

## GFS Crane DCIM - Asset Management

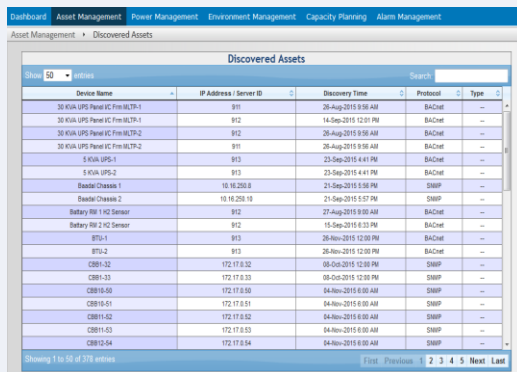
An integral feature of GFS Crane DCIM is comprehensive Asset Lifecycle Management that covers both Facilities & IT infrastructure of the Data Center:

1. Discovery of SNMP-enabled & BMS-connected assets
2. Creating Asset Inventory using built-in GFS Manufacturer Repository (OEM Library)
3. Asset Relationship mapping
4. Visualization with 2D & 3D Layouts
5. Mobile UI Support
6. Preventive Maintenance Schedules
7. Critical Device Uptime & SLA Reports
8. Workflow-based Move-Add-Change operations
9. Asset-related widgets on Dashboard

### 1. Discovery of IT and Facility Assets:

**IT Assets:** DCIM supports Asset discovery over SNMP. A range of IP addresses of IT assets are provided and DCIM discovers all assets within this IP range. The user-friendly Interface is easy to use and enables users to quickly add new assets within the data center environment.

Discovery of Facility Assets over various protocols (SNMP, BACnet ID Objects):



Device Name	IP Address / Server ID	Discovery Time	Protocol	Type
30 KVA UPS Panel IC Pm18C7P-1	911	26-Aug-2015 9:58 AM	BACnet	--
30 KVA UPS Panel IC Pm18C7P-1	912	16-Sep-2015 12:01 PM	BACnet	--
30 KVA UPS Panel IC Pm18C7P-2	912	26-Aug-2015 9:58 AM	BACnet	--
30 KVA UPS Panel IC Pm18C7P-2	911	26-Aug-2015 9:58 AM	BACnet	--
5 KVA UPS-1	913	23-Sep-2015 4:41 PM	BACnet	--
5 KVA UPS-2	913	23-Sep-2015 4:41 PM	BACnet	--
Basler Chassis 1	10.16.200.8	21-Sep-2015 5:58 PM	SNMP	--
Basler Chassis 2	10.16.200.9	21-Sep-2015 5:57 PM	SNMP	--
Battery RR 1 IC Sensor	912	17-Aug-2015 9:06 AM	BACnet	--
Battery RR 2 IC Sensor	912	15-Sep-2015 6:53 PM	BACnet	--
8750-1	913	26-Nov-2015 12:00 PM	BACnet	--
8750-2	913	26-Nov-2015 12:00 PM	BACnet	--
CB81-32	172.17.1.32	08-Oct-2015 12:00 PM	SNMP	--
CB81-53	172.17.1.33	08-Oct-2015 12:00 PM	SNMP	--
CB81-50	172.17.1.50	04-Nov-2015 6:00 AM	SNMP	--
CB81-51	172.17.1.51	04-Nov-2015 6:00 AM	SNMP	--
CB81-52	172.17.1.52	04-Nov-2015 6:00 AM	SNMP	--
CB81-53	172.17.1.53	04-Nov-2015 6:00 AM	SNMP	--
CB81-54	172.17.1.54	04-Nov-2015 6:00 AM	SNMP	--

