



Why Telecom Facility Monitoring?

Management & Operational Challenges of Telecom Sites (Towers & MSCs)

- Distributed: 1000s of sites
- Cannot afford downtime
- Expensive Capital equipment that need surveillance
- High Power & Fuel costs
- Multiple categories of assets: lifecycle management
- Location of assets: they keep changing



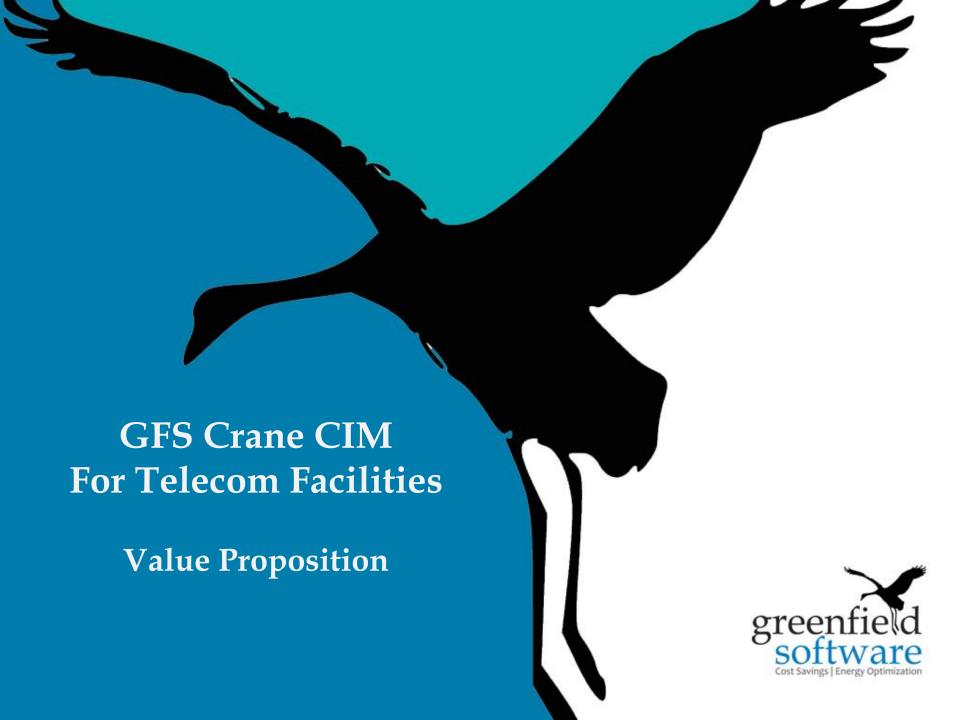




GFS Crane CIM for Telecom Facilities: Solution Highlights

☐ Industrial IoT application, designed to manage 1000s of Telecom sites from a centralized instance hosted on cloud infrastructure
☐ Provides end-to-end Monitoring and Alarm Management of components through sensors and probes
☐ Provides comprehensive Asset Tracking and Lifecycle Management
☐ Enables early fault detection and management, resulting in improved up-time
☐ Detects and prevents pilferage of fuel and electricity through DG fuel level and energy meter readings and their co-relation with DG run hours
☐ Co-relates events from the site to provide insight to fault patterns
☐ Customizable dashboards, real-time reports, alarms and analytics







Value Proposition: Executive Summary

	Value Proposition	GFS Crane Features
1	Consolidated Real Time View of	Integration with existing OSS: providing common view across multiple vendors' NMS
	ALL asset status in the shelter	Coverage of ALL asset categories beyond NMS purview (UPS, DG sets)
		Asset Relationship Map (ARM): shows chain of interdependent devices with RT status
2	Maintenance & Vendor	Linkage to Asset Relationship Map prevents overlaps of preventive maintenance dates of interdependent devices
	Management	Vendor-wise reports of asset performance, failures and MTTR
3	Monitoring & Alarm Management	Real-time status displayed on ARM besides delivery via email, SMS
4	Analytics on Failures + Dashboard providing Operational Intelligence	Analytics on failures based on monitored data and alarms
		Dashboards with KPIs: actual vs. benchmarks
UC -	H5	granfield







