

Integrating Environment Monitoring & Data Center Management

1. What are AssetGen & Sensorium iBMS?
2. Why link them together?
3. What is the difference between monitoring and management?
4. How does Sensorium present data center status and loading
5. How AssetGen support data center management and capacity
6. Examples of planning and change impact analysis
7. How the “integration” works in practice
8. Summary of results

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Why Link the Two Systems

- **Sensorium iBMS** monitoring is focused on environment and fixed infrastructure providing monitoring, alerting and usage statistics
 - Reporting and alerting is vital to give feedback on actual usage
 - Often the view is limited to facilities / data centre teams
 - The environment doesn't change as rapidly as the IT systems
- **AssetGen** focuses on the management and controls covering fixed and IT infrastructure, presenting different information sets for project and operations teams.
 - Past, current and planned states of servers, racks, power, networks
 - Device inventory, connectivity and change management
 - Visualisation (Visio) of floors, racks, networks, power, services

Different Toolset Focus – Examples

Sensorium iBMS

Environment Monitoring & Alerting

Realtime Power
Monitoring

Fault/Threshold
Alerting

Loading
History

Current
Status

Temperature &
Humidity Monitoring

CCTV, Security, Fire
Integration

Actual loading
By Power Strip

AssetGen

Data Centre Management & Control

Capacity Planning
& Reporting

Change
Management

Power Topology
View (Visio)

Rack Layout
View (Visio)

Inventory
Management

Work Order
Planning

Network Topology
View (Visio)

Audit
Trails

Billing &
Charging

Business
Impact View

Device Connectivity
(Power, LAN, SAN)

Recovery
Planning

An alert has come in –
what and who is affected?

Does the server take as
much power as expected?

A PDU is overloaded
What are my options?

What is the actual usage
vs planned usage?

We're running on UPS -
what is non-critical?

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 **AssetGen**
Software Solutions