Figure 1: Discovery of SNMP-based assets within a specified IP address range

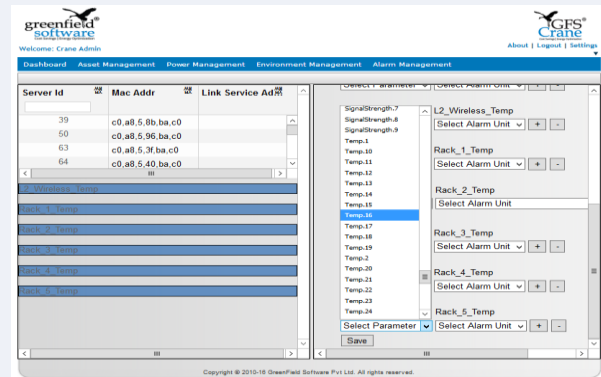
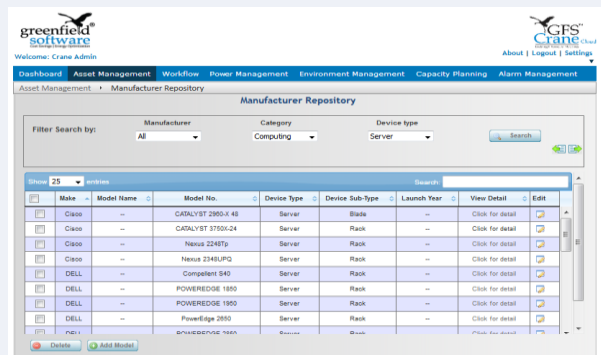


Figure 2: GFS Crane DCIM BACnet Configuration Cockpit UI allows users to Add and track Facility devices monitored by existing BMS Systems or other Plant Manager tools.

### 2. Creating Asset Inventory using built-in GFS Manufacturer Repository (OEM Library):

The Asset management module is integrated with an OEM Library that includes a list of Static Parameters of facility and IT assets of different makes and models. Post asset discovery, the OEM Library enables quick automated way of building a centralized asset inventory as it includes

- device data like max & idle power, weight, U-space, single/dual power supply, number of network ports
- front & rear device image



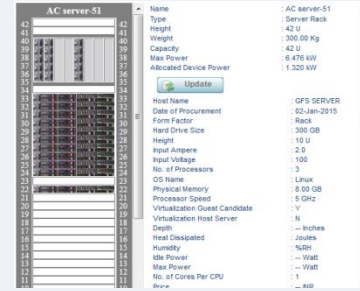
Make	Model Name	Model No.	Device Type	Device Sub-Type	Launch Year	View Detail	Edit
Cisco	--	CATALYST 2800-X 48	Server	Blade	--	Click for detail	
Cisco	--	CATALYST 3750X-24	Server	Rack	--	Click for detail	
Cisco	--	Nexus 2248T9	Server	Rack	--	Click for detail	
Cisco	--	Nexus 2248UPQ	Server	Rack	--	Click for detail	
DELL	--	Compaq 940	Server	Rack	--	Click for detail	
DELL	--	POWEREDGE 1800	Server	Rack	--	Click for detail	
DELL	--	POWEREDGE 1900	Server	Rack	--	Click for detail	
DELL	--	PowerEdge 2800	Server	Rack	--	Click for detail	

Figure 3: OEM Library - GFS Manufacturer Repository.

### Key Benefits of Manufacturer Repository (MR):

1. Populating Asset database from MR minimizes manual entry
2. Enables quick addition of device (with image) on rack and floor
3. Enables simulation for capacity forecasting
4. MR data helps to identify best-fit rack

Asset Management tool offers a clear visibility into Asset inventory, physical location, ownership and age. DCIM further maintains updated information on count, physical location and health of all physical assets. Provides asset lifecycle management by capturing procurement information, age and preventive maintenance schedules.



### 3. Asset relationship mapping

With a view of upstream and downstream connected devices, the ARM chart provides clear visualization for impact analysis.

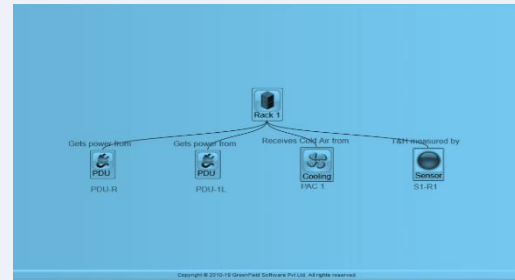
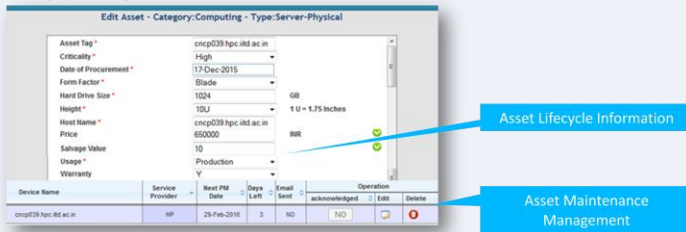


Figure 7: ARM Chart coupled with preventive maintenance schedules module helps DC managers make backup plans for planned downtime of devices for upcoming maintenance without affecting DC uptime.