Value Proposition - Auto-discovery of assets

- ☐ Auto-discovery of SNMP enabled assets over the network
- ☐ Automated configuration management of discovered assets
- ☐ Detects configuration changes in assets
- ☐ Maps discovered attributes with static attributes from equipment library
- ☐ Maps asset relationships and dependencies

Enables Higher Productivity







Value Proposition - Maintenance Management

☐ Automates provisioning and maintenance operations through workflow based work order processes
☐ Records and manages Maintenance History of assets and tracks Preventiv Maintenance and inspection schedules for assets
☐ Provides Document Management for assets and tracks entire asset lifecycle from procurement to retirement
☐ Linkage to Asset Relationship Map helps avoid overlaps of preventive maintenance dates of interdependent devices

Ensures Better Coordination & Higher Uptimes







Value Proposition - Vendor Management

- ☐ Provides vendor mapping for all assets
- ☐ Manages SOPs for asset installation, commissioning and maintenance
- ☐ Automates notification to vendors on Corrective & Preventive Maintenance
- ☐ Vendor-wise reports of asset performance, failures and MTTR

Tracks Vendor Performance versus SLA







Value Proposition – Monitoring, Alarm Delivery & Analytics

☐ Integration with NMS for administrative alarms □ Real-time monitoring & alerts of assets not monitored through NMS: UPS, battery health, DG sets ☐ Real-time monitoring and alerts on shelter environment > power/energy, temperature/humidity, water leak, fire/smoke, surveillance and security ☐ Centralized Alarm Console. ☐ Alarm delivery through traps to 3rd party ITSM, **Asset Relationship Map**, and via email and SMS ☐ Individual site and circle level visibility on asset health

Preventing Failures through Monitoring & Analytics







Value Proposition – Dashboards, Reports & Analytics

- ☐ Widget based customizable dashboard on vital parameters of critical assets
- ☐ Dashboards with KPIs: actual vs. benchmarks
- ☐ Analytics:
 - Historical Analytics with trends
 - Comparative Analytics on Asset Health & Performance across sites
- ☐ Advanced Alarm Handling:
 - Real-time Alarm Dashboard
 - ❖ Alarm Delivery through email, SMS & traps
 - Workflow based Trouble Ticket Management
 - ❖ Integration with 3rd Party Ticketing System

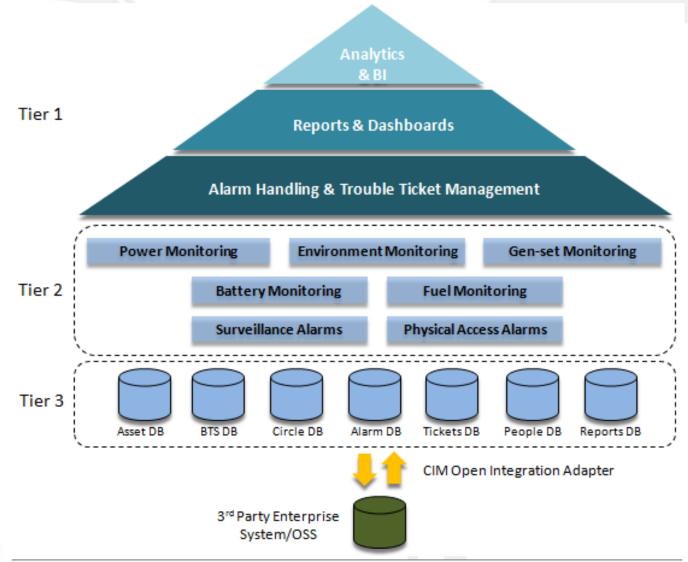
Enables Higher Operational Efficiency & Uptime







