Cohesion as applied to the best practices recommended by ITIL. Cohesion is of great benefit to the success and quality of IT management whether or not ITIL is the formal basis of the organization's IT processes.

The Cohesion Solution for IT Management

Cohesion 3.0 delivers proactive, policy-based change, configuration and compliance management across complex, distributed enterprise infrastructures. Cohesion provides IT service management personnel with an integrated way to automatically discover and track applications, create policies, compare and audit actual systems against reference systems, and manage change and configurations for hundreds of applications and services across the enterprise.

Cohesion is a “blueprint-based” application management system which allows support across all platforms for both custom and purchased applications. Blueprints embed the knowledge necessary to manage each software component including how to identify the component, what data to collect about the component, means to execute standard operations on the component, and documentation. Cohesion comes with a library of blueprints supporting all major operating systems, database systems, application servers, and many standard enterprise applications. Blueprints are easily created for custom applications.

Figure 2 shows key features of Cohesion and key uses with respect to ITIL processes. Central to Cohesion is its SMDB (Service Management Database) which includes the ITIL-defined CMDB (Configuration Management Database) plus more as follows:

- **CMDB:** Cohesion discovers and collects detailed configuration data for every application component from every managed system. Data is collected according to the blueprint from many sources including standard file formats (such as text and XML), registry settings, relational databases, and proprietary file formats (such as Microsoft IIS metabase). Historical snapshots of all information can be maintained and an audit trail is recorded for all changes initiated from within Cohesion. Figure 3 shows a sample detailed view of the configuration information for a multiplatform application.

- Best Practices Rules:** Cohesion's blueprints support the inclusion of best practices, corporate standards, and regulatory compliance policies as rules for all aspects of system and application configuration. Rules are easily created and modified – and can apply to just one server or all servers supporting an application. Figure 4 shows the results of running the rule compliance function against a set of web servers in which warnings are displayed with recommendation on how to correct the default and insecure installation.
- Business Services Data:** Business services data can be associated with each component for analysis and reporting. Such data includes ownership, location, and business processes supported by the component. The business attributes to be stored in the SMDB can be easily customized. Figure 5 shows a report of components supporting a specific business service.