Sensorium iBMS In More Detail

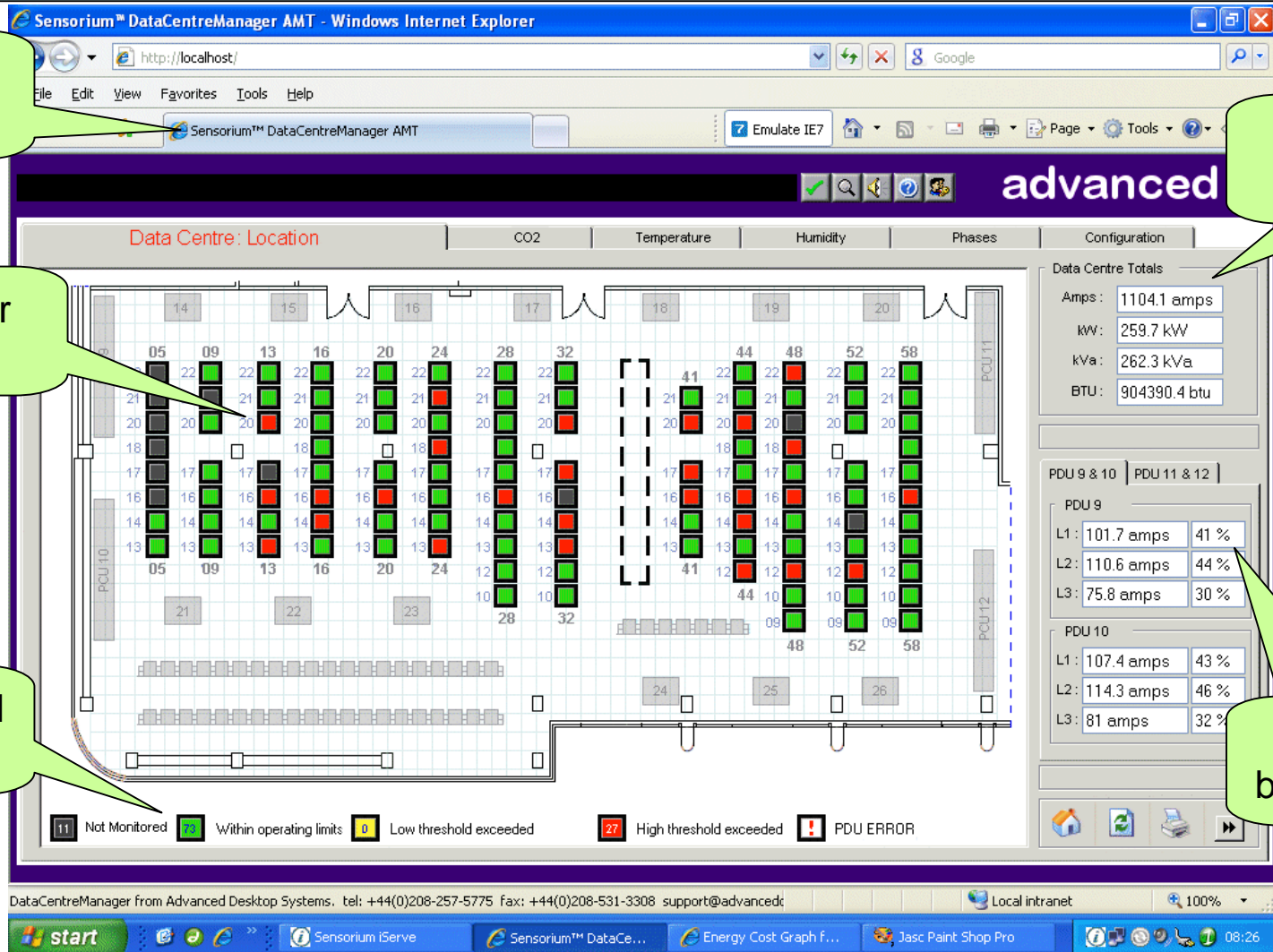
Web Browser View

Data Centre total usage

Rack power status

Rack threshold status

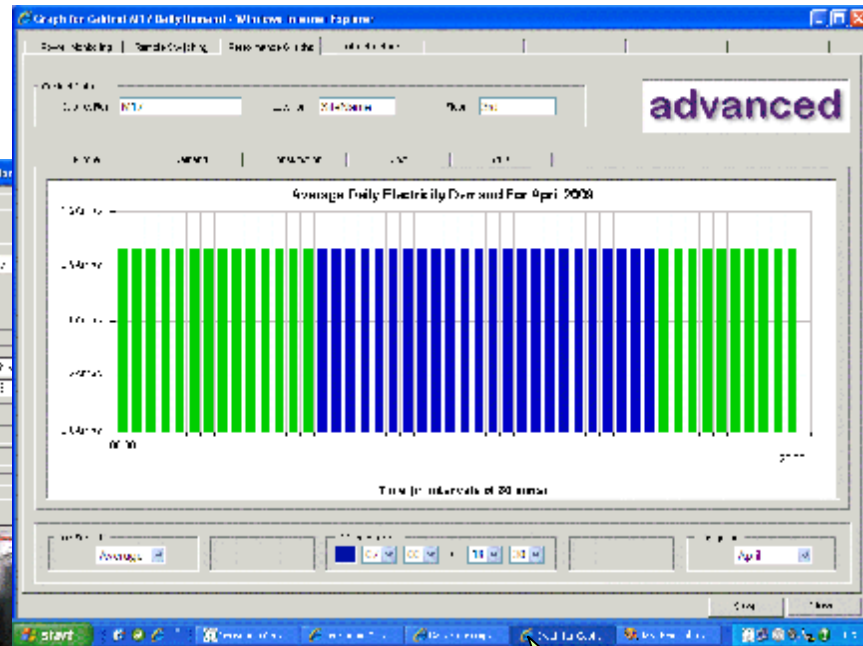
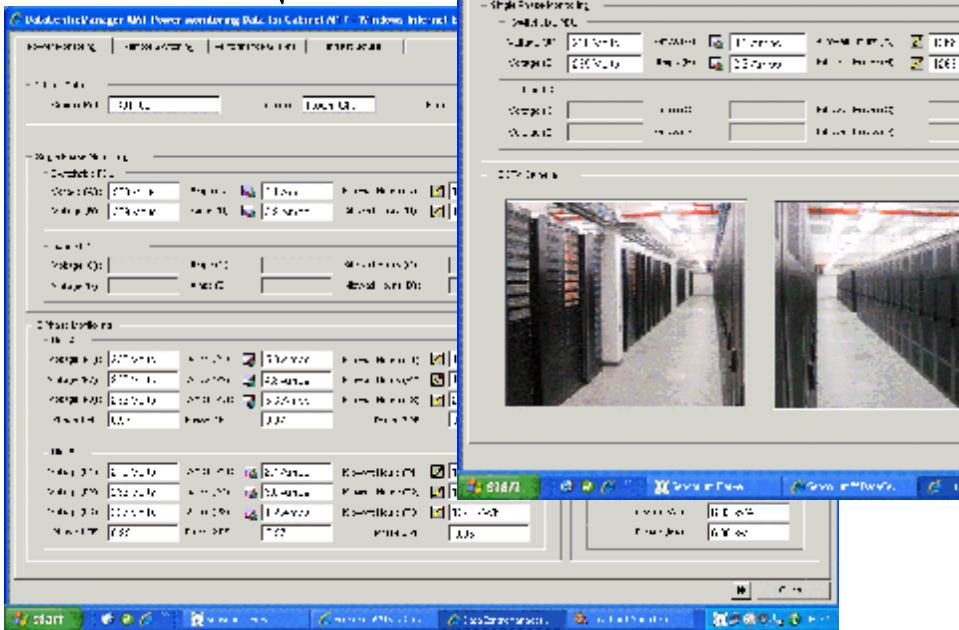
Power totals by PDU, phase