Solution Architecture







Functional Capabilities

Site Infrastructure Monitoring

Alarm Handling & Incident Management Workflow

Asset Tracking & Lifecycle Management

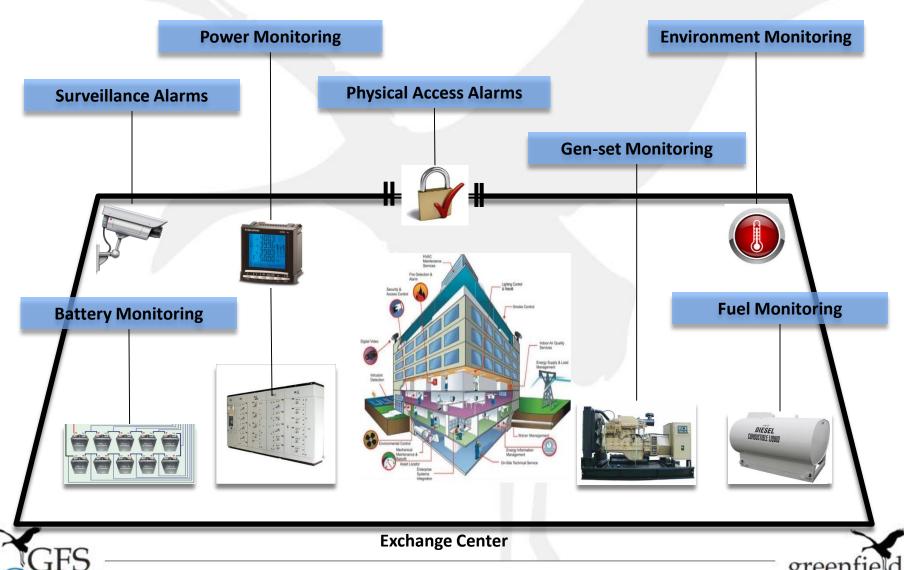
Centralized dashboards, reports & analytics







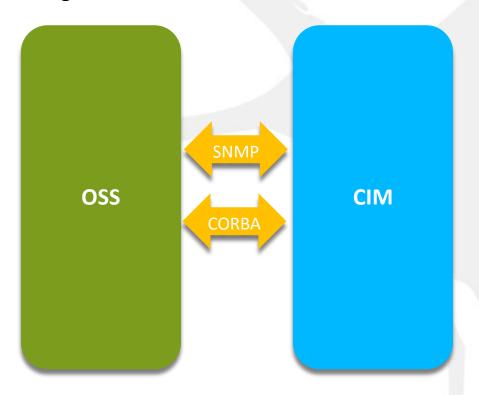
Site Infrastructure Monitoring





Site Infrastructure Monitoring: OSS Integration

Integration between OSS & CIM



Integration Prerequisites

- GFS needs to know the make & model/version of the existing OSS to determine exact interface supported for integration
- ☐ GFS requires all available manufacturer literature including integration interface specifications of existing OSS
- GFS needs direct access to OSS manufacturers' technical team to discuss integration approach







Alarm Handling & Incident Management Workflow

Alarm Handling

☐ Aggregates all physical infrastructure and security alarms from tower site infrastructure components and sends to central CIM instance at TOC	
☐ Provides correlation and normalization of alarms	
lacktriangle Provides suppression of false positives by identifying cascading impact of failure of pare node	ent
☐ Provides root Cause Analysis of issues raised as alarms and identification of root node	
☐ Analysis of historical alarms and failure trends	
☐ Web based customizable alarm dashboard with analysis and summaries	
☐ Provides trouble ticket (TT) generation from alarms	
☐ Incident Management workflow for TT assignment & reassignment, raising of WO for vendor calls, TT escalation and tracking till TT closure	,





Asset Tracking & Lifecycle Management

☐ Auto-discovery of SNMP enabled assets & physical location tracking using integrated RFID
☐ Maintains details of all devices along with attributes in single asset repository
☐ Maps all static attributes of the assets from built-in Manufacturer Repository
☐ Maps critical relationships and dependencies among assets
☐ Maps asset ownership hierarchy and escalation matrix
☐ Provides Maintenance Management of assets through alerting and work orders for preventive maintenance schedules
☐ Maintains Asset replacement / upgrade capabilities and identifies best possible upgrade path for an equipment from Manufacturer Repository
☐ Provides Lifecycle Management of assets by tracking different phases of an asset's life from procurement through retirement

