

VISIO DIAGRAMMING ON A LARGE SCALE

SQUARE MILE SYSTEMS



Visio Diagramming On A Large Scale

Microsoft Visio is widely used for schematics such as floor plans, networks, data centres, cloud systems, architectures, etc. But many don't know it's full capabilities and potential for diagramming on a large scale.

- Most users of Visio create single page diagrams for specific project needs
- Some have to create lots of the same diagram type for each rack, network, application, service, etc.
- Few users have ever had training, created their own standard stencils or explored the automation features. In our June 22 online webinar we found that 95% of our audience were self taught and only used manual methods.

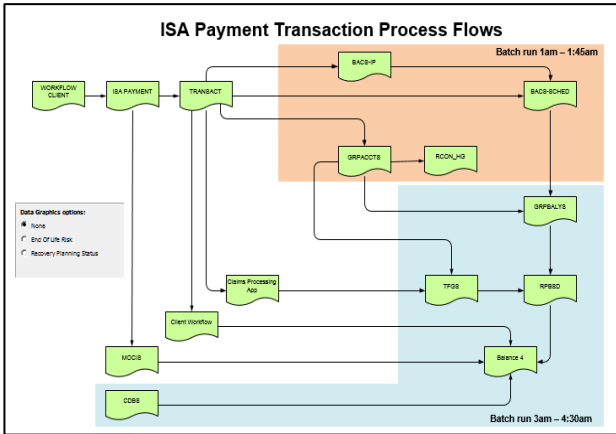
This whitepaper covers how to create and regularly update large amounts of Visio diagrams for project and operational use, reducing effort, improving consistency of information and minimising file size.

Microsoft's Visio platform is very effective for creating and maintaining IT schematics as individual diagrams. At Square Mile Systems we take the next step using our AssetGen database system to automate Visio diagramming. We create and update large numbers of schematics, improving accuracy, consistency and trust in the content. You keep all the advantages of Visio with extensive symbol availability, feature set and MS office integration, but with huge reductions in effort and maintenance of IT infrastructure diagrams.

