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Accelerating Time to Value for Your CMDB Project

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Introduction

The purpose of this document is to outline best practices for overcoming the initial and ongoing data quality challenges in Configuration Management Database (CMDB) deployments, and provide an approach to significantly enhance the overall reporting and analysis capability of IT Service Management (ITSM) programs. The details in this document were gathered from more than 70 Blazent engagements with some of the world's largest, most complex IT organizations.

The overarching theme of these engagements is that the success of CMDB programs are challenged by data quality. Because of lack of confidence in the data, various organizations within IT refuse to adopt the centralized philosophy of the CMDB and its related Service Management program. This resistance leads to multiple internal fiefdoms, each with their own set of "trusted data" in the form of operational spreadsheets.

"It's been 10 years since the concept of CMDB started to gain serious traction, and one of the lessons learned is that data quality issues can be lethal."

Charlie Betz
Research Director
EMA

Blazent offers several opportunities to accelerate the overall time to value for a CMDB program, starting with performing an accurate initial load of Configuration Items (CIs) and CI attributes. Other key areas of value include ongoing maintenance of data quality performed by Blazent's robust reconciliation engine, as well as the ability to leverage Blazent's highly flexible reporting and analytics capabilities.

Data quality, master data management, and analytics are all essential components of a modern approach to information-based IT performance management. Blazent's approach leverages proprietary algorithms to triangulate data from your current operational toolsets along with financial, user and logical data to create the most accurate electronic record available for all end user devices, virtual and physical servers, and network assets. In addition to ensuring the ongoing accuracy of this data, Blazent provides dynamic and flexible reporting and analytics capabilities to more effectively measure the accuracy of operational and asset baselines, and measure the performance of the team against the organization's operational standards.

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Problem: Many Companies Face Similar Challenges with CMDB Programs

While no two CMDB deployments are exactly the same, IT executives across industries mention similar challenges during the initial deployment and ongoing maintenance of their CMDB projects.

Challenges with Initially Populating the CMDB Using a Traditional Approach

APPROACH: Typical deployments load data from one to five auto-discovery tools, discovery agents and/or spreadsheets to initially populate the CMDB.

CHALLENGE: Because of the limited dataset used in the CMDB seeding process, key pockets of information are missing and the overall data set is often incomplete. This incomplete dataset restricts the overall capability of the CMDB.

APPROACH: Basic manual validation is performed on the data prior to the initial import into the CMDB.

CHALLENGE: Manual validation generally yields poor results and is the beginning of the well known problem of "garbage in, garbage out." Once bad data gets into the CMDB, it often results in multiple manually intensive cleanup projects, which yield limited success and erode the most important success factor: confidence in the accuracy and completeness of the data in the CMDB.

"While CMDBs may have a reconciliation engine, its focus is on whether or not a data element goes into the CMDB and possibly overrides another. Once that decision is made, the engine discards potentially useful variant data that might be essential for process improvement."

Charlie Betz
Research Director
EMA

Challenges with Ongoing Maintenance of the CMDB Using a Traditional Approach

APPROACH: CI information is updated manually through a standard process or automatically from electronic sources through the CMDB reconciliation engine.

CHALLENGE: Manual data entry and process gaps create inaccurate information. In addition, with record updates or replacements occurring during reconciliation, the original values of the source systems are not preserved in the CMDB for analysis. Further complicating the issue is the fact that CMDB reporting focuses on incident, problem and change metrics, and lacks the ability to perform root cause analysis to uncover process issues that are causing the data inaccuracies.

APPROACH: Reporting of tool coverage is specific to the agents integrated and registered within the CMDB.

CHALLENGE: Because emphasis is on production, agent interfaces are typically thoroughly engineered and automated, and "non-production" sources are avoided as ongoing feeds. While this is not a bad thing, it slows the completeness of the CMDB picture.

An analytic environment separate from the day-to-day production CMDB can be more accepting of non-production and semi-automated data sources. This is especially critical during CMDB implementation, as users may expect the CMDB to provide immediate insights that will be delayed by requirements for full production automation.

Additionally, the CMDB lacks enterprise-level reporting audits of the entire operational environment (i.e. coverage, completeness and currency of backup, security, monitoring, distribution, antivirus, etc.). With limited integration of operational tools, the compliance dashboards can only report on the assets that the source tools have knowledge of. As assets are introduced to or removed from the environment, this leads to operational exposure and gaps in business continuity occur.