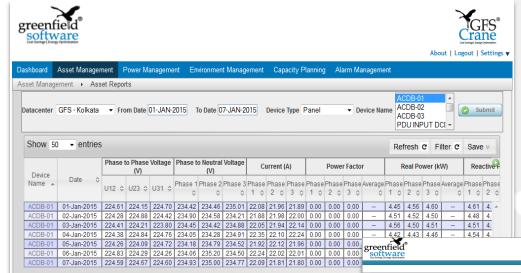






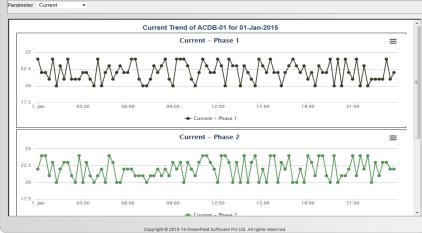
Power Monitoring Reports

Power Panel Monitoring Report



Monitoring Power Panel Parametes

- ☐ Real-time power panel parameters
- ☐ Trend Analysis and comparative analysis of monitored parameters



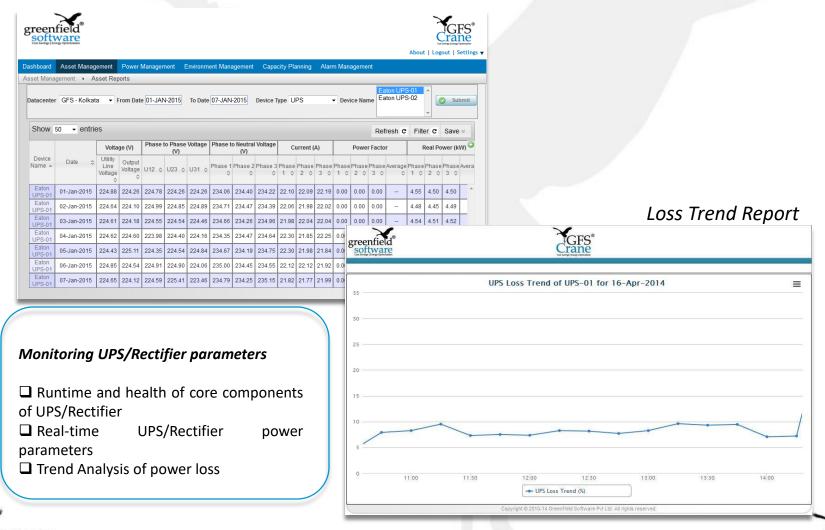


GFS[®]



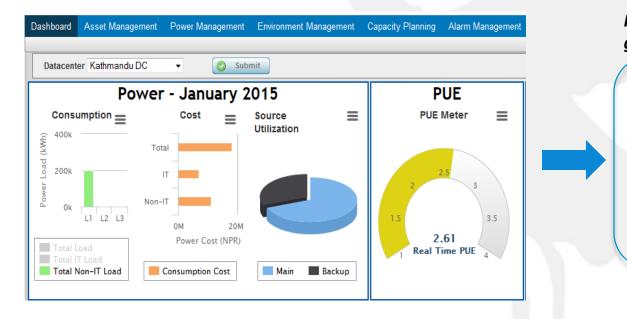
Power Monitoring Reports

UPS /Rectifier Monitoring Report





Power Monitoring Reports



Power Profile of a BTS site at a glance

Power dashboard showing important power parameters

- ☐ Total load for different levels of the infrastructure
- ☐ Power Cost
- ☐ Comparison of primary and backup power usage
- ☐ Energy Efficiency of the site