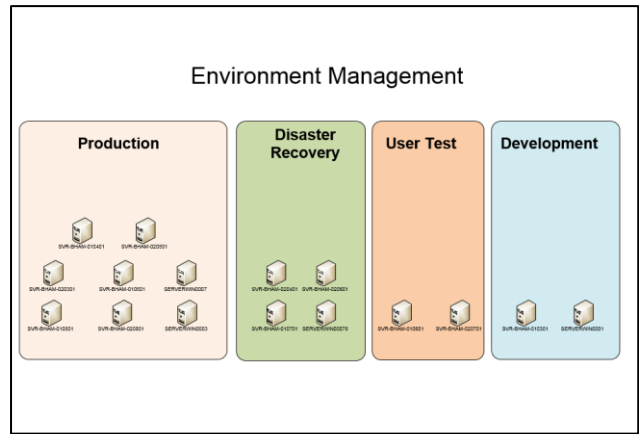


Example Visio Diagrams With Automation

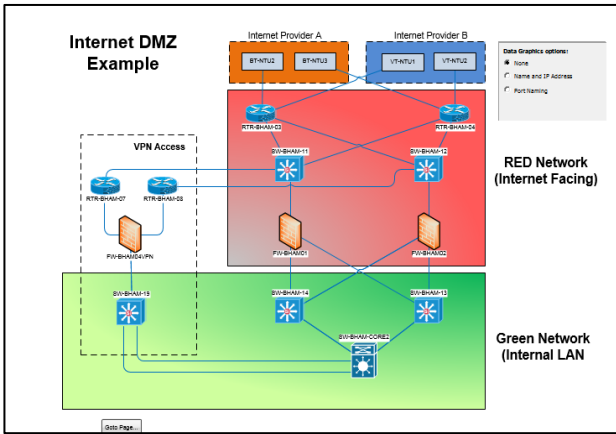
Data Flows



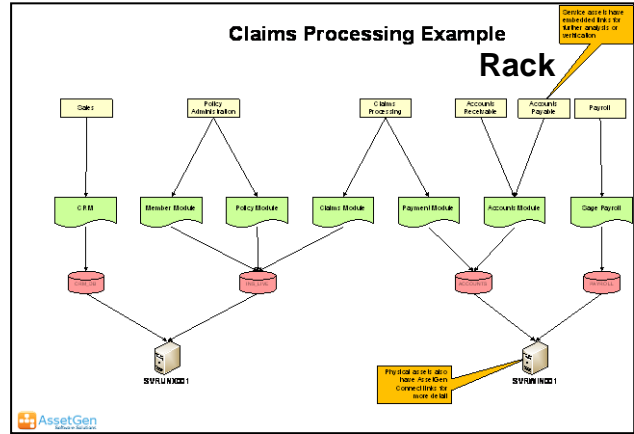
Environment



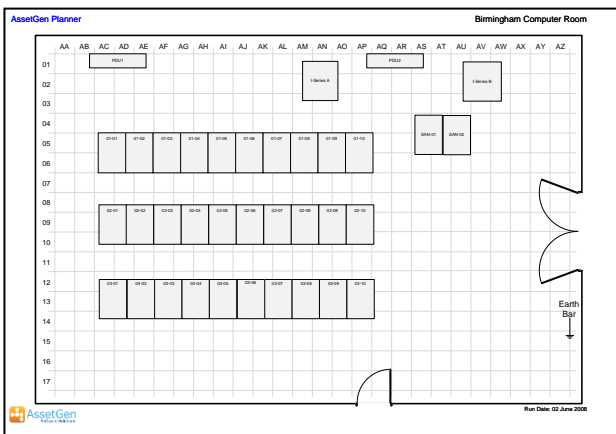
Zones



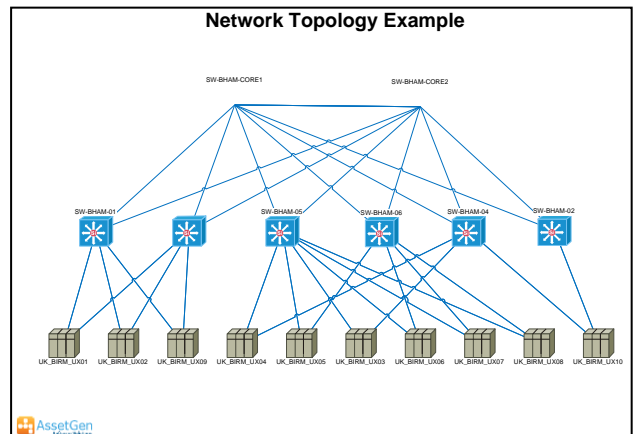
ITIL Service Map



Floor Plan



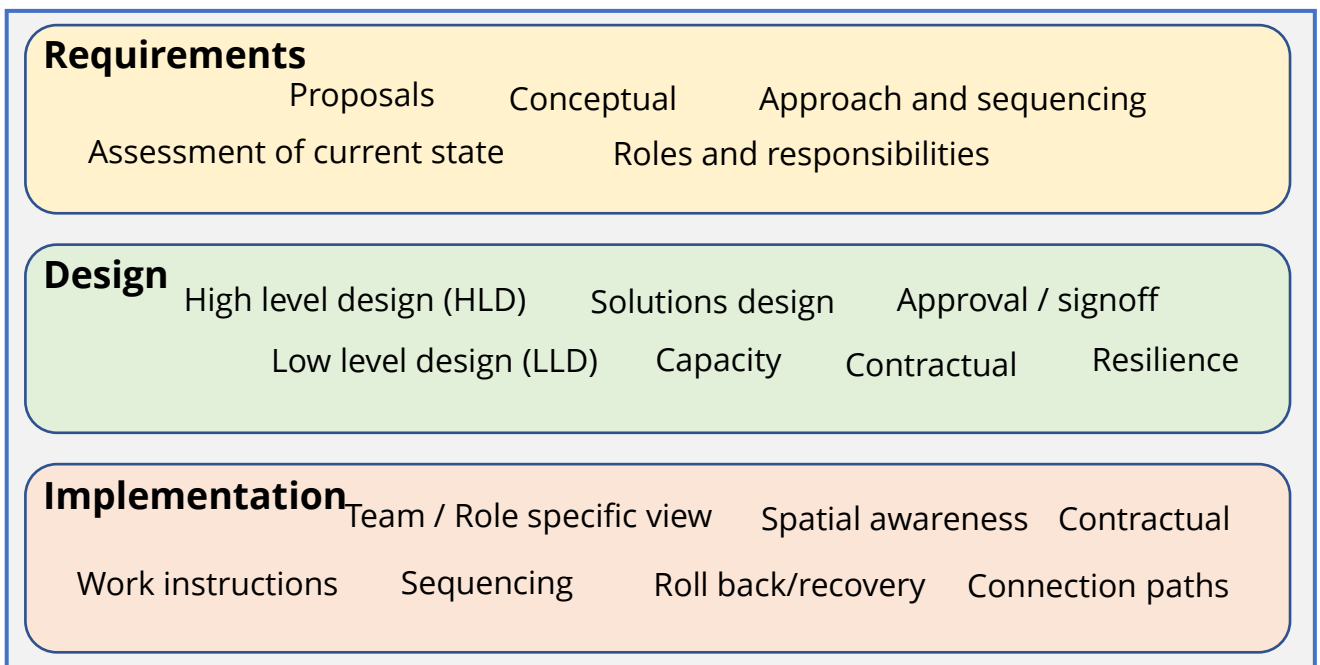
Network Topology



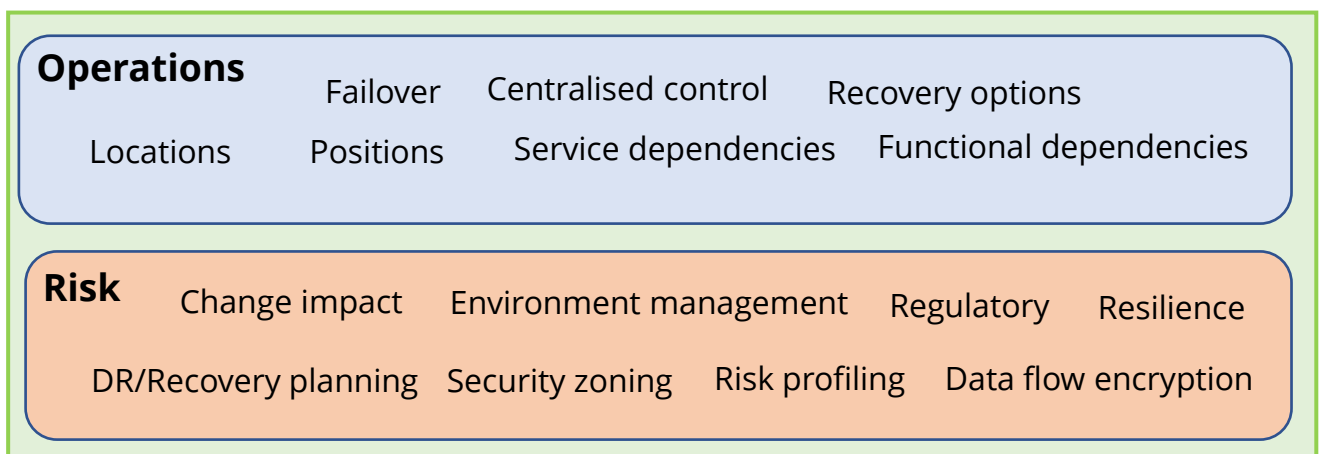
Multiple Visio Diagrams or “A Single Pane of Glass”

A single pane of glass is a common throw away phrase in the IT industry by toolset suppliers. When you look at which diagrams are used for by different teams covering the different life cycle roles, its easy to see that there will never be a single pane of glass. We create schematics to help articulate changes, options, dependencies, build and other perspectives of IT systems, network and applications. Hence the many diagram types needed for different perspectives.

Few Diagram Consumers



Many Diagram Consumers



How Many Operational Diagrams? 1 Data Center + 5 buildings, approx. 50 Racks?

As an example if we have one data centre + 5 buildings, you might expect to see the following amounts of diagrams to cover this environment.