Example Power, Alerts, Usage History etc.

Link to CCTV
and alerts

Actual power,
volts, amps



Usage reports by
day, week, etc.

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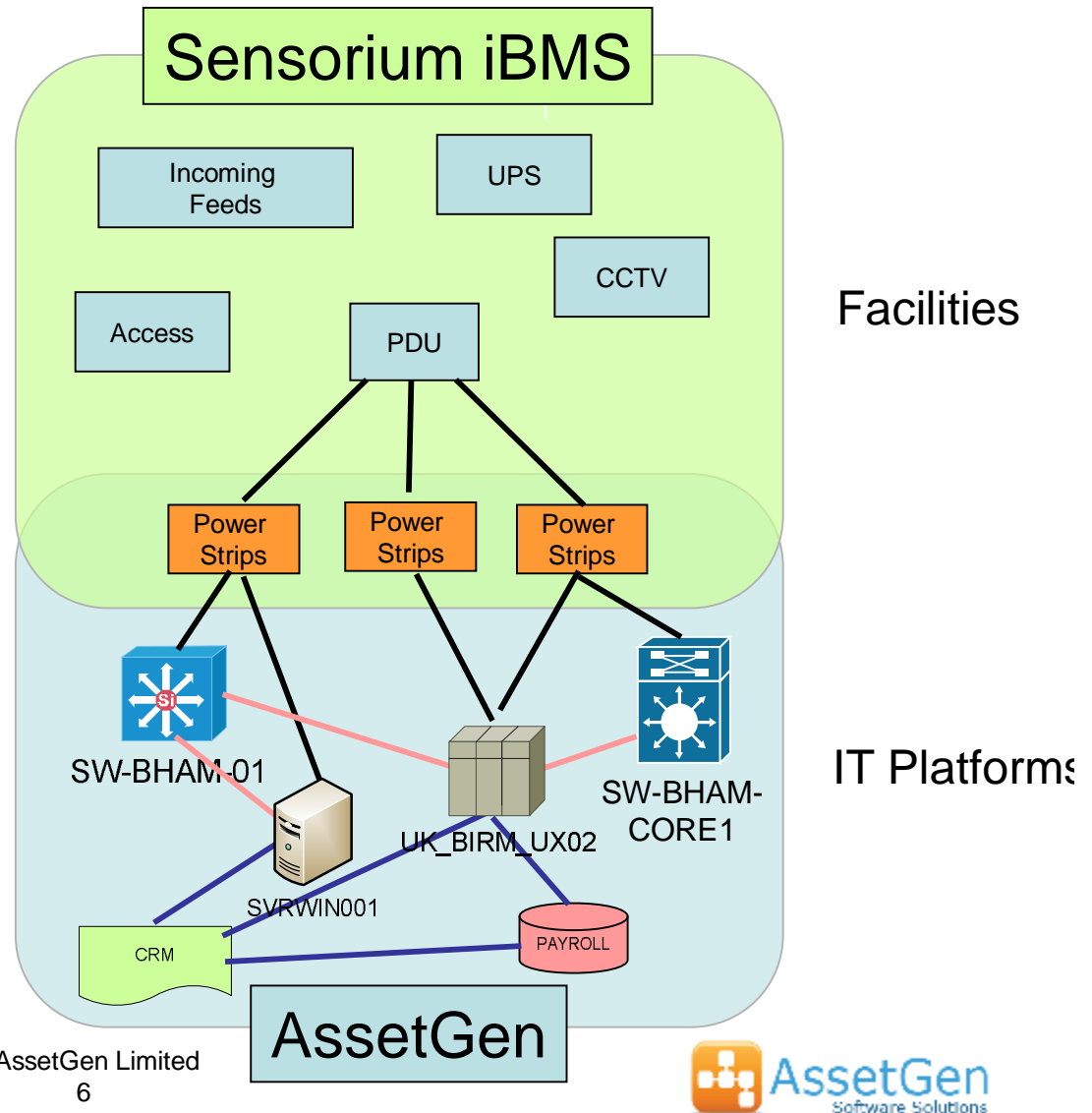
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Sensorium iBMS Summary

