Tips & Tricks: CA CMDB Data Mining Techniques

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Abstract

> Leverage CA CMDB data mining techniques to accelerate remediation of incidents, problems and assist in unauthorised change detection. This session will review a methodology that you can adopt immediately with your CA Service Desk Manager solution.
Agenda

> Background
  - The Evolution of Business and IT Landscapes
  - “Best Practice” – ITIL
> First - architect the right CMDB data model
  - What is a “Service”?
  - Step-by-step guide to building a Service Model with CA CMDB
> Next - Mine intelligence from the service model in the CMDB
  - Reconciliation
  - Architectural considerations
  - Correlating Business – IT performance
Background

> The Evolution of Business and IT Landscapes
> “Best Practice” – ITIL
Why Configuration Management?
All Companies Must Take Advantage
Increasingly, Business Depends on IT for Competitive Advantage
Increasingly, Business Depends on IT for Competitive Advantage
But, the Business of Managing IT is Complex

**BUSINESS**

**IT CHALLENGES**

- Process, Policies and Automation
- Functional Silos
- IT Controls
- Agility
- Expanding Infrastructure
- Costs and Resources
- Visibility
- User Experience

**Pace of Business Change**

**Increased Regulation**

**Increased Corporate Profitability**

**Industry Consolidation**

**New Markets, New Products**

**Customer Retention & Acquisition**
**IT Management Evolution**

**CURRENT STATE**
- Management by technology
- Accountability by technology area
- Technical experts
- KPIs measured/set by IT
- Tool-driven approaches
- Outages viewed in terms of technologies impacted
- Reactive to problems that occur
- Reward by technical prowess
- IT is a support function

**FUTURE STATE**
- Management by service provided
- Accountability by service delivered
- Horizontal consultative teams
- KPIs measured/set by business
- Process-driven approaches
- Outages viewed in terms of services impacted
- Proactive to prevent problems from occurring
- Reward by contribution to the business
- IT is a business enabler
ITIL is Evolving With The Business

> **ITIL Version 3**
  - Business-IT service integration and value generation
  - Service Management for business and technology

> **ITIL Version 2**
  - Business-IT alignment
  - Delivery and Support of Services
  - Quality and efficiency of IT processes

> **ITIL Version 1**
  - Stability and control of IT infrastructure
  - IT Infrastructure Management process
Primary Factors Driving CMDB Adoption (Based on CA Survey)

- Improve IT Alignment with the Business: 14
- Improve Service Through Increased Service Availability: 14
- Reduce Risk: 10
- Lower Costs: 9
- Other: 2
- No Response: 1

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Primary CMDB Use Cases (Based on CA Survey)

Impact Analysis in support of Change Management
Supporting Root Cause Analysis for Service Desk
Other
No Response
Data center automation

Note: Change Impact and Root Cause Analysis represents 73% of the CMDB’s primary focus
Consumers of Configuration Management Information

> What processes are you looking to implement first using a CMDB?

- 43%: Release, Change, and Configuration Management
- 34%: Incident and Problem
- 13%: Asset Management
- 8%: Service Level Management – Why?
  - Service Modeling based on critical applications
- 2%: Other

All are attributable to gauging impact, controlling important assets, or guidance in defining services based on CI relationships in existence...

Source: EMA
First - architect the right CMDB data model

> What is a “Service”?  
> Step-by-step guide to building a Service Model with CA CMDB
Configuration Management

> IT Service focused – items (CI’s) that need to be “managed” to deliver the Service

- Models Business Services in the CMS, providing information about Configuration Items, including their Relationships required to deliver the Business Service
- The Configuration Management process provides the ability to consistently **identify, manage** and **verify** the IT infrastructure components and their Relationships within the Business Services
- Quality is determined by the maturity level of the Configuration Management Process

*It is not about sticking every bit of infrastructure in a big database!*
A Bird’s eye view of an IT Service
A Bird’s eye view of an IT Service

> Services are made up of many layers

> Connecting layers is what makes Services robust but complicated

> We need to find the connections to “navigate” through the layers
End-to-End Service View

> Critical to a Service is understanding what and how it is constructed, delivered and supported
Business Architecture

An Example “Services Model”

- **Business Processes**
  - Use
    - **Business Services**
      - Use
        - **Infrastructure Services**
          - Are implemented by
            - **Configuration Items**
              - Are executed by
                - **Run-Time Objects**

