Infrastructure Configuration Management Techniques

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Agenda

Introduction

Automating Visio infrastructure diagrams

Inventory and connectivity management

Impact analysis and change management

Quick wins and common sense
A Few Questions

1. Who typically documents inventory and/or connectivity data in Excel and Visio?

2. Who creates data center diagrams (rack, floor plans) in Excel and Visio?

3. Who has had a Visio training course in the last 3 years?
Infrastructure Configuration Management – Why?

Strategic
- More projects and tasks with less resource and less cost
- Reduce change risks as infrastructure gets more complex
- Flexible use of partners without losing control
- Centralising expertise to cover multiple locations and technologies
- Optimise use of strategic assets – data center capacity, host systems

Tactical
- Spreadsheet chaos and inconsistent management tools
- Inconsistent and inaccurate Visio diagrams
- Multiple standards, conventions, training
- Repeated audits, reporting/communication of capacity and risks
Key Drivers

- **Time**
  - Identifying faults and risks
  - Discovery, site survey, workshops
  - Communication across teams

- **Cost**
  - Site survey / discovery / audit
  - Duplicating resources
  - Communication across teams

- **Risk**
  - Identifying change impacts / risks
  - Individual / team overload
  - Communication across teams
Each team records its own viewpoint separately
Different Working Practices
Saving Costs With Better Understanding

Know existing costs, practices and resources

- Baseline infrastructure capacity (space, power, connectivity)
- Manage demand and forward planning
- Streamline working practices
- Identify and control external costs – maintenance, contractors, etc.

Reduce costs for change implementation

- Optimise use of equipment
- Better usage of lightly used equipment – servers, switches
- Reduce engineers time and effort to assess, plan, coordinate and deliver projects
- Avoid disruption to services by reducing reliance on key individuals knowledge

Reduce the time and cost for management controls

- Effort required to fill in and coordinate change forms
- Producing documentation of infrastructure to suit operational / business needs
- Providing evidence of assets or controls to 3rd parties or internal teams
- Developing risk and recovery plans
Infrastructure Configuration Management

It’s common sense that you should know what is in your IT infrastructure, how it is configured, how it works.

Planning changes is easy.

Fault diagnosis is quick.

Infrastructure resources are optimized.

Information accuracy can be verified.
Industry Standards and Frameworks

Data Center & Infrastructure
• TIA606A - Cabling installation & administration
• TIA942 - Data Center Design
• ANSI/BICSI-002 - Data Center Design & Implementation

Others
• ISO20000/ITIL - Service Management
• CoBiT - Governance and Control
• ISO27001 - Security

It’s good to document – but you have to find your own approach
ITIL V3 Guidelines - The CMDB/CMS Concept

Presentation Layer
- Portal
- Change & Release View
- Asset Mgmt View
- Config Life-cycle View
- Technical Config View
- Quality Mgmt View
- Service Desk View
- Business Impact View
- Compliance View (Cobit)

Knowledge Processing Layer
- Query & Analysis
- Reporting
- Performance Mgmt
- Modelling
- Monitoring

Information Integration Layer
- Customer/User – Service – Application – Infrastructure mapping
- Service Portfolio
- Service Package
- Integrated Asset & Config
- Service Change
- Service Release
- Common Process
- Scheme
- Meta Data
- Reconciliation
- Synchronisation
- Extract, Load
- Mining

Data Integration
- Project Doc Filestore
- Definitive Media Library
- Federated CMDBs
- Discovery Asset Mgmt & Audit Tools
- Software Config Mgmt
- Platform Config Mgmt
- Enterprise Apps

Search, Browse, Store, Retrieve, Update, Publish, Subscribe, Collaborate

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Can We Put A Server Here?

Technical
- Space
- Weight
- Power
- Cooling
- Connectivity

Business
- Function
- Location
- Cost
- Capacity
- Risk
And Afterwards – Document the Change!

1. Update asset/inventory list
2. Update rack diagrams
3. Update network patching records
4. Update switch port usage and capacity
5. Update floor plan capacity view
6. Update power usage spreadsheet(s)
7. Update server recovery plans
8. Update storage / backup system documentation
9. Update systems architecture documentation
10. Update DR plan
11. Update maintenance records
12. Update change records
13. Update project documentation with the “as built” details

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What Does Infrastructure CM Look Like?

• Standard naming and conventions
  – Fixed infrastructure
  – Active components
  – Connectivity power, network, SAN

• Multiple outputs from a few sources
  – Rack and floor management
  – Capacity management space, power, connectivity
  – Visual views, rack, network, power, system
  – Inventory and asset management
  – Service and system mapping

• Reduce multiple data sets to a few trusted systems
  – Project, operations, risk, asset, audit, platforms
Implementing Configuration Management

Infrastructure complexity
- Scale and scope – local, end to end
- Understanding risk and dependencies
- Maintaining diagrams – network, power, application, space

Duplication and overlap of infrastructure data
- Multiple toolsets, spread sheets and diagrams
- Distraction - autodiscovery/CMDB/integration

How to change
- Knowing the starting point – process, data, benefits
- Reduce data sets and maintenance effort
- Change skills, work process and culture
Automation (1)

1. Don’t look back
   - Buildings & Locations
   - Fixed Infrastructure
   - Racks, cabling, power
   - Inventory
   - Connectivity
   - Presentation

2. Reduce Data Sources

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Automation (3)

3. Use Existing Toolsets More Effectively

**Lists/Inventory**
- Excel
- Database

**Diagrams**
- Visio

**Examples**
- Inventory to rack layout
- Inventory to network diagram
- Rack list to floor plan
- Power usage to floor plan
- Application list to service map
- Switch links to network diagram

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Automation (4) – Specialist Toolsets

Physical Changes
- Location and position
- Resource reservation for projects
- Physical connectivity
- Audits and manual data gathering
- Impacts and dependencies
- Adds, moves and changes

Typical Outputs
- Capacity management – space, power, connectivity
- Change impact analysis – impact, risk, auditing
- Inventory extracts
- Custom reporting
- Physical plans
- Floor and rack diagrams
- Topology diagrams
- Networks, power, storage
- System & Architecture Maps
- ITIL services, applications

Trusted sources
- Discovery systems
- Monitoring tools
- Service desk CMDB
- Spreadsheets – risk, contracts
- Recovery plans
- Project handover

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Automated Visio Diagramming
Q. When would a rack diagram be updated with the position of a new server?

Q. When would patching records be updated for it’s network connections?

Q. Who would update the various documentation sets?
Implementing Infrastructure CM

• You could define your own approach but will be limited by
  – Authority
  – Experience
  – Knowledge of good techniques and practices
  – Best communicators available
  – Existing management information – costs, process, roles

• So you should adopt a pragmatic approach
  – Look for quick wins that all understand
  – The first steps are often setting standards – so they’ll take longer
  – Create a POC that shows the benefits as soon as possible
  – Selective use of advisors, training, workshops, tasks
  – It doesn’t have to be perfect, just better!
The AssetGen Solution

- **Service Mapping**
  - “SysMap”

- **Asset & Connectivity**
  - “Connect”

- **Fixed Infrastructure**
  - (Cabling, Power, Cabinets, Rooms, Buildings)

- **Hardware Infrastructure**
  - PCs, Network, Servers, UPS, Storage, Other

- **Virtual Infrastructure**
  - PCs, Network, Servers, Storage, DBMS

- **Applications**
  - PC, server, mainframe, SOA

- **Services**
  - End user, infrastructure, supplier

- **Business Processes**
  - Departmental, Company

SQL Server platform

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