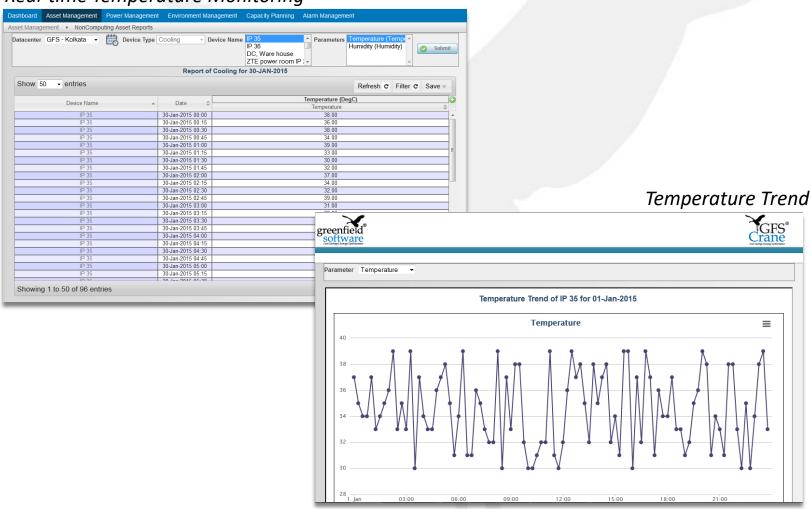






Environment Monitoring Reports

Real-time Temperature Monitoring

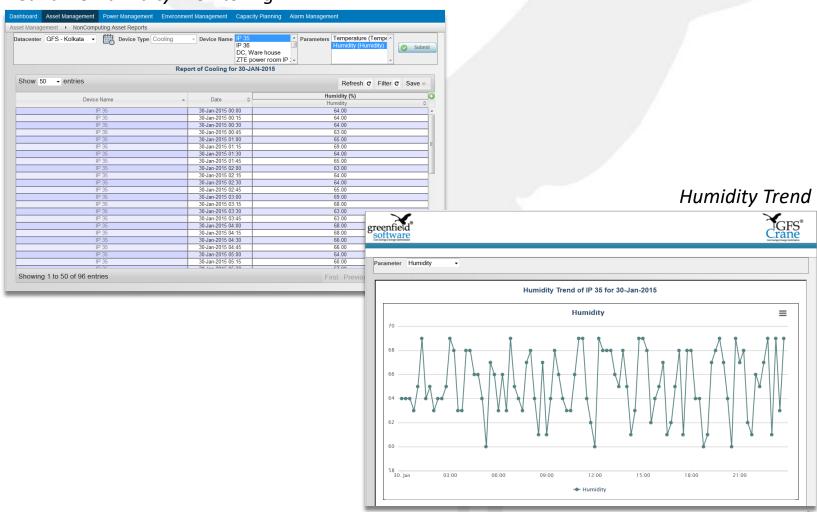






Environment Monitoring Reports

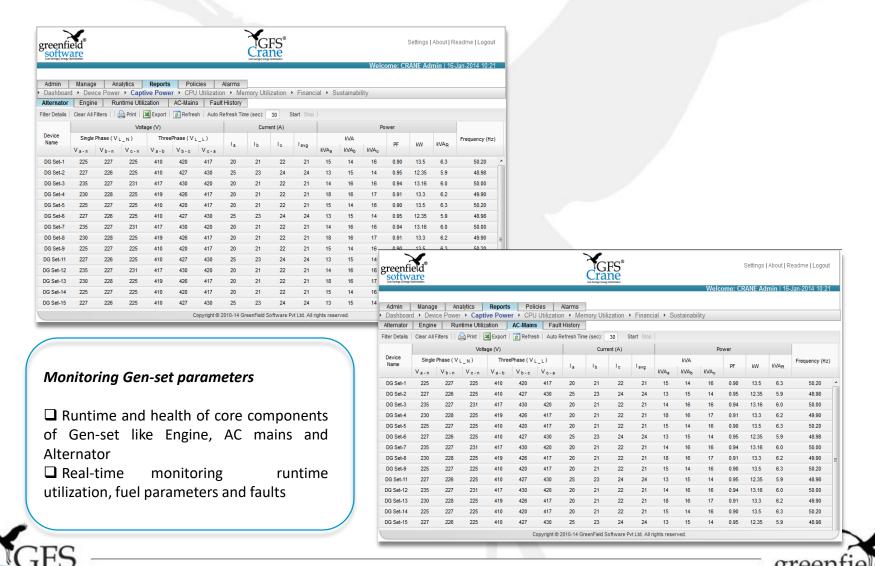
Real-time Humidity Monitoring







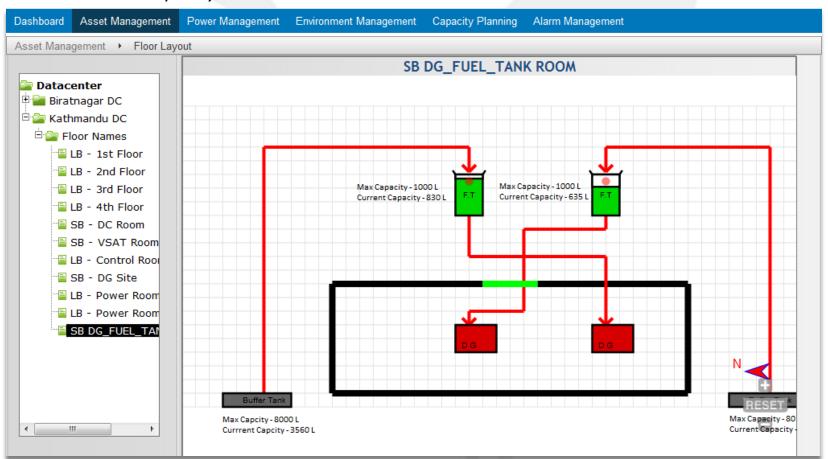
Gen-set Monitoring Reports





Fuel Monitoring & Management Reports

Real-time Fuel Capacity

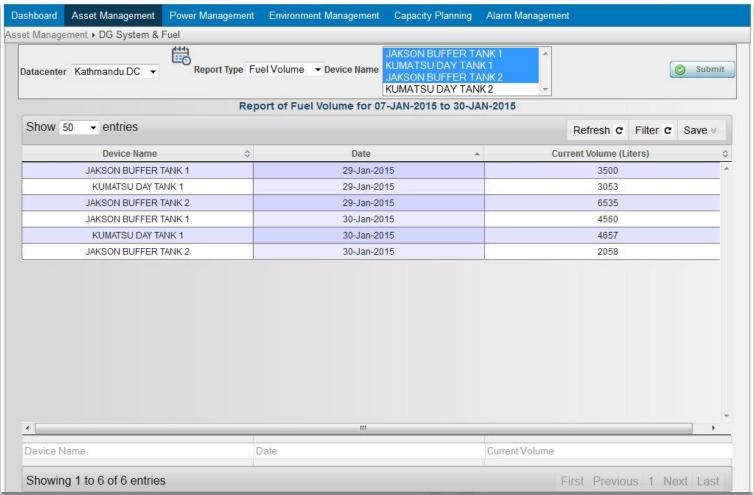






Fuel Monitoring & Management Reports

Fuel capacity