Sensorium Benefits

- Real time monitoring
- Customised for each facility
- Easy to use
- Alerting against thresholds
- History of actual usage
- Links to different types of power, temperature, humidity inputs
- Can give usage by power port

AssetGen provides the IT device information to help interpret results, identify risks and plan power usage (plus a few other things)



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AssetGen in More Detail

1. Capacity reports space, port usage

2. Find racks with space, power, etc.

3. Visio floor & rack plans

The screenshot displays several windows from the AssetGen software. At the top right is the 'Equipment - Port Usage Report' window, which contains a table with columns for 'Cabinet', 'Load', 'Reserved', 'Fault', and 'Spares'. Below it is the 'AssetGen Planner' window, showing a 'Cabinet Search' interface with a table of search results. On the left is a 'Microsoft Visio' window showing a floor plan with colored rectangles representing server racks. On the right is a 'Planned install of server' window showing a vertical rack with a server icon. At the bottom right is a 'Usage and status of ports' window showing a detailed view of a cabinet's port usage.

Cabinet	Load	Reserved	Fault	Spares
01-01	50	80	50	80
01-02	24	06	2	7
01-03	28	178	1	1
01-04	18	04		
01-05				17

Location	Cabinet	Height	Space	Front	Rear
Computer Rooms	01-01	48	0		

Cabinet	Load	Reserved	Fault	Spares
02-01	50	80	50	80
02-02	18	06		6
02-03	28	178		16
02-04	12	02		
02-05	50	80	50	80
02-06	7	8		27

6. Usage and status of ports

5. Planned install of server

4. Coloured by role, owner etc.

AssetGen in More Detail (2)

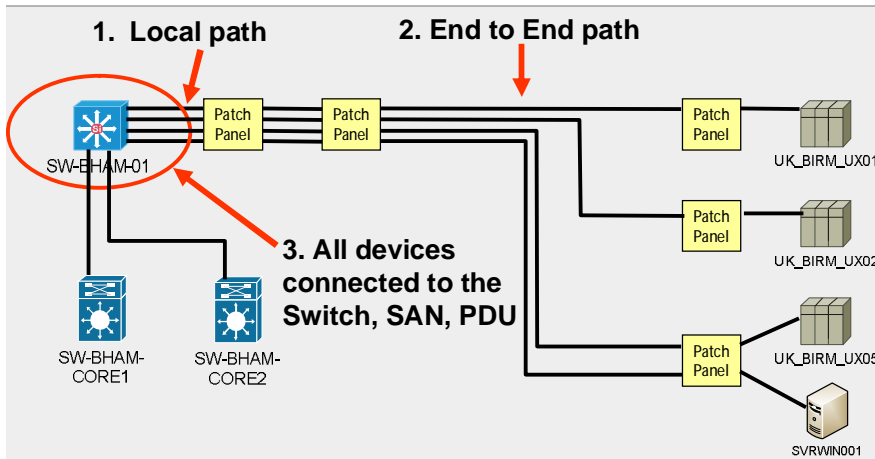
Risk & Impact Control

- Impact of hardware changes
- Identify single points of failure
- Service impact of hardware / software changes
- Components supporting critical systems
- Recovery and continuity plans