Asset Lifecycle Management



Depreciation Policy

Device Type	Depreciation Type	Depreciation Rate (%)	Salvage Value (%)	Replacement Period (Year)
Server	STRAIGHT LINE	30.0	10.0	3.0

Figure 4: Asset Creation to Decommissioning

### Rack & Floor Elevation with Space Management:

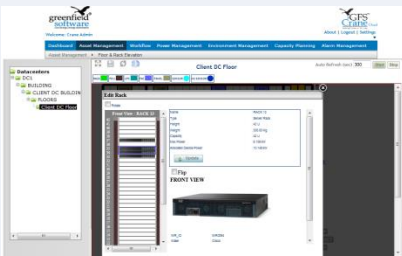


Figure 5: Rack elevation visualizing u-space occupancy, with list of devices populating the rack.

Figure 6: Manufacturer Repository provides OEM specs for integrated list of devices

### 4. Visualization with 2D & 3D Layouts

Floor space visualization helps the user to remotely identify assets within the Datacenter space.

#### 2D Visualization (figure 8):

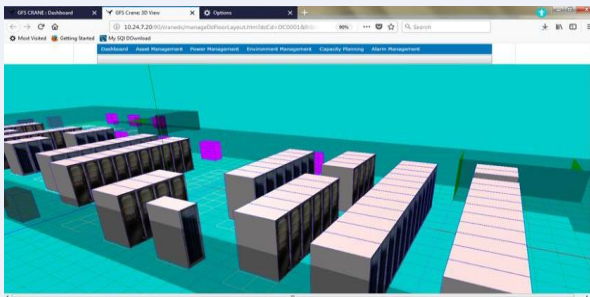


2D layout supports visual Row/ Rack Number based identification of Racks and provides Building/ Floor/customer-wise representation of the entire DC area. PAC units, UPS units and other facility devices can be

visualized, along with the Racks. Assets are color coded for quick identification along with its coordinates.

### 3D Visualization (figure 9):

3D layout also supports Row/Rack-wise identification of Assets and provides visual representation of the DC. PAC units, UPS units and other facility devices can be visualized, along with the Racks.



## 5. Mobile UI Support

Mobile support enables users to search for asset details from asset inventory, visualize 2D layout, and look at dashboard with asset management related KPIs.



Figure 10: App-Based Mobile Support

## 6. Preventive Maintenance Schedules

Preventive maintenance service scheduling for Facility and IT Infra Assets are configured through GFS Crane DCIM.

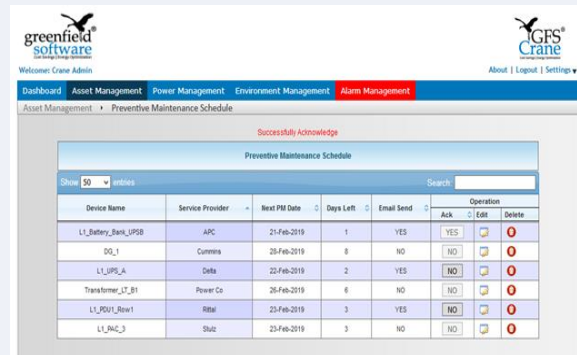


Figure 11: Preventive maintenance schedules

Auto email generation with reminders to respective service providers can be configured.

## 7. Uptime & SLA Reports:

Based on monitored data, specific critical facility devices can be monitored for uptime calculations.

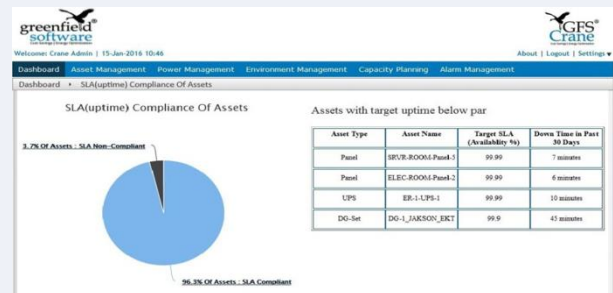
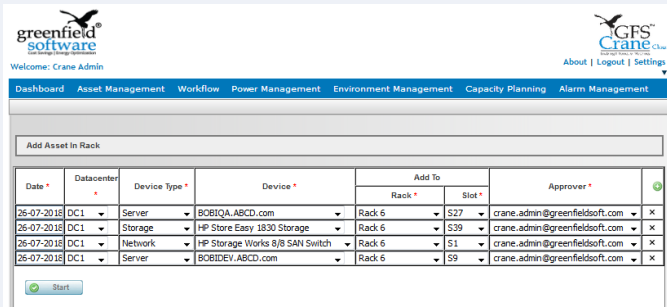


Figure 12: Time-wise breach reports can be viewed/emailed for determining SLA compliance.