Network	- LAN, WAN, SAN, VLAN, OOB, Firewalls, Zones	20
Rack layout	- Server, Network, Cabling	50
Floor plans	- DC/Equipment rooms, offices, outside plant	60
Modular systems	- ODFs, Blades, Switch chassis, PDUs	20
High level diagrams	- BMS, Access control, CCTV, Resilience, Routing, risk	50
Systems	- Server VMs, VPN, DMZ, Storage, ITIL service maps	30
Capacity	- Cabling, storage, network, power, CPU	20
		<u>>250?</u>

Plus – 5x project diagrams and spreadsheets with inventory, connectivity and configurations

There will also be word documents with embedded diagrams and configuration lists or tables. And quite a few spreadsheets with technical, space and business data about the same equipment. Maintaining and updating all this documentation consistently with changes in equipment, versions and formats is not simple for an environment with 50 racks.

What if there are 100s or 1000s of racks? It's just a bigger problem!
This is why we developed the AssetGen system...



Multi-Diagramming Benefits

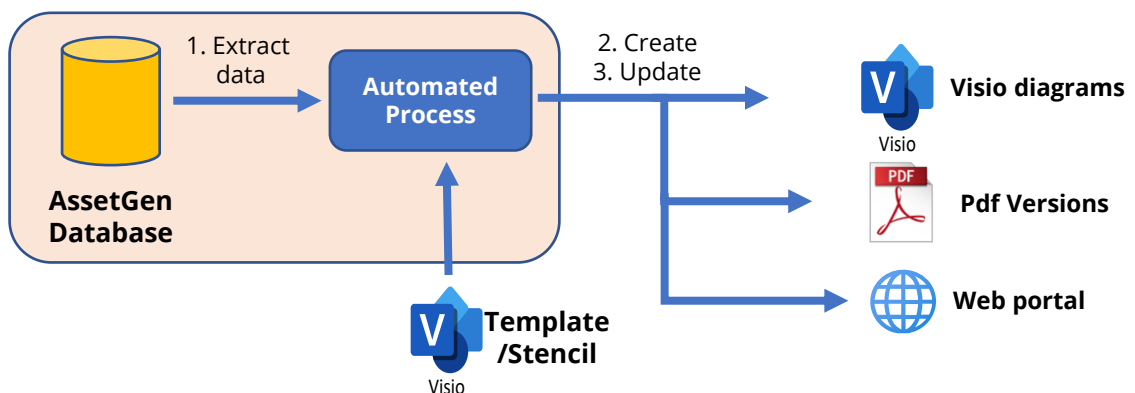
Producing and updating lots of Visio diagrams can be very time consuming if manual methods are the only option. Just as 2 people would paint a different picture using the same paint set, we would expect 2 versions of a network diagram. They would probably be different in content, layout, information shown, symbols, fonts and supporting information. Its not the fault of the people - who have different Visio skills, experience knowledge and available time. Automation helps overcome these inconsistencies as well as providing other benefits such as audit trails for control and management.

Overcoming inconsistency

If diagrams are created automatically from a database with company standard Visio template and stencil sets, then every diagram will be consistent in content and easier to layout for readability. For this reason, AssetGen refreshes laid out diagrams with changes, rather than always create new ones.

Reducing file sizes and the numbers of diagrams required

Having standard Visio templates means that the Visio shapes stencils can be optimized in size, as file size reduction is a major benefit for remote working as well as storage. Rather than embed fixed data into the shapes, AssetGen will add and maintain data as diagrams are created and refreshed. Our support for Visio data graphics reduces the number of diagrams needed as well

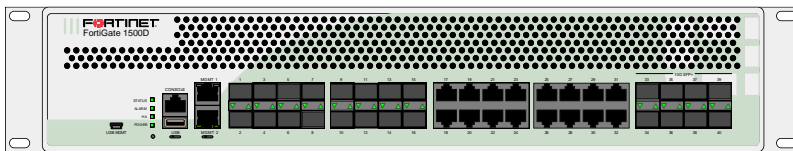


Hands off Visio automation

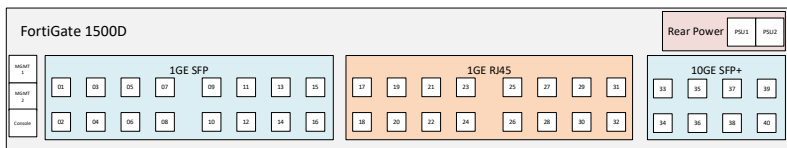
With AssetGen creating and maintaining the diagram content and embedded data, it is very simple to run an automated batch process to update diagrams as well as spreadsheets. We extend this process to publish diagrams in pdf and html format for ease of sharing and access. Originally meant for operational diagram refresh, many customers use automation for major projects. Being able to automate diagram updates at major milestones is a **huge** timesaver.