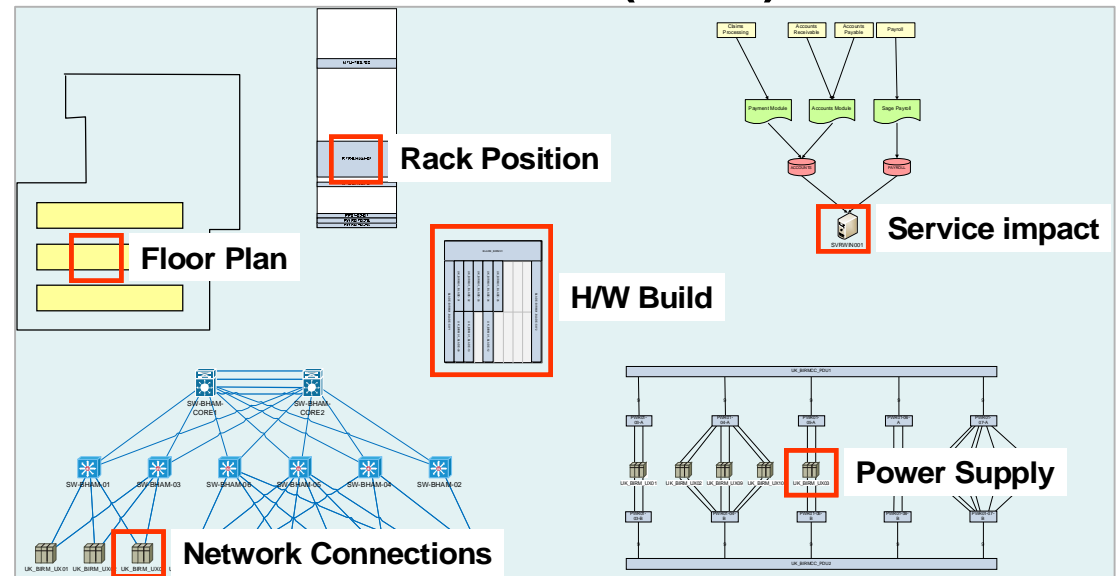
Capacity & Work Flow

- Rack space
- Power utilisation
- Network ports (SAN, patch also)
- Hardware fill
- Planned work & build orders

Connectivity & Path Management

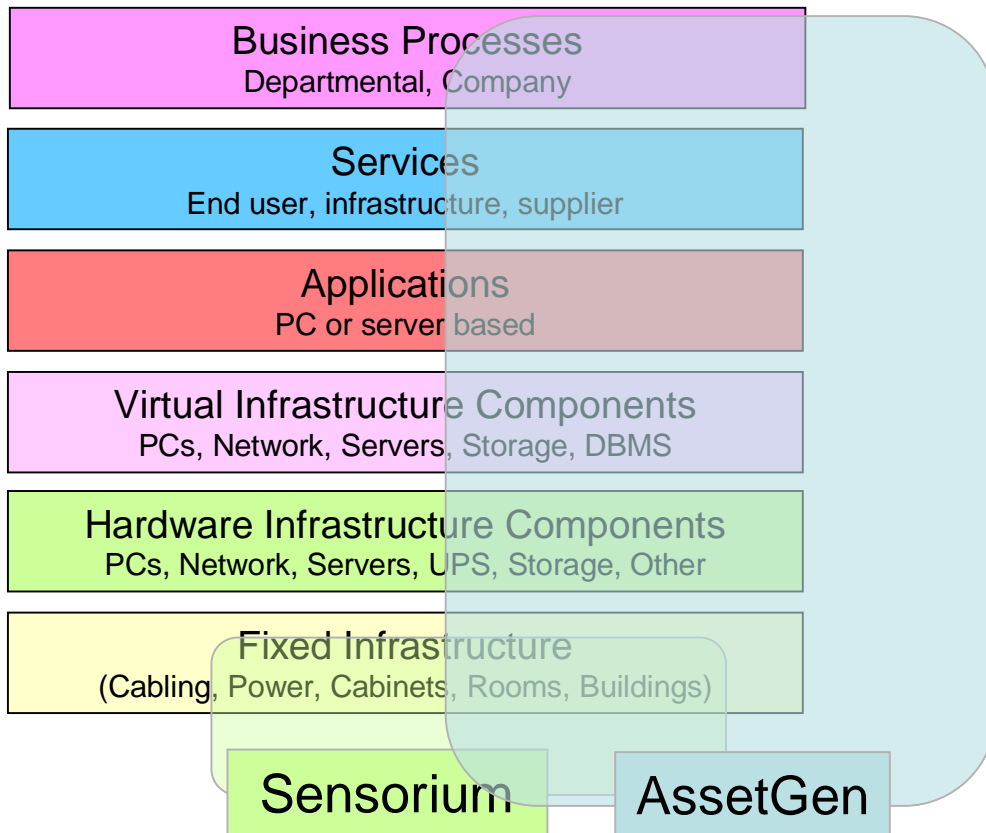


Visualisation (Visio)



AssetGen Example 1 – Adding a Server

Installing a server and connecting it to infrastructure resources in AssetGen takes 2-3 minutes in total – compare this to existing methods with Excel, Visio etc.



