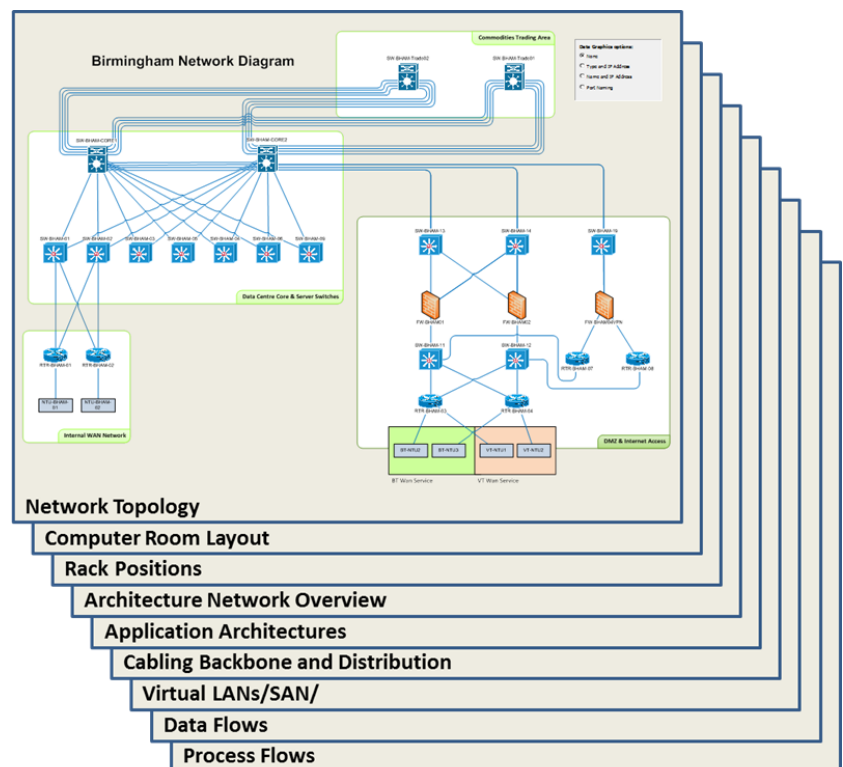# Visualising
IT Assets

An article from David Cuthbertson

It's common sense to know what IT assets you have and to manage them through their lifecycle as part of the IT environment. In practice, asset management is often separate to the planning, operations and risk management processes used every day in delivering services. This white paper looks at how the value of asset management is increased if assets and their interdependencies are able to be visualised, reducing duplication and improving accuracy of information sets.

Automating IT Asset Visualisation

We all use diagrams and schematics at some point in planning and managing IT systems. Diagrams help to visualise where assets are, how they link together and what they do. Site surveys and workshops are regularly needed to gather the data required to underpin planning, change and risk documents, often needing external resources and delaying project delivery. Maybe you spend even more and purchase an auto-discovery toolset to save time, only to find data and information are different things. Few realise that the effort and cost involved in creating and maintaining IT systems documentation could be dramatically reduced if you automatically linked details of IT assets to the schematics that show the view required.

When you stop and think about it, a rack diagram is just a visual representation of where hardware assets are physically located. A network diagram is just a visual representation of how assets are linked and the types of communications protocols involved. If you want to understand VLAN assignments then a VLAN zone diagram showing logical groupings of network and assets is useful, probably using the same assets that are in racks and on the network. In these simple examples, the data on a network switch or server is replicated across the diagrams, with further replication across asset management lists, discovery tools, monitoring systems and service desk CMDBs. So it seems like common sense to produce and update the three (and more) diagrams from the asset management list or CMDB if possible.