Combined with device age and asset performance information (example: UPS load efficiency), the Uptime report provides valuable guidance for lifecycle management of the asset.

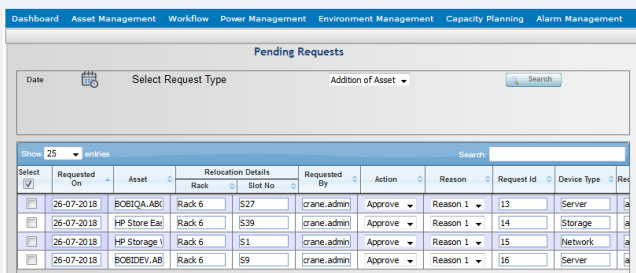
## 8. Workflow-based Move-Add-Change operations

Policy driven GFS Crane Asset management tools help enforce IT standards and practices for reliable data center Management. Workflow based change management is one of them: A request for a MAC is initiated (Figure 13 below):



Date *	Datacenter *	Device Type *	Device *	Add To		Approver *
				Rack *	Slot *	
26-07-2018	DC1	Server	BOBIQA.ABCD.com	Rack 6	S27	crane_admin@greenfieldsoft.com
26-07-2018	DC1	Storage	HP Store Easy 1830 Storage	Rack 6	S39	crane_admin@greenfieldsoft.com
26-07-2018	DC1	Network	HP Storage Works 8/8 SAN Switch	Rack 6	S1	crane_admin@greenfieldsoft.com
26-07-2018	DC1	Server	BOBIDEV.ABCD.com	Rack 6	S9	crane_admin@greenfieldsoft.com

The pending requests are submitted to the designated senior IT management for Approval.



Select	Requested On	Asset	Relocation Details	Requested By	Action	Reason	Request Id	Device Type
			Rack Slot No					
<input type="checkbox"/>	26-07-2018	BOBIQA.ABC	Rack 6 S27	crane.admin	Approve	Reason 1	13	Server
<input type="checkbox"/>	26-07-2018	HP Store East	Rack 6 S39	crane.admin	Approve	Reason 1	14	Storage
<input type="checkbox"/>	26-07-2018	HP Storage 1	Rack 6 S1	crane.admin	Approve	Reason 1	15	Network
<input type="checkbox"/>	26-07-2018	BOBIDEV.AB	Rack 6 S9	crane.admin	Approve	Reason 1	16	Server

Work orders can be created for Approved requests and emailed to the assignee for execution on the DC floor.

Audit Trail: Logs are recorded for each change carried out and records maintained for each IT asset during its entire life cycle until decommissioned. Similar workflows for 'Move Asset' or 'Decommission Asset' can be carried out based on day-to-day change management occurring within the data center.

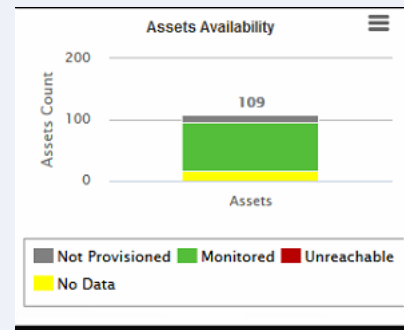
## 9. Asset-Related Dashboard Widgets:

GFS Crane DCIM offers a customizable widget-based dashboard where at a glance key KPIs can be viewed.

Asset Management KPIs would include: Rack Space Utilization, Floor Space Utilization, Asset Count and Aging Analysis (Figure 14):



Asset Availability (Figure 15):



Asset Count (Figure 16):

Category/Sub-category	Count
Storage	30
Panel	21
PDU	30
Server-Virtual	134
Sensor	16
Network	74
Other	19
Chassis	2
Cooling	4
UPS	3
Server	123

Finally, GFS Crane Asset Management provides the foundation for other DCIM functions – Device Monitoring, Power Consumption, Capacity Planning and Impact Analysis.