Adding a server to AssetGen

- Updates the rack diagram
- Updates the rack capacity
- Updates the inventory
- Links the server to power, networks, KVM, SAN
- Updates infrastructure capacity reports
space, network, SAN
power utilisation reports
- Updates planned activities (work orders)
- Updates an audit trail

Will also update Visio diagrams

- Rack diagram
- Network, power, SAN topology
- Floor plans
- Service maps

AssetGen Example 2 – Change Impact Analysis

Mapping technical and service dependencies to critical components with AssetGen means it takes a few seconds for projects or operations staff to;

1. Identify the impact of a fault or overload indication from monitoring systems such as Sensorium iBMS, NMS or server dashboards
2. The potential impact of a server reboot or fault on software, users and services
3. The devices and services affected by a reboot of an infrastructure device such as a network switch, San controller, blade chassis
4. The hardware and services impacted by a planned (or unplanned) outage on a power PDU or circuit breaker
5. The hardware delivering the top 10 critical services (for DR, charging, etc.) and single points of failure at power, network and functional levels

Linking AssetGen and Sensorium iBMS

Both systems have many strengths, so where does integration give us additional benefits or capabilities?

- ü Reduce fault finding time by automatically linking from Sensorium cabinets or power strips to access AssetGen device, connectivity and services data
- ü Identify current usage during planning activities by automatically linking from AssetGen cabinets, power strips to get real time power, temp etc. from Sensorium
- ü Automatically link from Visio diagrams of floorplans, rack layouts and power diagrams to access real time data from Sensorium
- ü Import data from Sensorium into AssetGen to combine actual with planned power capacity data, avoiding over-engineering
- ü Produce power usage reports from AssetGen for billing and charging by technology, users/customers, services based on actual usage from Sensorium
- ü Correlate changes in actual power usage with changes in IT equipment installs / removals / transformation projects

Enhancing Sensorium iBMS with AssetGen data

Click on rack for AssetGen inventory and changes

The screenshot displays the Sensorium DataCentreManager AMT interface within a Windows Internet Explorer browser. The browser window title is "Sensorium™ DataCentreManager AMT - Windows Internet Explorer" and the address bar shows "http://localhost/". The interface features a navigation bar with tabs for "Data Centre: Location", "CO2", "Temperature", "Humidity", "Phases", and "Configuration". The main display area shows a data center floor plan with various racks and PDU units. A callout bubble points to a rack, indicating that clicking on a rack provides AssetGen inventory and changes. The right-hand sidebar displays "Data Centre Totals" and "PDU 9 & 10" / "PDU 11 & 12" details.

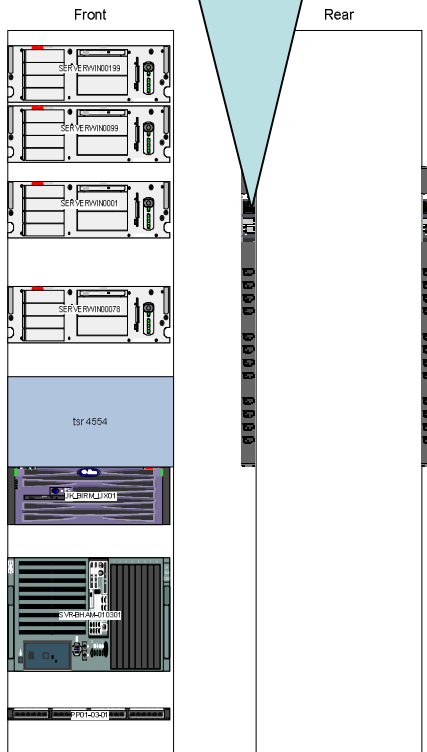
Data Centre Totals	
Amps:	1104.1 amps
kW:	259.7 kW
kVa:	262.3 kVa
BTU:	904390.4 btu

