
AWP
MONITORING
Pivotal
TECHNOLOGIES
Real Time Environmental Monitoring for Mission Critical Environments

What is EMSpro?

EMSpro is the latest advancement in environmental monitoring solutions from Pivotal Technologies. Mission critical operations such as data centres require solutions that surpass conventional thinking, and this is where EMSpro stands alone among its competitors.

EMSpro packages together a sophisticated, **highly configurable software platform** with a modular hardware backbone, leaving it unchallenged by the complexity of today's data centre.

> *Your data kept on your site.*

In summary:

Stand-alone panel, monitoring a vast array of field devices & conditions: Modular, fully customisable, scalable

Web-based UI compatible with all browsers

High level & Low level integration with equipment from any 3rd Party including generators, CRACs, UPS, Battery monitoring & Field sensors

Configurable alarm escalations for SMS/ Email/Macro Alerts.
Support for protocols: Modbus, SNMP, BACnet IP, Lon. Interface w/ any device or infrastructure with high polling rates

Full system integration with Pivotal Technologies branch circuit monitoring (BCM system)

User configurable arrangement of area groups & area assignments

Unlimited number of users with support for granular access controls

What EMSpro offers

EMSpro packages a sophisticated, highly configurable software platform with a modular hardware backbone.

SCALABILITY

Application from small server rooms to large enterprise data centre.

MODULARITY

Modular allows future expansion capabilities as your business's use case grows & changes.

DIVERSE INSTRUMENTATION

Capable of monitoring almost any device

Digital status point, analogue sensor, fire panel or HLI such as UPS, CRAC unit or energy meter.

ADVANCED DATA ACQUISITION

Logging, visualisation, reporting, analytic & management capabilities ensure critical infrastructure is safe all the time.