One set of data to maintain – three or more outputs! If there were 100 racks then why not refresh the layouts from a common list containing all assets in those racks. But there is a problem, there often isn't a single asset list, but many. There also isn't a single visual format that will meet all needs, as the overview on the right shows. If we can reduce the number of lists containing asset details then we could save man years of administrative effort and reduce project delivery timescales as well. If we also reduced the number of visual formats and standardised the symbol sets, then even more engineering and management time is saved. In practice we find that there are 1000s of spreadsheets and diagrams duplicating data, most with inconsistent naming and visual formats. It seems that it is still worth doing – even badly!
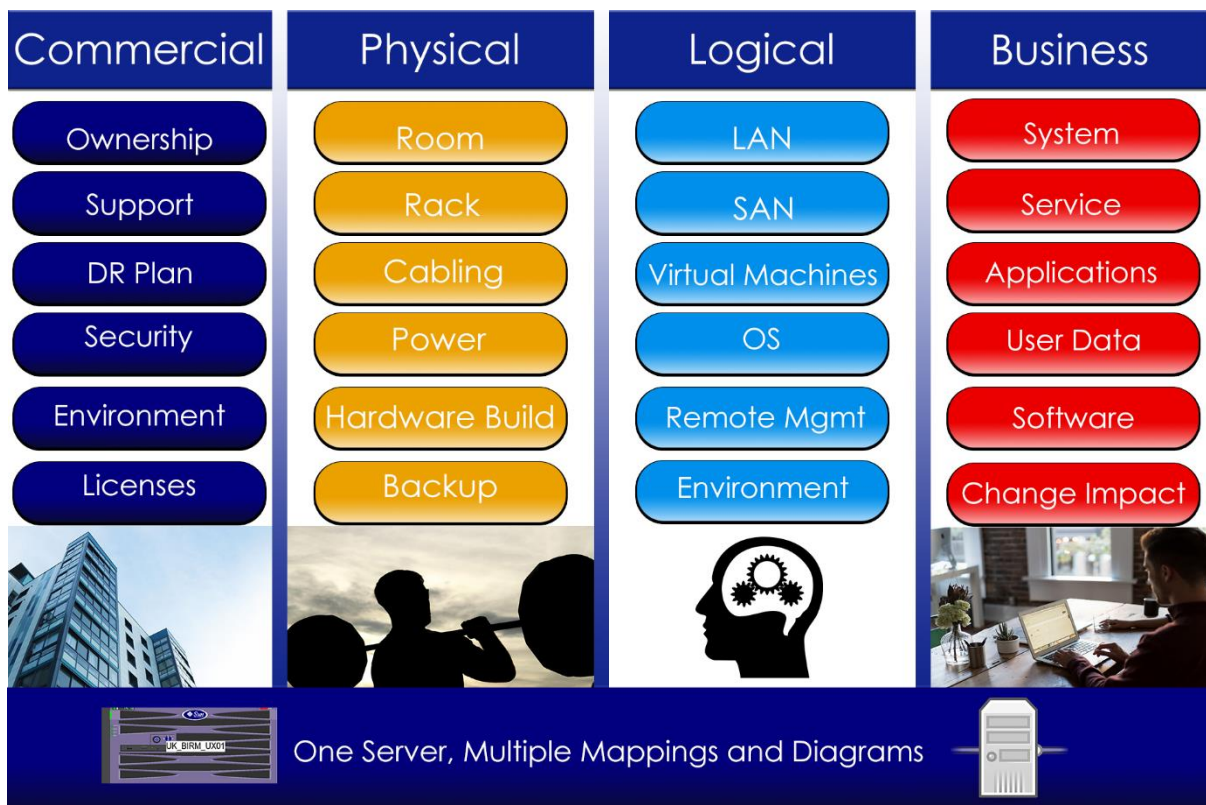

Network Topology
Computer Room Layout
Rack Positions
Architecture Network Overview
Application Architectures
Cabling Backbone and Distribution
Virtual LANs/SAN/
Data Flows
Process Flows

IT Infrastructure needs more than one diagram!

Reducing The Asset Data Overload

The term "asset" also has different meanings across IT teams, so there isn't a simple starting point. Asset management has many definitions; for simplicity, I'll summarise it as typically covering hardware and software assets that have some 3rd party commercial involvement, where details covering financial value, warranty, maintenance, licence and ownership are involved.

When you look at management frameworks such as ITIL and ISO27001 you'll also see terms defined such as "information assets" and "service assets" to help focus control and governance on components and data critical to the organisation. In data centres the physical infrastructure such as power strips, patch panels and cabling are very important in managing space and connectivity, so we may use the term "inventory" to cover all components used in the delivery of IT services. In the interests of completeness, I'll assume asset management could be any component you want to identify, manage and control for any management purpose often held in a mix of spreadsheets and databases.