PDU 9 & 10	
PDU 9	
L1:	101.7 amps 41 %
L2:	110.6 amps 44 %
L3:	75.8 amps 30 %
PDU 10	
L1:	107.4 amps 43 %
L2:	114.3 amps 46 %
L3:	81 amps 32 %

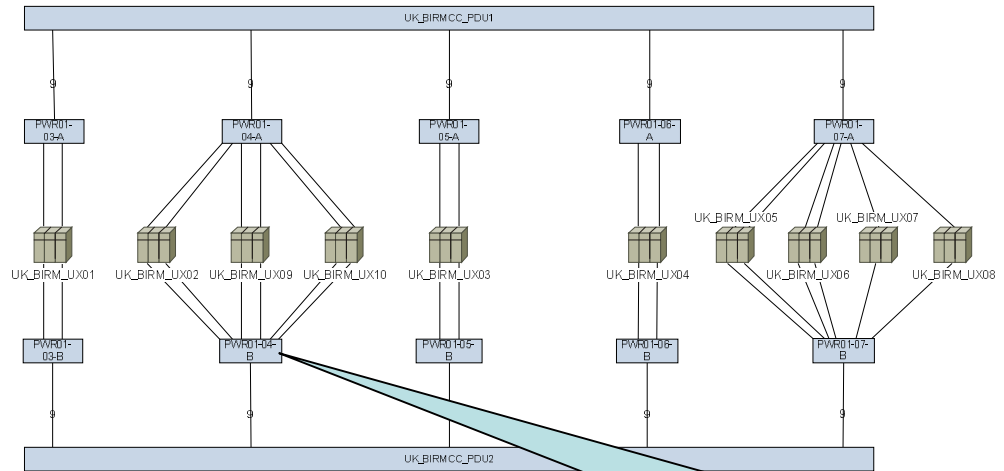
Legend: 11 Not Monitored, 22 Within operating limits, 0 Low threshold exceeded, 27 High threshold exceeded, ! PDU ERROR

Enhancing AssetGen with Sensorium iBMS data

Actual loading by power strip and port

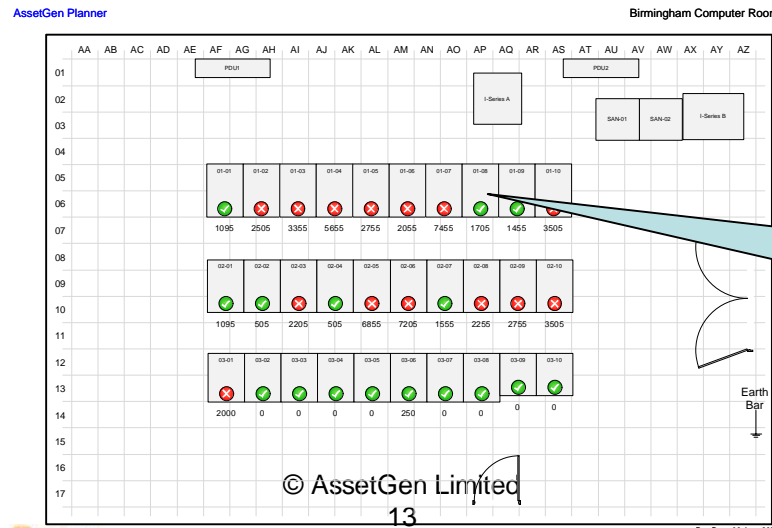


Power Topology Diagram



Confirm loading required in failover mode

Check actual rack loading against capacity allocated



Making it Happen

It took less than a day to prove the integration worked between AssetGen and Sensorium iBMS, enabling hyperlinking between systems and exchange of data.

Existing AssetGen and Sensorium installations can leverage more value from the current systems data.

Power and IT infrastructure changes can be assessed and optimised much more easily, with risks easily determined by combining actual data with planning tasks.

Warnings and alerts from the BMS system can be more quickly interpreted for incident and impact management.

Case Study Summary

Monitoring systems are designed to present current status, loading and past utilisation, so integration with AssetGen enables interpretation of complex infrastructure alerts and change impacts.

The integration techniques described here also work with monitoring, discovery and work flow systems spanning multiple technologies
eg. Power, Network, Servers, Storage, Systems, Services

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