EMSpro Client Access:
Secure Remote Portal

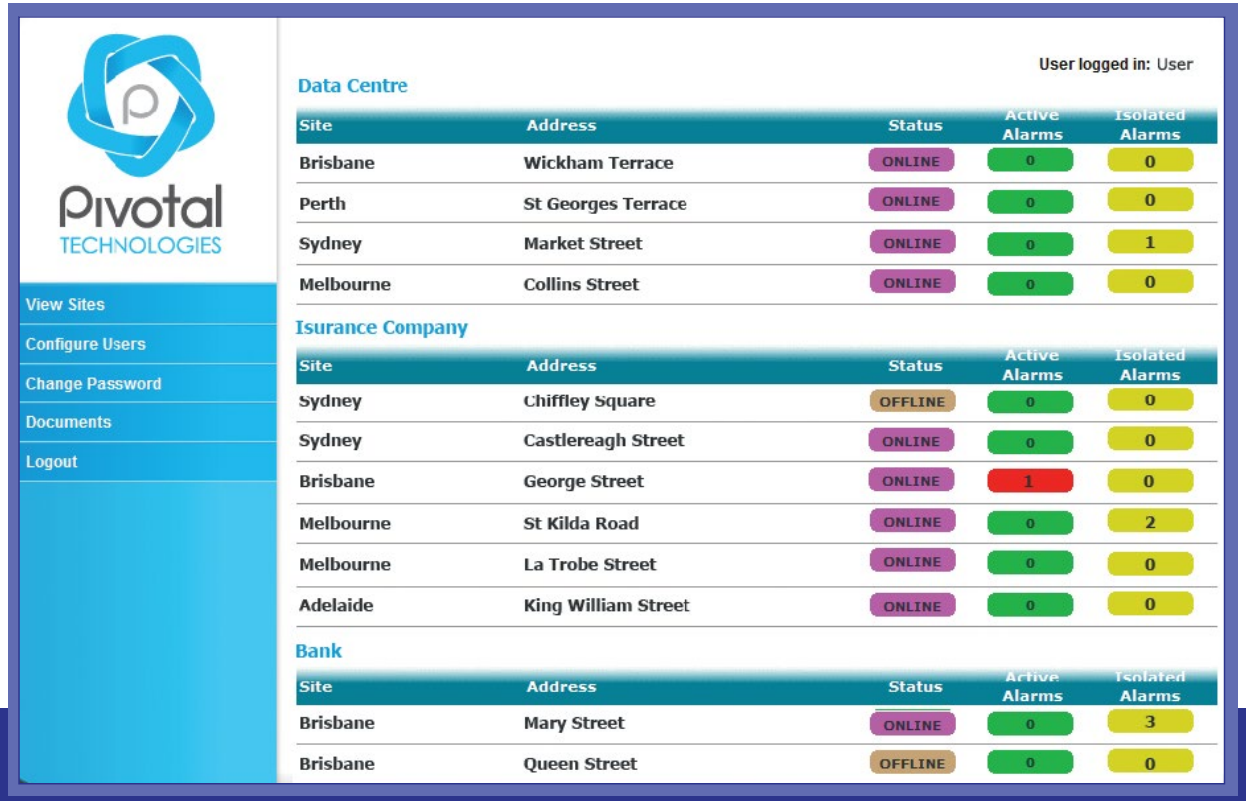


Diagram 1

The Secure Portal Access [SPA] option allows clientele to remotely access the EMSpro interface using a remote proxy access. The service is hosted through Pivotal Technologies own secure servers located in multiple enterprise data centre's in Australia.

A key design feature of the SPA is the ability to allow key service providers or clientele (with infrastructure within the data centre) access to EMSpro interface. It offers the enterprise data centre a degree of transparency to downstream clientele and negates the need for VPN connections.

Monitoring and Management Interface

Site Level

System Overview

Real-time Views & Graphing

Battery Data Logging & Analytics

Alarm & Circuit Monitoring

EMSpro Site Level:
Default Overview

Diagram 2. System status page for an initial overview of the data centre including active and isolated alarms and general system status.

The standalone nature of the EMSpro platform negates the need for additional software in order to view the user interface. A built-in web server allows multiple clients to be connected to the EMSpro using only a web browser enabled device.

The embedded web server technology provides the user with a platform which utilises the latest in web technologies to deliver a rich cross browser compliant experience.

The EMSpro user interface provides the user with a diverse range of options to **view, manage, administer and report on the monitored data centre.**