1. **Make Travel Arrangements**
   - Buy Ticket
   - Planning Service
     - Assess Options
   - Purchasing Service
     - Price Book
   - Timetable Service
     - Access Route
   - Email Service
   - Backup Service
   - Report Service
Use Technology to Help

> Change Impact
> Root Cause
Service Model Design

> Structure – Underlying classification, component attributes and hierarchy of CI’s

> Object Model – A diagram that represents all CI types within the scope of the Configuration Management process and their named relationships

> Service Model – An Object Model diagram that includes the key attributes meta data values that will be captured in relation to the defined CI Types

_If the Infrastructure is the puzzle, and the Configuration Item (CI) is the piece, then the Configuration Management Service Model is the picture on the puzzle box_
Iterative Methodology

> Adopt an iterative lifecycle approach:
  - Start small – have a clear objective
  - Identify one or two key services
  - Work with consumers to define attributes
  - Leverage your existing tool information to populate CI attributes
  - Supplement with Discovery
  - Define role-based service views
  - Synchronise data on an ongoing basis to ensure accuracy
Identify the hierarchical layers

- Business Service
- IT Service
- Web Presentation
- Applications
- Software
- Database
- Operating System
- Hardware
- Network/Facilities

Additional Layers:
- Organisations
- Customers
- Locations
- SLA
- Application Development
- Virtual Environment
- High Availability
- Security
- .... ???

Can these layers be represented as attributes of CIs?
If you add a layer be ready to have extra CI types, attributes and relationships to manage
Build a Service Model with CA CMDB

- Baseline from Asset Management
- + Baseline from Discovery tools (Desktops, Devices, etc)
Service Model - Identify CI’s Relationships between Layers

- Business Service
- IT Service
- Web Presentation
- Applications
- Software
- Database
- Operating System
- Hardware
- Network/Facilities

Enterprise Service
- Dependent Provider
- Is business owner of

Service
- Provides to

Software.COTS
- Serves

Software.Application
- Runs

Software.COTS
- Is used by

SW Database
- Contains

Cluster
- Hosts

Software.Operating system
- Is server of

Hardware.Server
- Is HA Server for

Hardware.Server
- Dependent Provider

Network.Hub
- Is gateway for

Network.Hub
- Dependent Provider
Building an Example Service Model

Organisation

Business Process

Service

Systems

S/w Applications

S/w Infrastructure

Virtual Environment

Physical Environment

Facilities Layer

Attributes:
CI Name = Client Manager
CI Type = Service

Attributes:
CI Name = Server 4
CI Type = Server
Integrated Service & Infrastructure Management
Next - Mine intelligence from the service model in the CMDB

> Spotting duplicates in the CMDB
> Architectural considerations
> Correlating Business – IT performance
Spotting Duplicates in the CMDB
What is Reconciliation

> Reconciliation is the process we use to resolve similar identifying characteristics

- **Real life:**
  - Credit agencies “reconcile” different identities to the same or different people based on identifying attributes
    - Name, Birth date, national id, drivers license, employee id

- **CA CMDB (11.0, 11.1, 12.0, 12.1) uses the following Identifying attributes:**
  - Name
  - Serial number
  - DNS name
  - MAC address
  - Asset tag
  - System name
Reconciliation

> Why Reconcile?
  - When creating the full picture of CI, gathered from different data sources, we want to make sure that all attributes are associated with the correct CI.

> When Reconciliation fails:
  - False matches (aka false positives)
    - Too few CIs
  - False mis-matches (aka false negatives or duplicates)
    - Too many CIs
How to spot duplicates?

> You cannot manage what you cannot measure

> **KEY CONCEPT:** The ambiguity index measures uniqueness of the identifying attributes of a CI. It is the count of all CIs that match any of its identifying attribute values

  - Count (matching name)
  - + count(matching serial number)
  - + count(matching mac address)
  - Etc
CIs can be ambiguous

> Scenario – using the data in the squares below:

> Scenario:
  - I have 3 CIs in my CMDB, all named Server1
  - The ambiguity index of each CI is 2

<table>
<thead>
<tr>
<th>Name server1</th>
<th>Mac address</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>11:11:11:11:11:11</td>
</tr>
<tr>
<td>Name server1</td>
<td>Mac address</td>
</tr>
<tr>
<td>Name server1</td>
<td></td>
</tr>
</tbody>
</table>
Identify Ambiguous CIs scoreboard