Challenges with CMDB Analytics and Reporting

APPROACH: The CMDB provides a flat, highly-tuned transactional data model that excels at providing a good user experience for CI record management and single function reporting.

CHALLENGE: Because the CMDB data model is tuned for transactions and not reporting, it does not easily facilitate cross-tower reporting or ad hoc requests. In addition, running reports from the CMDB's live transactional environment can affect end user performance and provide inaccurate results for averages, sums and counts. Users are also forced to learn the complex CMDB data model to report on roll up values (locations, business units, asset types, etc.), and as a result, often resort to extracting CMDB data into spreadsheets to produce results. Since these spreadsheets represent a "moment in time", they are usually discarded after use and erode confidence in the CMDB.

APPROACH: The static data model of the CMDB is defined during the initial implementation and has limited capability to create user defined fields to address changing business requirements.

CHALLENGE: Many data elements that are used to provide meaningful business context are not typically stored in the CMDB. They are maintained externally in financial systems, spreadsheets, etc. Additionally, user defined fields are not usually included in standard CMDB reporting templates. In order to accomplish reporting goals, custom fields either need to be added to the CMDB or complex spreadsheet manipulation is required.

APPROACH: Analytics and reporting are focused primarily on service management disciplines (incident, problem, change, etc.)

CHALLENGE: Most CMDB's provide limited reporting and analysis on hardware/software inventory accuracy, data quality metrics, operational compliance and risk management.

Solution: Optimize Your CMDB with Feature Enhancements Provided by Blazent

INTEGRATION

Blazent integrates multiple sources of existing traditional and non-traditional asset data, well beyond the capability of the CMDB, and provides intelligent reconciliation to deliver the most reliable information about an asset (complete and accurate CIs and CI attributes). Best practices suggest a minimum of twelve sources for the appropriate confidence level in data accuracy to be achieved.

By bringing in non-traditional data sources such as financial, procurement, network infrastructure, and end user authentication, Blazent delivers the most complete and accurate record of an asset. This is called the "Golden Asset Record." The following data sources/types are examples of the data that Blazent integrates during an implementation:

- Operational Data from Agents (Antivirus, Backup, Monitoring, Patching, Inventory, Distribution)
- Financial/Procurement Data (Hardware Invoicing, Purchasing Records, Maintenance Lease Records)
- HR/User Data (Directory/Authentication, HR Systems, VPN)
- Logical/Static Data (Asset Repository, CMDB, Spreadsheets)

MULTI-SOURCE RECONCILIATION

Blazent provides the industry's most intelligent reconciliation engine to ensure the highest level of data quality for CIs and CI attributes. The purpose of Blazent's reconciliation is to validate and perform analysis on the quality of the underlying data sources (Fig. 1). Whereas, the primary purpose of the CMDB's reconciliation approach is to perform a field or record update using the incoming data sources. Therefore, it does not preserve the underlying source data, show side-by-side comparisons or identify recurring issues with incoming data feeds. Additionally, in the event incoming information doesn't match, duplicate CIs are created or records erroneously updated. The following are key features of Blazent's intelligent multi-source reconciliation engine:

- **Association:** Blazent provides the ability to match assets across key fields from many data sources including Serial Number, Asset Name, Asset Tag, MAC address and/or IP address, even when these fields are null or in conflict.

"Blazent provides an essential quality cross check on these systems so they become the trusted enterprise resource that IT organizations so badly need."

Charlie Betz
Research Director
EMA

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- **Consolidation:** Using proprietary logic based on 10 years of experience, Blazent will automatically suggest the most trusted source for field level attributes to deliver a "Golden Asset Record" with the best data from the most accurate sources.

- **Content:** Blazent provides an extensive knowledge base of content developed specifically to assist in the normalization and cleansing of IT data.

- **Data Model:** CMDBs have somewhat generic data models. The concept of "configuration item" is highly general; anything from a RAM chip to a mainframe to a contract to a payroll service can be called a "CI"; however, in the real world, there are specific CI concepts and data items that are of critical importance like server, serial number, IP address, MAC address, subnet range, switch port, and so forth. There are a specific number of known techniques for sourcing this information, and intricate best practices for reconciling it. This is where Blazent has built extensive intellectual property over many years.