Commercial	Physical	Logical	Business
Ownership	Room	LAN	System
Support	Rack	SAN	Service
DR Plan	Cabling	Virtual Machines	Applications
Security	Power	OS	User Data
Environment	Hardware Build	Remote Mgmt	Software
Licenses	Backup	Environment	Change Impact

One Server, Multiple Mappings and Diagrams

IT Infrastructure has lots of dependencies!

Dependencies between assets is a bit more complicated as there are commercial, physical, logical and business dependencies to consider when deciding on the data to be managed along with the "asset". A server can be connected to multiple logical networks (LAN/SAN/Virtual/remote management) so it always requires multiple diagrams to show how assets are connected. Simple questions such as "how secure is our user data" or "how resilient are our systems to a power outage" will require a lot of understanding of dependencies before an accurate risk assessment can be undertaken. Knowledge of assets alone is not enough for typical change impact and risk information needs as you can't map dependencies between assets without an asset list to start with.

First Steps To Visualising Assets

As you leave behind the baggage of unwanted spreadsheets with orphaned data, you then face the need to reduce the effort of creating and maintaining asset visualisations. Where possible, we want to automate both the data updating and the visualisation. It isn't a simple task so here are a few words of advice on how to progress:

Step 1

Buy a book or look online on how to use MS Visio to leverage the data linking features in the professional version. In a few minutes you can refresh a diagram from data in a spreadsheet or database. In a few more minutes you can have multiple diagrams refreshed from the same spreadsheet. Simple, quick, plus less errors manually cutting and pasting data into diagrams.

Step 2

Look at the various Visio extensions or utilities that are available online (mostly free) to speed up specific types of diagramming. At Square Mile we provide free Visio utilities to support data centre, network, application mapping, and drill down diagramming. No cost, so a bargain if you have more than a few diagrams to do.

Step 3

Invest in training for at least one person in each IT team to be a visualisation subject matter expert. They can then guide and advise on diagramming formats, symbols, methods, templates and standards so that it's easy and simple for everyone to use. Otherwise there is no consistency and time is wasted unnecessarily re-inventing formats and conventions.

Step 4

Look at consolidating asset and inventory data into as few repositories as possible, to make maintenance and data reuse simpler. It does often result in mixing "asset" data with non-asset components such as cabling, power, internal developed software, etc. to support capacity and consolidation planning. The database repository could be home grown, though the better solution would be a commercial system such as a CMDB which already has in-built reporting and audit trails, possibly even with some visualisation capability.

Step 5

Investigate the use of specialist toolsets such as our AssetGen infrastructure documentation system for database driven visualisation. If you have more than 1000 assets, multiple sites, or distributed IT design and support then automated visualisation is needed to cope with the scale of medium or large enterprises. If manually drawing 100 racks worth of assets can be reduced from 15 to 25 man days down to a 15 minute overnight batch process, the workload reduction and improvement in accuracy is easy to understand. If you have 1000 racks, 200 network diagrams and 600 host/application service maps it becomes even more beneficial to adopt automated techniques.

The first three steps to improving asset visualisation are really about improving skills and methods, while steps 4 and 5 then implement the methods on common data sources. When both methods and data come together, the result is improved control and governance across technology platforms and teams.

Conclusion

How much confidence in a supplier of IT services would you have if they didn't maintain their own systems documentation? Would you believe the bills? The reasons for outages? The delays in responding to simple governance questions asked by your own management? I find it worrying that planned changes still result in the majority of service disruption experienced by users. The ITIL framework has been around for 20 years and there are still many organisations who haven't managed to map which servers are involved in delivering which business processes. No wonder many users and incident managers get the Monday morning blues after weekend updates. More recently we see that cyber-attacks keep revealing the internal challenges of managing change, risk and communication about the IT systems vulnerabilities. Getting the basics right such as knowing what you have, where it is and what it does is reliant on managing knowledge of assets and understanding their dependencies. One day it may become common sense to understand your own systems….

The Author

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