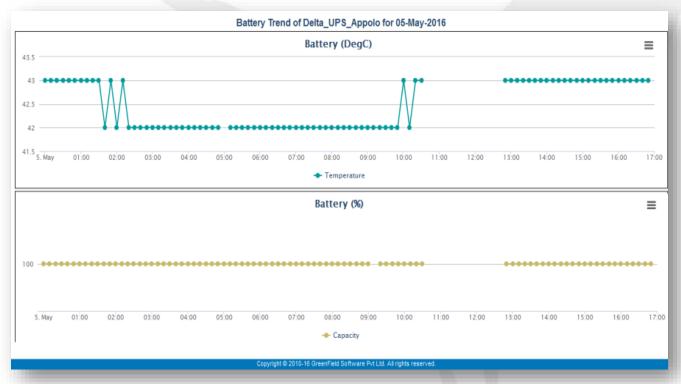






Battery Monitoring Reports

Battery Voltage Report

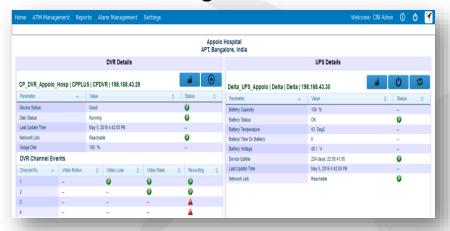


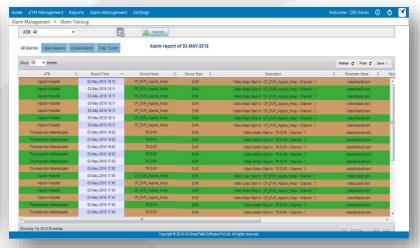


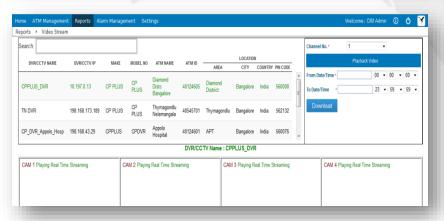


Physical Access & Surveillance Reports

DVR Monitoring







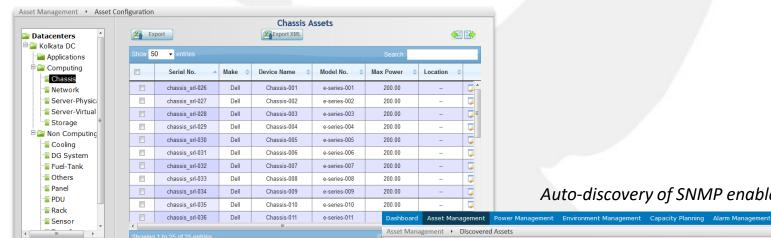






Asset Management Reports

Single console to manage assets



Auto-discovery of SNMP enabled Assets

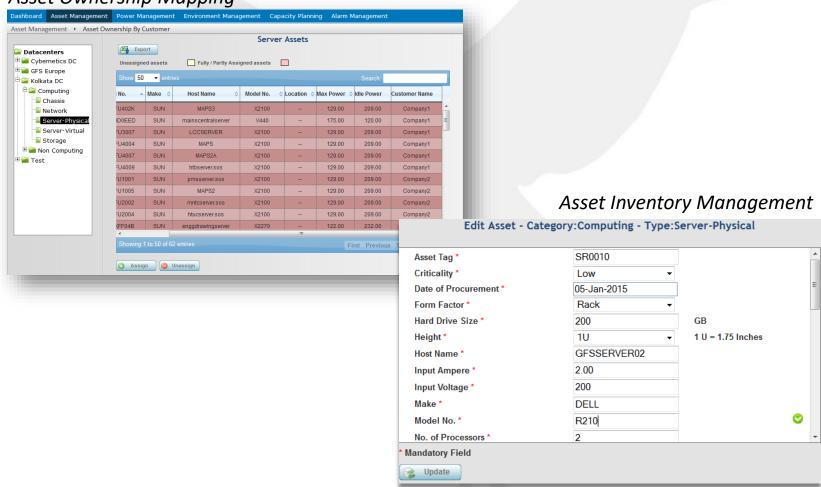






Asset Management Reports

Asset Ownership Mapping