Diagram 3

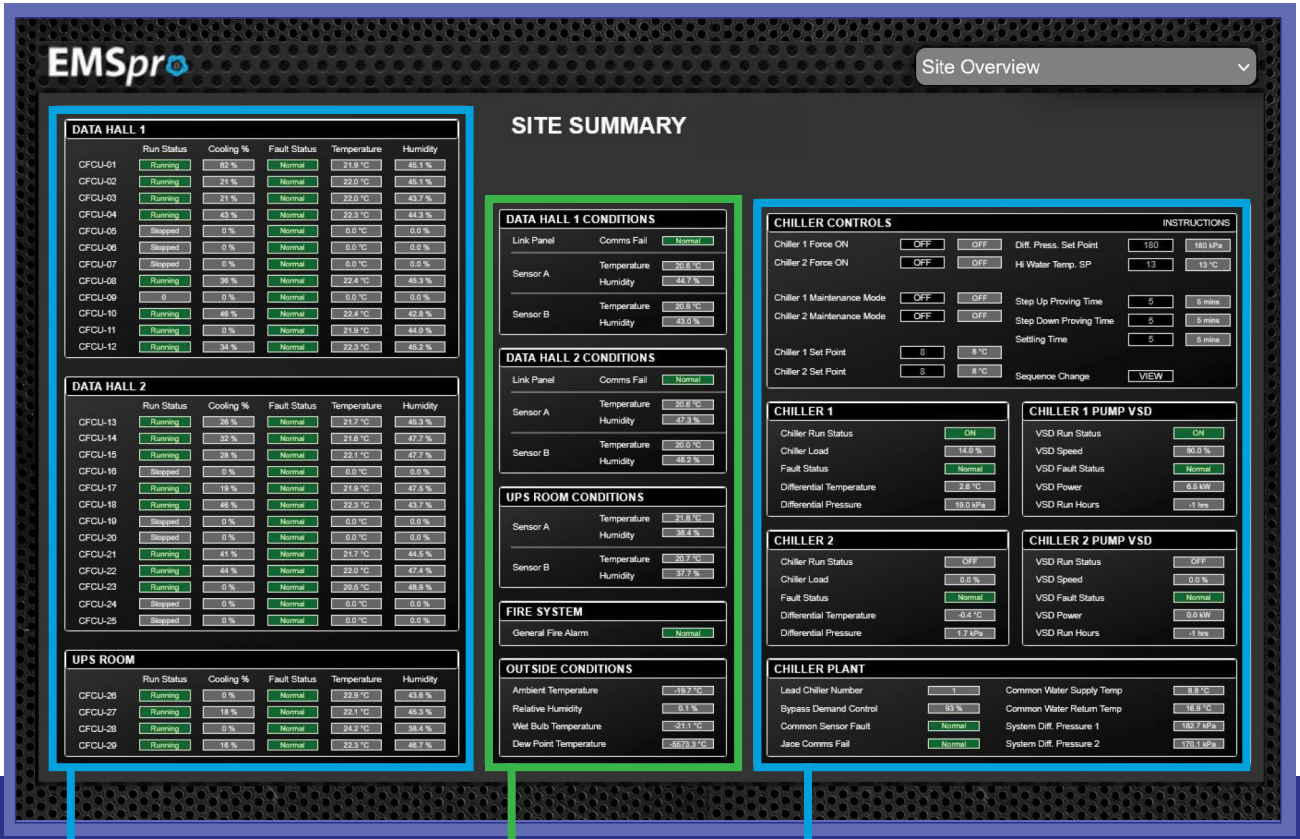


Diagram 3

Equipment Overview (Cooling Units by Area)
Shows the status of cooling fan coil units (CFCUs) in different zones.

Conditions & Safety Overview
Focuses on environment sensors and alarms for fire safety.

Chiller & Pump System
Shows chiller plant controls for cooling water supply and performance tracking of large-scale chillers.

EMSpro System Overview: Site Dashboard

This dashboard is a site summary screen used in facilities management or data centre operations.

Your EMSPro Site Dashboard is completly configurable to your needs.

Real Time Condition Summary

Provides real time information on all monitored equipment including 24 hour min, max and average values.

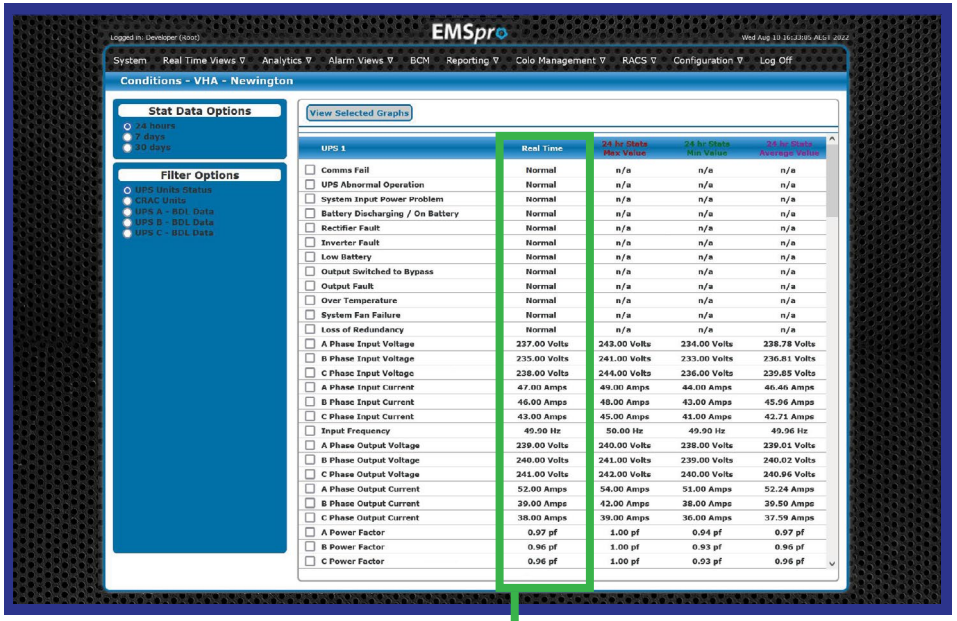


Diagram 4

Shows status of UPS.
Normal shows units are running smoothly. Otherwise will show *Fault or Alarm.*

Real Time Graph View

All monitored data can be easily graphed across custom timeframes with adjustable resolutions.