Which Visio Symbol Should You Use?

When it comes to creating a standard approach to your Visio diagrams, you need to consider the view and detail that you require. Do you want a detailed equipment overview indicating the exact port types and manufacturer name? Or do you just need to show the device name and which U position it is in for example. Once these decisions have been made our new diagrams can be consistent.



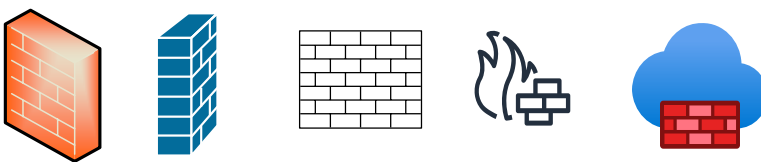
Physical View



Connection View



Minimal View



Logical Views

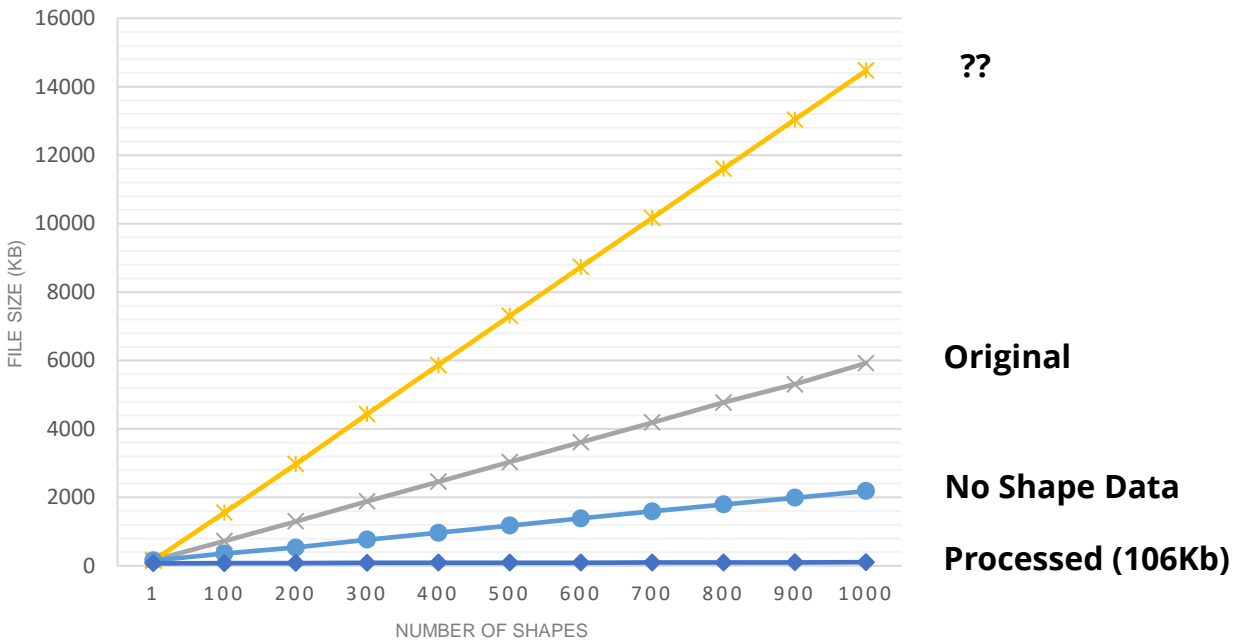
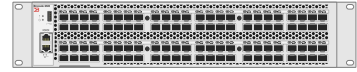
A common problem with Microsoft and manufacturers stencils are that they are typically designed for single page diagrams to aid communication. But these can come with...