CA Service Desk Manager / CA CMDB

Logged in as: ServiceDesk (Log Out)
Role: Configuration Administrator

Scoreboard as of 08/19/2009 04:02 pm

- CI Priorities
- Configuration Items:
  - All (11149)
  - Telecom Voice (0)
  - Telecom Wireless (25)
- CMDB Changes
- CI Status
- Reconciliation Management
- Ambiguous CIs
  - All (1804)
  - Updated in the Last Day (1804)
  - Updated in the Last Week (1804)
  - Updated in the Last Month (1804)
- Ambiguous CI Transactions
- Superseded CIs (0)
### Identify and research ambiguous CIs

#### Ambiguous CI List

<table>
<thead>
<tr>
<th>Ambiguity</th>
<th>Name</th>
<th>System Name</th>
<th>DNS Name</th>
<th>MAC Address</th>
<th>Serial Number</th>
<th>Alt Asset ID</th>
<th>#Req</th>
<th>#Inc</th>
<th>#Prb</th>
<th>#Chg</th>
<th>#Iss</th>
</tr>
</thead>
<tbody>
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<td>Last Mod By: servicedesk</td>
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<td>0</td>
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<td>Superseded By:</td>
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<td>Last Change: 05/19/2009 10:43 am</td>
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<td></td>
<td></td>
</tr>
</tbody>
</table>

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3 CIs, same name, different alt Asset id
Architectural considerations
The Challenge – Find the Architectural Risks?
Real World Examples

> **Example #1:** Identify where there may be a high degree of risk for making architectural changes e.g., A,B,C – Measure # of services each CI impacts.

> **Example #2:** Identify where there may be an existing architectural risks for IT Continuity e.g., G,M – Use Trace Relationship filter in the Visualizer
Correlating Business-IT performance
Business – IT Alignment

> IT and Business Alignment:

- Are we doing the right things?
  - Long term Strategic Initiatives
  - Tactical Business Processes

- Are we doing things right?
  - Tie Business Metrics to IT metrics
## Business – IT alignment

### Business Goals → IT Goals → IT Process Goals → Activity Goals

<table>
<thead>
<tr>
<th>Type of Goal/Measure</th>
<th>E.g. of Goal</th>
<th>E.g. of Measure</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Business Goals/KPIs</strong></td>
<td>Maximise Internet sales during the holiday season</td>
<td>Number of Internet Sales Orders in holiday season</td>
</tr>
<tr>
<td><strong>IT Goals/KPIs</strong></td>
<td>Ensure that the IT services that support internet sales</td>
<td>Aggregate Availability of the Order placement and Order fulfillment IT services; Lost sales due to unavailability</td>
</tr>
<tr>
<td></td>
<td>(Order placement and Order fulfillment) are available close to 24*7 during</td>
<td></td>
</tr>
<tr>
<td></td>
<td>the peak season.</td>
<td></td>
</tr>
<tr>
<td><strong>IT Process Goals/KPIs</strong></td>
<td>Find the root cause of the lower availability of “Internet Sales Orders”</td>
<td>Availability of “Internet Sales Orders” service</td>
</tr>
<tr>
<td></td>
<td>service</td>
<td></td>
</tr>
<tr>
<td><strong>Activity Goals/KPIs</strong></td>
<td>Understand why there was a network failure</td>
<td>Network availability</td>
</tr>
</tbody>
</table>
## KPIs

<table>
<thead>
<tr>
<th>KPI</th>
<th>Potential Source</th>
</tr>
</thead>
<tbody>
<tr>
<td># of Internet Sales Orders in holiday season vs. Aggregate Availability of the Order placement and Order fulfillment IT services</td>
<td>ERP/CMDB/SAM</td>
</tr>
<tr>
<td>% of IT services that support strategic initiatives</td>
<td>PPM(Clarity)/CMDB</td>
</tr>
<tr>
<td>% of IT services that support tactical business processes</td>
<td>PPM(Clarity)/CMDB</td>
</tr>
<tr>
<td>What % of work is unplanned?</td>
<td>CMDB/Clarity/Service Desk/CM/Service Catalog</td>
</tr>
<tr>
<td>Service Downtime for all critical business services subscribed to by the finance department</td>
<td>CMDB/SAM/Service Catalog</td>
</tr>
</tbody>
</table>
Questions