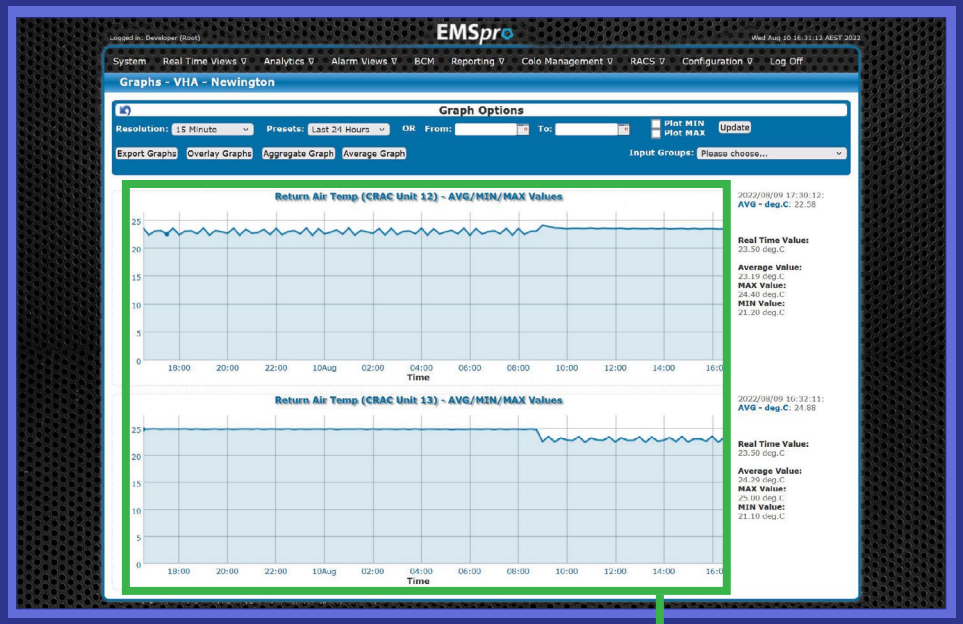
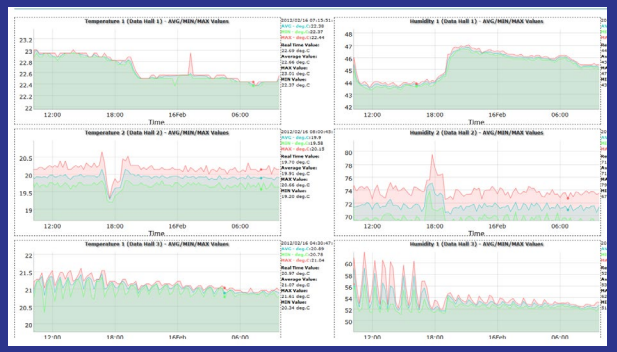


Diagram 5



Graph shows temperature in a 24-hour duration
Steady temperatures between *~21°C and ~24°C* are ideal for server safety.