- Unnecessary features that may confuse
- Unnecessary and unwanted detail
- Restrictive properties than impact shape sizing and useability
- No standardization across stencils and shapes

It is more efficient and simpler to provide users with Visio stencils where shapes have been processed into Visio stencils to make diagramming easier and quicker.

Visio File Sizes – The Impact Of Pre-Processing

BROCADE 6520 FRONT



Which line applies to your use of Visio?

The example graph shows how file sizes can be changed by processing shapes with a bit of awareness. We compare a basic shape supplied by a manufacturer and what would happen if we had up to 1000 of them on a page. The resulting file is 6Mb, though processed shapes could reduce the same diagram to 106Kb. If there is no control over Visio shapes, then the opposite could also happen and the file size could be more than double to 15Mb – 141 times larger than needed!

On a project we found that a customer with 150 racks had been complaining about slow response times on VPN links. The file was so large at 150Mb it took ages to load, send and open. It was quite straight forward to reduce this a more manageable 15Mb without reducing the image quality or embedded data. If simple rectangle shapes are used then the file size for 150 racks is reduced further to 1.2Mb.

150 Racks 2400 devices approx. 16 devices/rack

Equipment – non processed	>150Mb
Equipment – processed	15.6Mb
Basic shape (rectangle)	1.2Mb

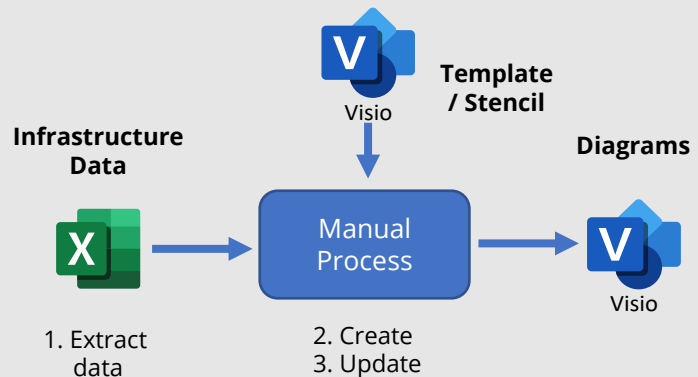
Using Data To Create and Update Diagrams

A good Visio technique is to start with data in a spreadsheet or database and use it to help build diagrams. It saves typing, cutting and pasting and enables refresh of data with changes. There are some limitations, though in most cases time will always be saved and consistency delivered. The data could be a list of inventory, connections, IP addresses, VLANs, cabinets, etc. The technique is to filter out what you need for the diagram and then use a Visio template to populate with the relevant shapes and data. For example 100 network diagrams could be manually created using Visio, or fully automated with the AssetGen system for large scale diagramming. It could be the difference between 3 days or 50 days of engineering effort. Let's explain further.

1. Manual diagramming with Visio

- Select the Visio template.
- Link Visio to a data source like Excel.
- Filter the data needed.
- Manually select the shapes and data.
- Transfer to the Visio page
- Manually layout as required

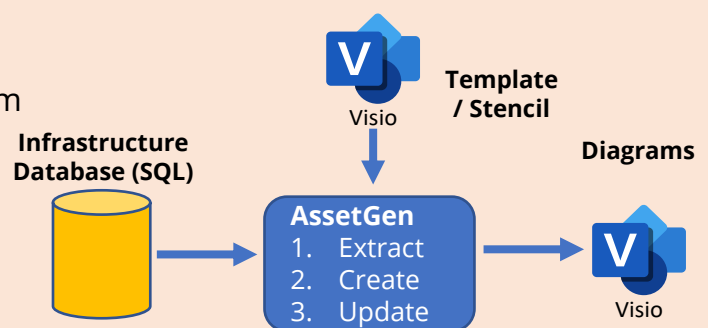
Connections between shapes will need to be made manually. Refresh of existing shapes and data is possible from the data source, but any additions or deletions have to be done manually. This will still easily save more than 50% of engineering time creating a diagram



2. Automated Visio diagramming

- Filter the data needed.
- Select the Visio template.
- AssetGen draws/refreshes the diagram
- Manually layout as required

- ✓ Connections between shapes
- ✓ Refresh of existing shapes and data
- ✓ Additions or deletions managed
- ✓ Automated overnight updating
- ✓ Web page and PDF updates
- ✓ Audit trails and archiving



How Important Is Engineering Time?