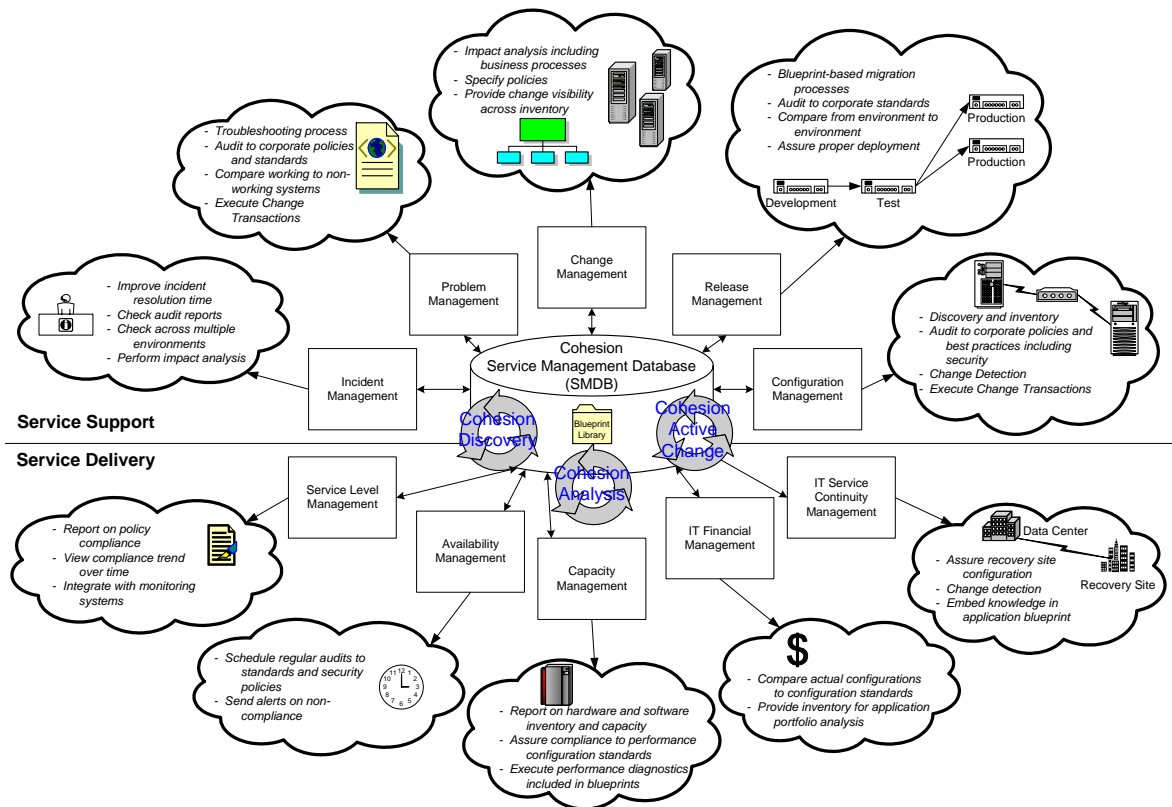


Figure 2 – Cohesion and ITIL Service

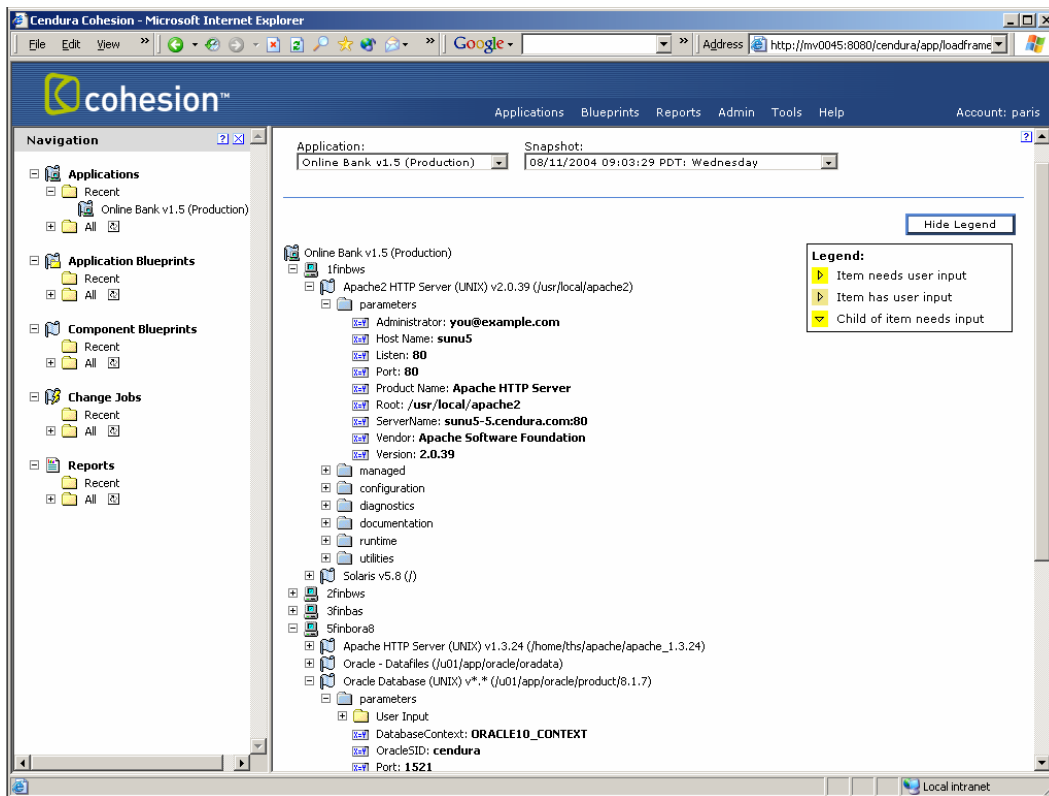


Figure 3 - Cohesion Configuration Data

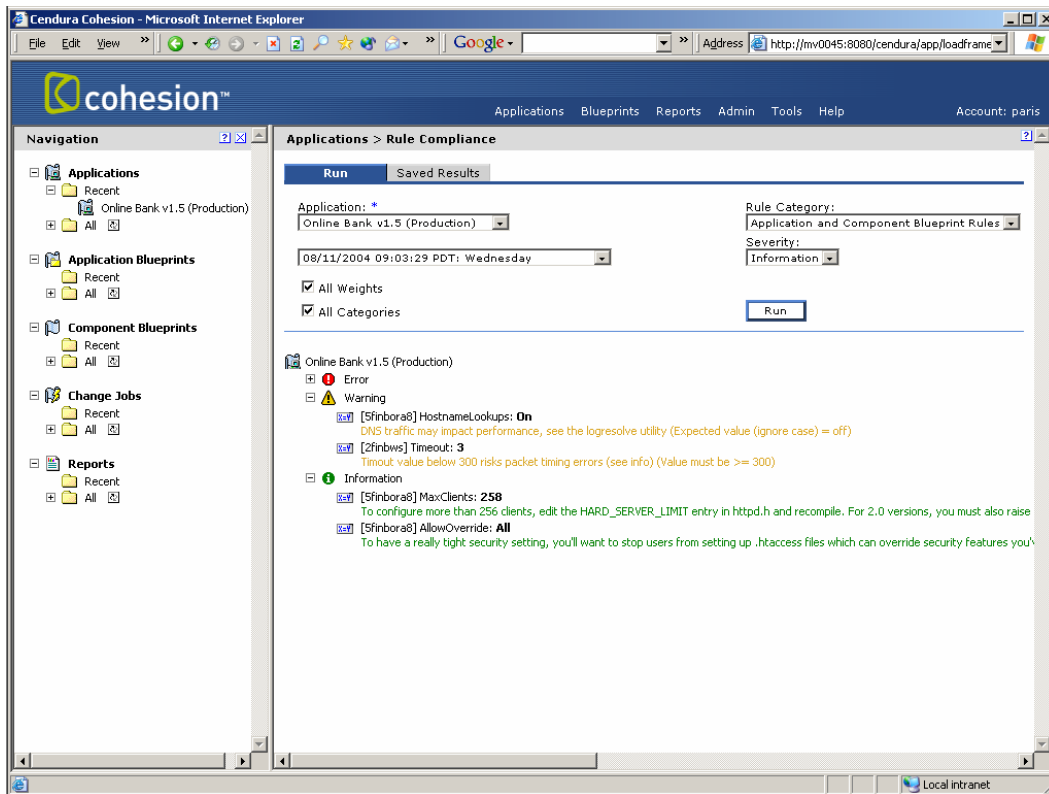


Figure 4 - Cohesion Rules for Best Practices

Host Report
 Report Date: 09/24/2004 12:31:03 PDT
 Generated By: paris

Filters:
 Applications: All
 Host Groups: All
 Hosts: 2finbora10, 3finbas
 Component Blueprints: All
 Platforms: All
 Business Attributes: All

IP Address	Platform	Live	Applications	Component Blueprints	Location	IT Owner	Business Process	Business Owner
192.168.123.118	Linux (UNIX) 2.4.21-15.0.3.ELsmp Intel i686	✓	Financials.com v2.0 (All Servers) Online Bank v1.5 (QA)	BEA WebLogic 8 Server v8.* BEA WebLogic Domain (UNIX) v*.* BEA WebLogic Server Instance v[78].* Oracle Database (UNIX) v*.* Oracle HTTP Server (Unix) v1.3 Red Hat Linux v[789].*	CA,1871,Mountain View	QA Support,Betty Holiday,bholiday@cendura.com	Quote to Cash,Order Processing	ghost@financials.com ,QA,John Ghost
192.168.123.110	Windows 2000 (WIN32) 5.0.Service Pack 4 (Build 2195) Intel x86	✓	Online Bank v1.5 (Production) Online Bank v1.5 (QA)	Apache Tomcat Servlet Engine v3.3.* BEA WebLogic 7 Server v7.* BEA WebLogic Domain (Windows) v*.* BEA WebLogic Server Instance v[78].* Microsoft SQL Server v8.* WIN32 v*.*	CA,1871,Mountain View	QA Support,Betty Holiday,bholiday@cendura.com	Quote to Cash,Order Processing	ghost@financials.com ,QA,John Ghost

Figure 5 – Business Services Data

Surrounding the SMDB are active processes provided by Cohesion including:

- Discovery:** Cohesion supports auto-discovery of all blueprinted components. An initial discovery can provide an accurate inventory view of what is actually installed on all managed servers. Scheduled refreshes can keep the data up-to-date and create historical snapshots. The discovery process creates relationships between components according intelligence in the blueprints and the discovery automation. Figure 6 shows the results of the discovery process in a report.
- Analysis:** A rich set of analysis capabilities are provided by Cohesion including change detection, verification of rule compliance, and reporting. Change detection can compare a server across time, or can compare similar components on different servers. Rule compliance and change detection can be done on a schedule and integrated with email and other monitoring systems to provide immediate notification on compliance failure. Figure 7 shows the result of change detection.
- Active Change:** Configuration settings in files, registries and proprietary formats can be changed directly through Cohesion’s access-controlled interface. Changes can be linked together into a change job integrated with calls to system commands and external programs as needed. The change job can be applied to either one server or all servers supporting an application, and can be locked pending approval. All changes are saved in a history and can be “undone” with a single click. Figure 8 shows a screen for entering a configuration change.