Fig. 1 - Blazent Architecture Summary
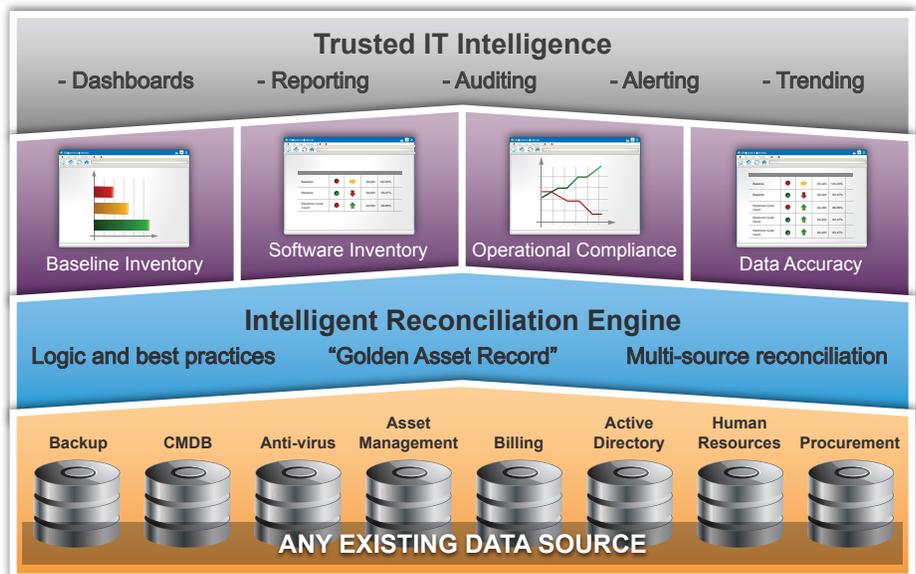
CMDB LOADING

Customers may choose to load the CMDB with the Blazent "Golden Asset Record" or they may choose to remediate conflicts in the raw source data and load directly from the sources into the CMDB. This is a decision of critical importance. If the customer chooses to load raw source data, they will need to remediate the conflicts in the raw sources before proceeding.

SOURCE SYSTEM VALIDATION, CONFLICT IDENTIFICATION AND ONGOING DATA QUALITY ANALYSIS

Because a CMDB is not built to audit itself, Blazent provides a unique set of analytics to ensure immediate improvement in data quality and ensure ongoing data integrity.

- **Source System Validation:** Blazent's Data Quality Module validates and checks the accuracy of all incoming data sources and is preconfigured to identify common data issues including duplicate records and missing, incomplete, and invalid values. In addition, the data is cleansed and normalized using the content in the knowledge base.

- **Identifying and Fixing Data Conflicts:** Blazent's intelligent multi-source reconciliation engine will identify data conflicts across all sources. Based on the proprietary techniques used in creating the "Golden Asset Record," the Blazent application will suggest the appropriate values to use when populating the raw source systems or in the case of agent-based sources, Blazent will identify a list of assets not covered so you can target them for remediation.

- **Root Cause Analysis:** Blazent will provide a set of out-of-the-box categorizations to identify the process breakdowns that are the root cause of defects. Examples include defects by Location, Operating System, Business Unit, Department, Asset Status, etc.

- **Trending of Quality Improvements:** Blazent provides dashboards that trend the remediation of conflicts and data gaps over time, allowing clients to measure the progress of data conflict resolution against business goals.

ANALYTICS

One of the most powerful features Blazent adds to any CMDB deployment is the ability to provide highly flexible reporting and analysis. The most common complaint regarding the CMDB is the inflexible nature of its reporting and analysis capabilities. This is due to the fact that the CMDB is

highly optimized for transaction processing and not for complex analytical queries or ad hoc reporting requests. This leads to inflexible reporting and delays in transactional response time when running complex reports. In addition, the table structure of a typical CMDB does not lend itself to rollup type reporting of assets across the enterprise.

- **Customized Extensions & Configurations:** The CMDB has traditional CI tracking and therefore, traditional CI attributes. Blazent not only allows the addition of all desired attributes, it also features all of the reporting power of most business intelligence tools.

- **Accumulates Data into Logical Groupings and Pre-calculates the Data Mart:** Blazent is optimized for sub-second response time to a large number of concurrent users, running complex reports, without affecting the production of the CMDB.

- **Pre-Built Data Marts Allow High-Performance Analytics**

- **Enterprise-Level Metrics with Built-in Dashboards:** Blazent provides executive-level dashboard views with the ability to drill down to the individual underlying asset data depending on the user's role and function.

- **Separating Processing from Analytics:** As with mature systems approaches in other domains, Blazent decouples transactional, day-to-day processing from the challenge of large scale data management and analytics. IT may well be the last major enterprise domain to do this.