On a small scale, you might be able to get by using manual methods. However, with a larger environment with more complexity, you just cannot justify the time and cost creating diagrams. Upon creation, those diagrams are only up to date for that day. In the example below, you can see the difference in time for rack diagrams using Visio automation with AssetGen compared to manual methods. Reduce both engineering time and costs, as well as gain consistency!

Manual method - draw a single rack diagram

2 - 5 hours

- Gather rack inventory data and positioning
- Find Visio shapes for equipment
- Draw the rack with shapes

Automated method with AssetGen

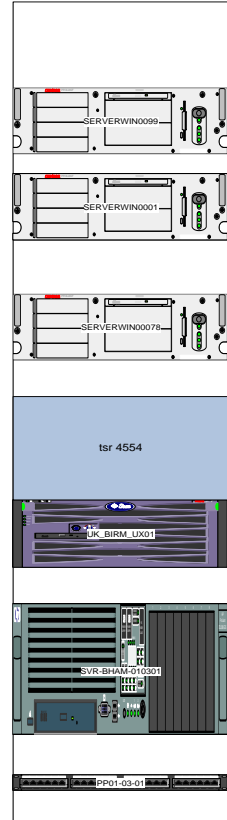
10 seconds

- Select rack and Visio template for cabinet drawing
- Visio rack diagram produced by AssetGen
- Set up batch process for automated updating

For large scale diagramming - Understand the cost (\$100 an hour)

- | | | |
|---|----------|---------|
| • 100 racks - 25 days or 16 minutes | \$20,000 | vs \$26 |
| • Monthly all rack refresh (30 mins a rack) | >\$5,000 | vs \$0 |
| • Daily 100 rack refresh | \$???? | vs \$0 |
| • Daily 1000 rack refresh | \$???? | vs \$0 |

Plus the same data is re-used for network, floor plan, system and other diagrams!



Tips For Large Scale Visio Diagramming

1. Standardise naming conventions and Visio templates/stencils.
2. Process Visio shapes to keep file sizes small.
3. Version control and archiving of operational diagrams is simplified with AssetGen automation. Manually managing 100s of diagrams is time consuming.
4. Consider use of web publishing / pdf diagrams for easy consumption
5. Break down a big diagram into smaller views, while ensuring refresh capability – service maps, networks, hardware layout (ODFs).
6. Invest in skills uplift – books, training, consulting support

Next steps

Large scale Visio diagramming as covered in this paper provides immediate benefits. As project, operational and risk management teams have limited time available, these methods reduce workload effort and improve understanding.

There are immediate tactical benefits for project teams and the work involved in gathering data, understanding dependencies and creating project documents. Square Mile can provide the AssetGen system, Visio skills transfer and project support to deliver Visio automation with minimal impact on existing teams.

At a more strategic level, infrastructure documentation availability and consistency is improved to support operational and risk management functions. If you already have the information to deliver impact awareness and risk mitigation, it is much easier to react to a cyber attack or a key supplier meltdown. The larger the environment the more the benefit of automating large scale Visio diagramming.

Take advantage of our free resources – videos, webinars, whitepapers and online website content to assess the automation benefits for your own environment. We'll be glad to talk with you on specific issues and options.



About Square Mile Systems

Square Mile Systems is based in the United Kingdom, developing the AssetGen system at our HQ in Poulton, Gloucestershire. The first production version of AssetGen was released in 2006 with customers across all sectors and continents then purchasing the system. While mainly focused on complex enterprise level ICT systems documentation, AssetGen is also used for marine, industrial, military and transportation applications that have adopted IT and IoT technologies.

Square Mile Systems works with various industry trade associations in the UK and North America developing best practices and standards for documenting and visualising complex ICT infrastructure.

**' We use AssetGen constantly and trust it more than our CMDB,
discovery tools and spreadsheets.
(and neither produces rack and network diagrams!) '**

For more information, please visit our websites which have more product information, webinars and contact forms.

Alternatively, call us at our HQ and we will be glad to help.
Tel: +44 (0)1285 852190



www.assetgen.com



www.squaremilesystems.com

©Square Mile Systems

All trademarks are acknowledged