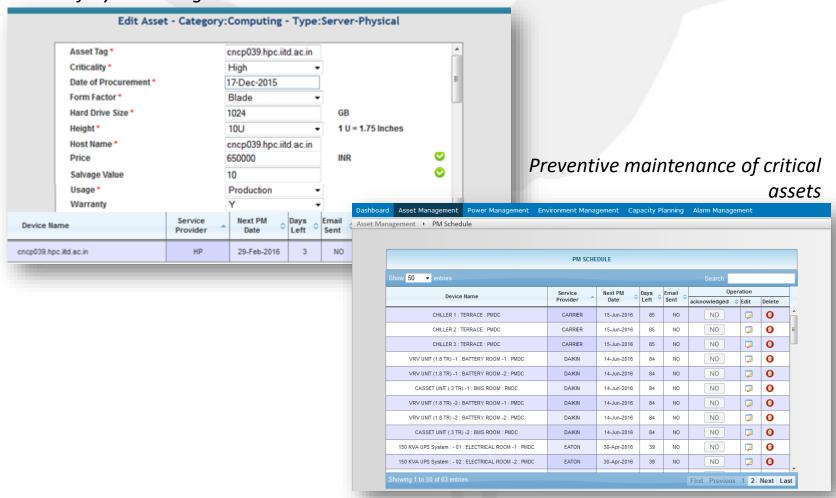






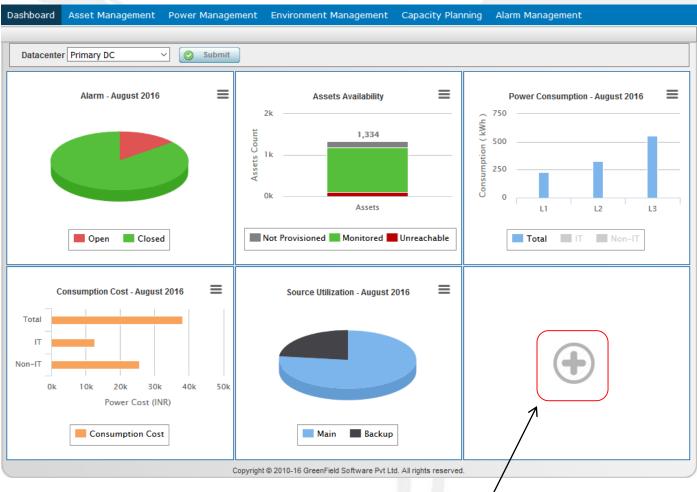
Asset Management Reports

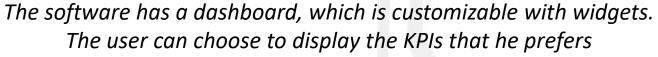
Asset Lifecycle Management





Dashboard



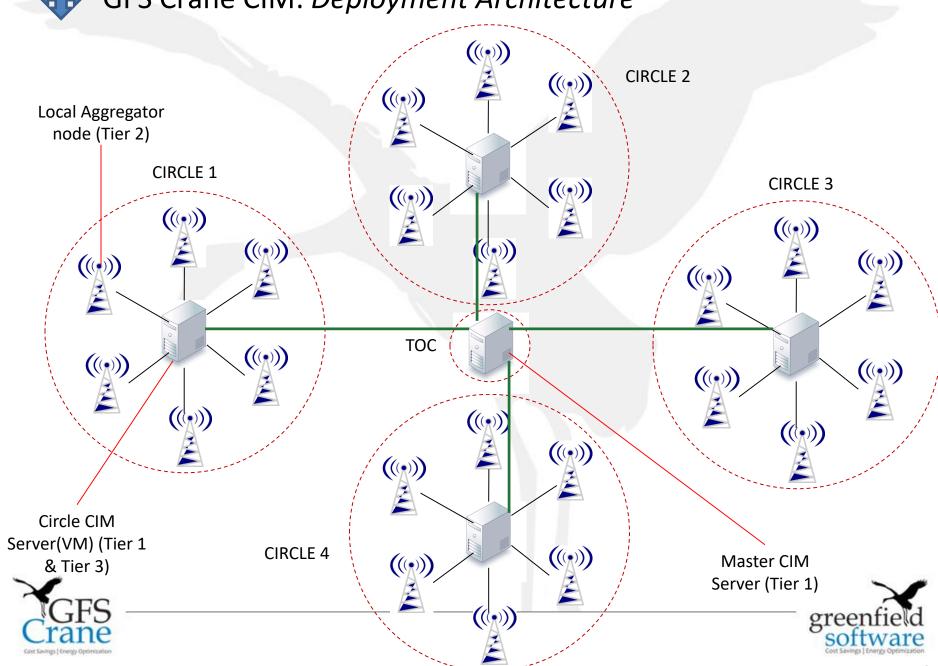








GFS Crane CIM: Deployment Architecture





GFS Crane CIM: Deployment Architecture

□GFS Crane CIM can be deployed in load-balanced mode with a dedicated 'Circle CIM Server' (VM) for each Circle.
□ Local Aggregator node(thin server appliance) at each tower site collects local alarms & monitored data and sends to respective Circle servers
☐ The Circle CIM Servers(VM) can be hosted on Cloud and handles monitored data upto 30,000 monitored parameters and alarm traffic from tower sites within respective Circles
□All Circle CIM servers point to a Master CIM Server, hosted within the same Cloud fabric
☐ The Master CIM server consolidates data from all circles and provides a 'Single Pane of Glass' view for the entire network of tower sites





GFS Crane CIM for Telecom Facilities: Summary View