OPERATIONAL COMPLIANCE

This dashboard-driven module provides the ability to monitor the statuses of all agents and electronic tools whose data is being loaded into Blazent for the purposes of ensuring the most accurate and complete deployments of operational tools. These agents and tools are grouped by common function into tabs that run across the top of the dashboard. The CMDB can only report on what it "knows" about. Blazent analytics identify gaps in operational tools and provides the insight to "know what you don't know" (Fig. 2).

In addition, without operational compliance, organizations suffer from business continuity issues and security risks due to incomplete deployments of necessary toolsets.

- Each Blazent Operational Dashboard includes:
  - Coverage Analysis
    Assets that have verified tool coverage, assets where the tool has not recently reported and those that have no agent coverage at all
  - Electronic Aging
  - Trending
  - Root Cause Analysis
- The Blazent Operational Compliance module contains audits of the completeness and accuracy of the following tool deployments:
  - Antivirus (Fig. 2)
  - Backup Agents
  - Monitoring Agents
  - Discovery Tools
  - Distribution Tools
  - Standard Operating Environment
    A combination of tools that are expected to be on all assets of a given type (i.e. PC or Server)

Fig. 2 - Operational Compliance Dashboard for Antivirus
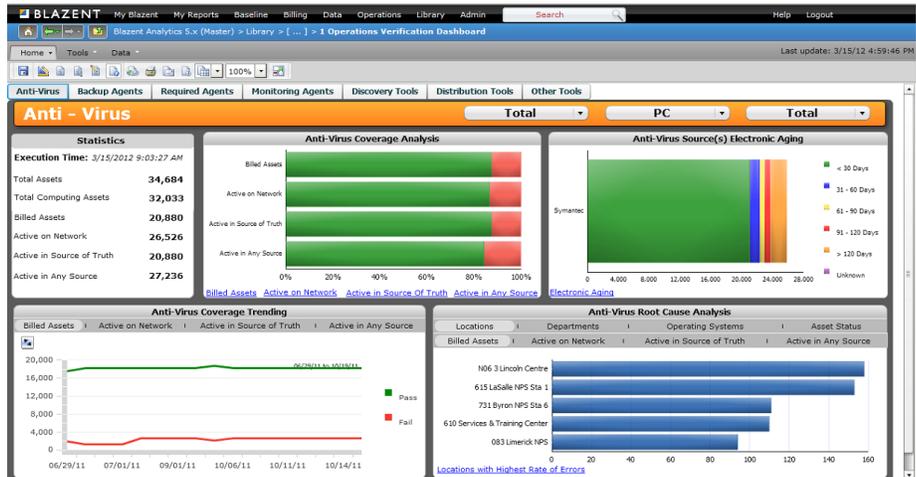
Conclusion

A successful CMDB deployment is the key to achieving IT Service Management excellence. Serving as the control center of the ITSM strategy, the CMDB must provide the most accurate view of the IT environment for critical service management processes to perform effectively (incident, problem, change, availability, etc). Despite this fact, data quality is often the most overlooked factor in most CMDB deployments.

When the entire organization has trust and confidence in the quality of the data in the CMDB, user adoption increases dramatically and incredible efficiencies are realized. By improving data quality and providing more robust analytics and reporting capabilities, Blazent can significantly improve the likelihood of success of any CMDB deployment or IT Service Management program.

The era of Big Data is upon us, and the data relating to IT Service Management itself is large and complex. Blazent is at the forefront of bringing state-of-the-art data management to the business of IT. Data quality, master data management, and analytics are all essential practices for managing complexity and gaining the insights needed to manage IT in this age of increasing technological velocity.

"While a CMDB is a necessary step on the road to IT maturity, it is not suited for the challenges of Big Data and analytics. To maximize the potential of your IT management infrastructure, an Analyst's Workbench, such as Blazent increasingly will be a key requirement."

Charlie Betz
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About Blazent

Blazent provides visibility and intelligence solutions to help companies uncover hidden opportunities to optimize IT operations, lower costs and reduce risks. By integrating data from disparate systems and applying built-in best practices, Blazent's cloud-based solutions deliver complete, accurate and trusted views into a company's entire IT environment, regardless of whether it's internal or outsourced. To date, Blazent solutions are deployed at some of the world's largest, most complex IT organizations to manage more than 1.5 million end user devices, virtual and physical servers, and network assets. For more information, please visit www.blazent.com.

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