EMSpro Real Time 3D Graphics Electrical Overview

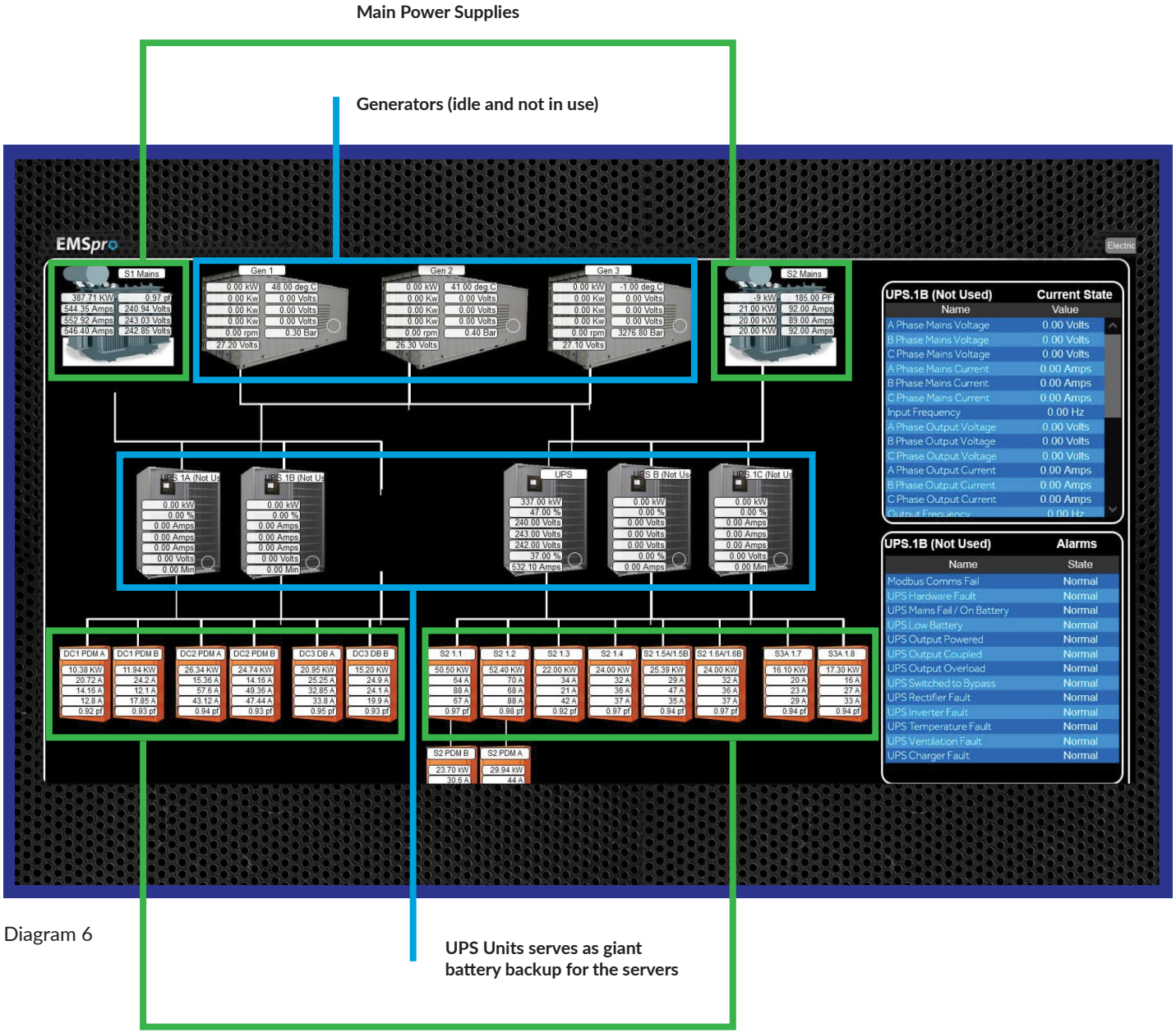


Diagram 6

HVAC Overview

Ensures stable cooling for the data centre by showing if the system is running efficiently and alerting operators when something is wrong.