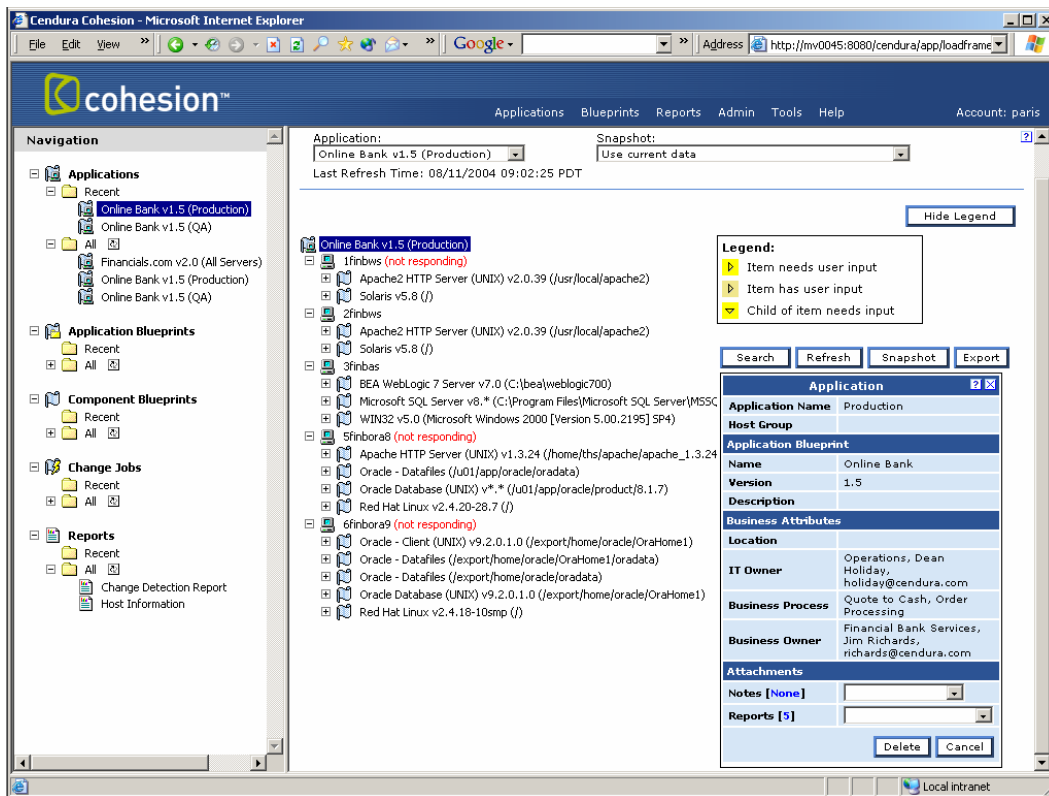


Figure 6 – Cohesion Discovery

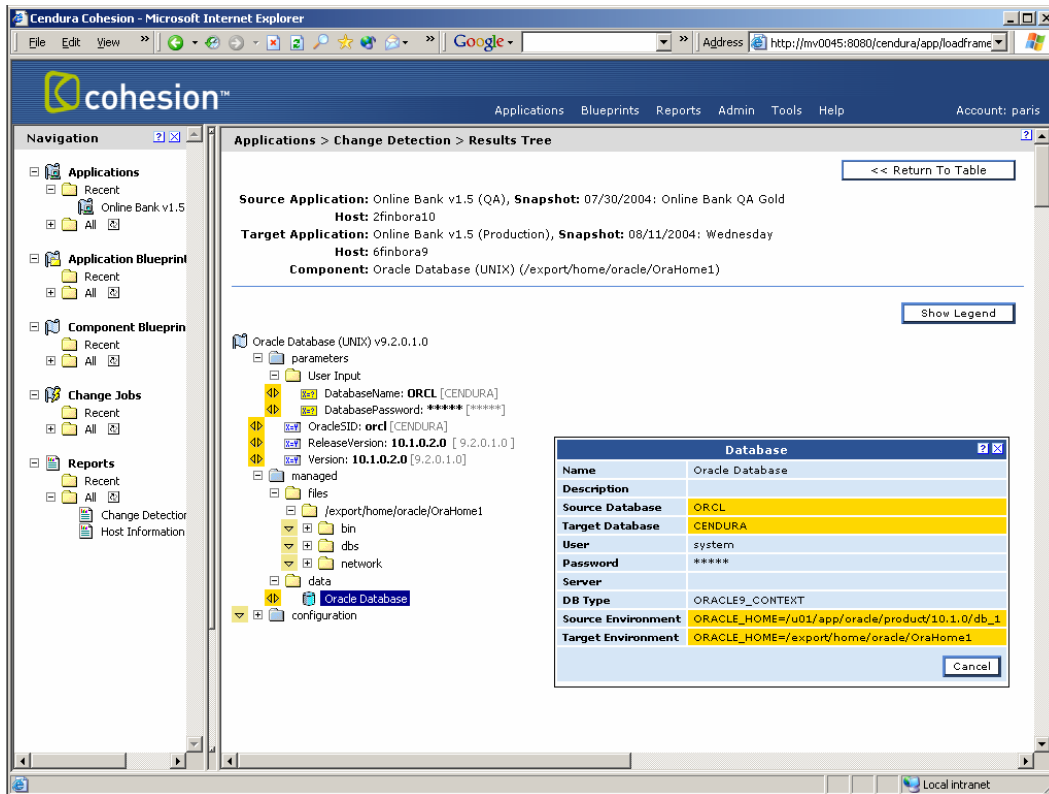


Figure 7 – Cohesion Analysis: Change Detection

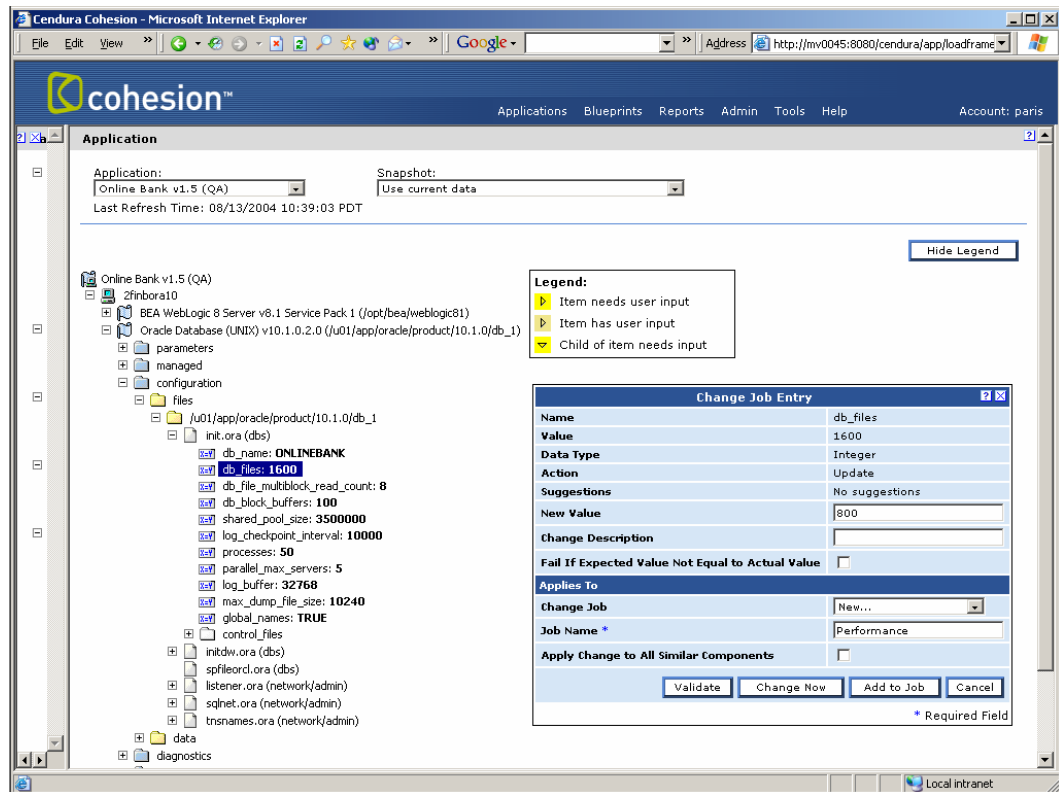


Figure 8 – Cohesion Active Change

Cohesion in Support of ITIL

With respect to the ITIL processes, Cohesion provides the following capabilities supporting in each case the Key Performance Indicators included in Figure 1:

- Configuration Management and Change Management:** Accurate and always up-to-date configuration data is crucial to populating the SMDB. Cohesion's blueprint-driven discovery capability is unmatched in its accuracy and depth of data retrieved. Once the SMDB is populated, auditing, change detection, and reporting gives analytical capabilities to assure that all configurations are set according to corporate standards. Change detection can highlight any unauthorized changes while reporting against business services data shows the business impact of changes.
- Release Management:** As applications move from development to test to production, misconfigured or incompatible elements are often introduced causing mission-critical applications to slowdown or fail. Cohesion can prevent such failures by performing audits to corporate and application-specific standards. Cohesion can identify any differences between certified test systems and the production deployment to catch errors before the systems are put online. Customizable Cohesion blueprints guide configuration requirements from development through production.

- **Problem Management and Incident Management:** Cohesion's role-based web-based interface allows appropriate access from service desk personnel to developers and system administrators. Cohesion provides trouble-shooting capabilities through both high-level analysis and drill-down examination of detailed configurations to pinpoint causes of failure. Once a cause is determined, rules can be put in place to avoid any repeat of the failure. When the cause of the failure is due to a configuration setting, Cohesion's active change capability can correct the setting on one machine or across a deployment.
- **Availability and Continuity Management:** Downtime can be proactively prevented with Cohesion by using its rules-based auditing facility with every change and release process. Continuity management requires that back-up sites are configured properly to work instantly when needed in an emergency. Cohesion allows detailed comparisons between the working production site and the backup site to make sure that recovery is fast and services are maintained.
- **Financial and Capacity Management:** Cohesion's discovery capabilities allow a detailed and always up-to-date inventory of all software and hardware components across the managed network. The inventory can be used to assure that systems are configured according to standards and to feed an application portfolio analysis.
- **Service Level Management:** Cohesion's auditing and reporting capabilities allow compliance monitoring with corporate standards for system and application configuration. Cohesion's integration capabilities, such as through SNMP and XML, allows integration with deployed service level monitoring and management tools.

Advancing IT Management Best Practices through Automation

Approaches such as ITIL define best practices for IT management. These practices need to be supported by automation capabilities to support the complexity of distributed applications in a timely and accurate fashion. As shown in Figure 9, people, processes, supporting data in the SMDB, the managed systems, and the automation must lock together like a jigsaw to provide the best possible level of IT services.

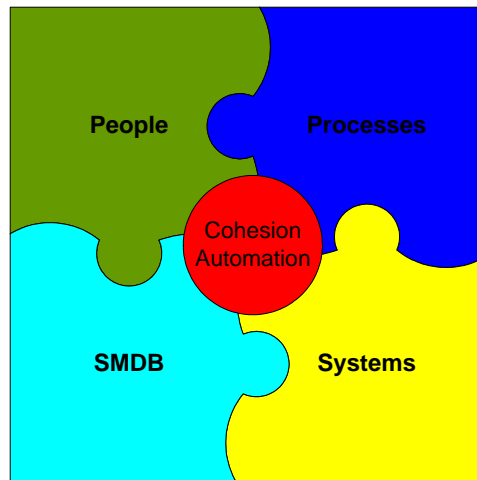


Figure 9 – The Role of Automation in IT Management

Cohesion is defining a new level of best practice for application management automation. This automation can be leveraged across the IT management processes and across the many roles in the IT organization. Through its advanced multi-platform support, customizability, and integration linkages, Cohesion can allow IT organizations to meet the challenge of providing exceedingly high levels of systems reliability, cost-effective operations, and customer service.

¹ Office of Government Commerce, www.itil.co.uk.

² BSI, BS 15000, www.bsi-global.com/Portfolio+of+Products+and+Services/IT+Information/IT+Service/Overview.xalter

³ IT Service Management Forum, www.itsmf.net.

⁴ Microsoft Corporation, Microsoft Operations Framework, www.microsoft.com/technet/itsolutions/techguide/mof/default.aspx.

⁵ Office of Government Commerce, Best Practice for Planning to Implement Service Management, The Stationery Office, Norwich, UK, pp. 97-107.