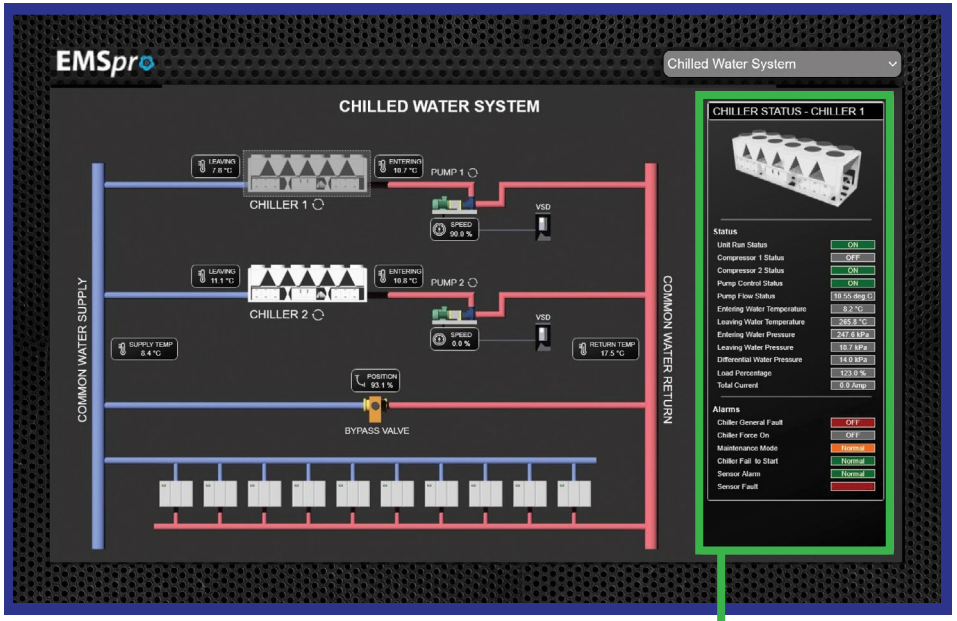


Diagram 7

Shows compressor status, water pressures, load percentage, and alarms.

DC Floor Plans

Shows the data hall stays within safe temperature and humidity levels while also confirming that the power supply is stable and reliable.

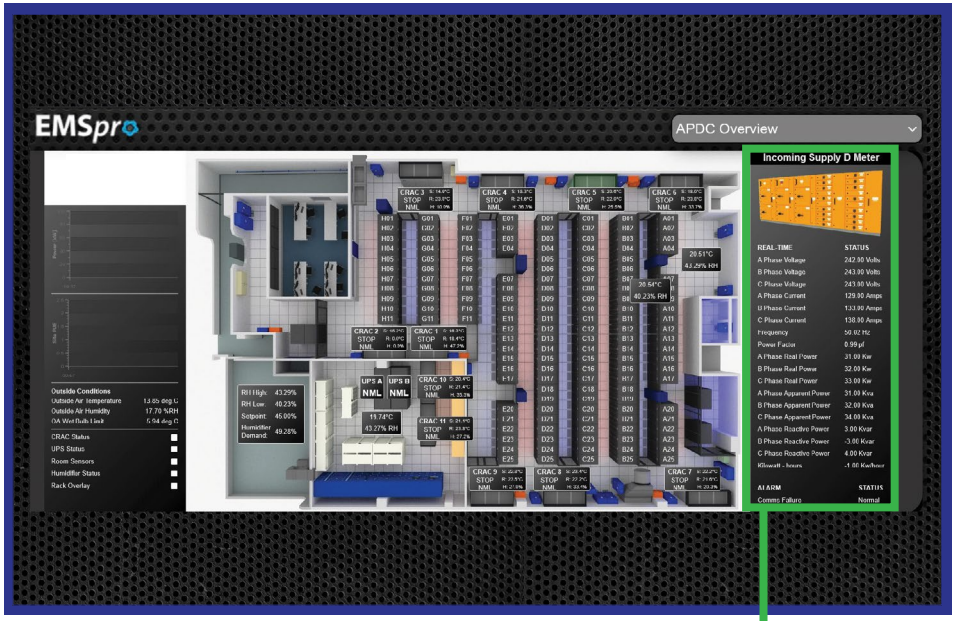


Diagram 8

Incoming Supply D Meter with real-time electrical parameters: Voltages, currents, frequency, power factor, real power, apparent power, reactive power, etc.

Battery Data Logging and Analytics

EMSpro Battery Data Logging

BDL 1

Name	Volts (V)	RL (mΩ)	Temp (°C
Battery 32	13.56	6.92	24.82
Battery 31	13.54	13.3	24.82
Battery 30	13.53	8.35	25.64
Battery 29	13.57	8	25.64
Battery 28	13.51	7.55	25.84
Battery 27	13.52	8.68	25.84
Battery 26	13.48	10.03	28.9
Battery 25	13.51	13.76	28.9
Battery 24	13.48	7.11	26.32
Battery 23	13.61	6.93	26.32
Battery 22	13.55	9.2	25.71
Battery 21	13.56	9.14	25.71
Battery 20	13.51	6.95	26.09
Battery 19	13.55	8.35	26.09
Battery 18	13.53	9.6	25.15
Battery 17	13.54	8.59	25.15
Battery 16	13.43	7.15	26.89
Battery 15	13.49	8.6	26.89
Battery 14	13.55	8.01	25.63
Battery 13	13.53	8.11	25.63
Battery 12	13.48	10.16	24.98
Battery 11	13.52	6.4	24.98
Battery 10	13.49	8.37	24.18
Battery 9	13.52	7.85	24.18
Battery 8	13.48	7.96	25.96
Battery 7	13.5	9.14	25.96
Battery 6	13.51	6.52	24.34
Battery 5	13.56	6.71	24.34
Battery 4	13.59	5.16	23.31
Battery 3	13.63	6.58	23.31
Battery 2	13.56	5.79	24.09
Battery 1	13.63	6.27	24.09

BDL 2

Name	Volts (V)	RL (mΩ)	Temp (°C
Battery 32	13.5	8.95	24.92
Battery 31	13.54	11.98	24.92
Battery 30	13.47	7.96	25.48
Battery 29	13.53	8.52	25.48
Battery 28	13.53	7.01	24.75
Battery 27	13.54	7.92	24.75
Battery 26	13.5	8.24	26.13
Battery 25	13.49	9.29	26.13
Battery 24	13.48	7.96	26.16
Battery 23	13.55	6.39	26.16
Battery 22	13.49	8.67	26.11
Battery 21	13.5	10.62	26.11
Battery 20	13.46	9.98	25.91
Battery 19	13.51	10.04	25.91
Battery 18	13.98	9.83	25.51
Battery 17	13.58	11.48	25.51
Battery 16	13.47	8.94	25.16
Battery 15	13.54	7.73	25.16
Battery 14	13.49	8.54	25.83
Battery 13	13.53	8.81	25.83
Battery 12	13.47	9.24	25.73
Battery 11	13.48	8.89	25.73
Battery 10	13.52	8.71	25.48
Battery 9	13.57	7.97	25.48
Battery 8	13.47	7.25	26.24
Battery 7	13.54	8.2	26.24
Battery 6	13.51	7.73	26.16
Battery 5	13.52	9.55	26.16
Battery 4	13.55	7.2	24.29
Battery 3	13.64	6.33	24.29
Battery 2	13.53	6.12	24.42
Battery 1	13.61	7.07	24.42

BDL 3

Name	Volts (V)	RL (mΩ)	Temp (°C
Battery 32	13.5	5.94	25.05
Battery 31	13.49	4.57	25.05
Battery 30	13.51	4.95	24
Battery 29	13.63	5.11	24
Battery 28	13.52	5.68	24.23
Battery 27	13.46	5.4	24.23
Battery 26	13.49	5	26.49
Battery 25	13.57	4.89	26.49
Battery 24	13.51	5.95	24.69
Battery 23	13.55	4.91	24.69
Battery 22	13.53	5.14	24.36
Battery 21	13.64	6	24.36
Battery 20	13.51	5.37	24.6
Battery 19	13.59	5.03	24.6
Battery 18	13.49	5.65	25.07
Battery 17	13.58	5.29	25.07
Battery 16	13.49	5.57	24.37
Battery 15	13.57	5.36	24.37
Battery 14	13.49	4.91	23.91
Battery 13	13.55	5.12	23.91
Battery 12	13.51	5.8	24.54
Battery 11	13.48	5.43	24.54
Battery 10	13.48	5.95	24.9
Battery 9	13.57	4.79	24.9
Battery 8	13.45	6.14	24.7
Battery 7	13.58	5.73	24.7
Battery 6	13.52	6.26	24.11
Battery 5	13.61	5.67	24.11
Battery 4	13.53	5.55	23.85
Battery 3	13.6	5.09	23.85
Battery 2	13.52	5.39	23.55
Battery 1	13.55	5.71	23.55

Diagram 9

A diagram of the battery racks, showing where each unit is physically stored.

A live monitoring system for the backup batteries that keep servers running if the main power fails.

Each battery is listed with three key details:

- Voltage (power level),
- Resistance (health/efficiency)
- Temperature (heat levels).

EMSpro Analytics

Displays real-time monitoring of the data centre's chiller system, showing critical metrics such as power consumption (amps/kW), thermal performance (supply and return water temperatures), and compressor demand.

Diagram 10. Displays setup for what's being measured, like power use (amps/kW), water return temperature, and compressor demand.

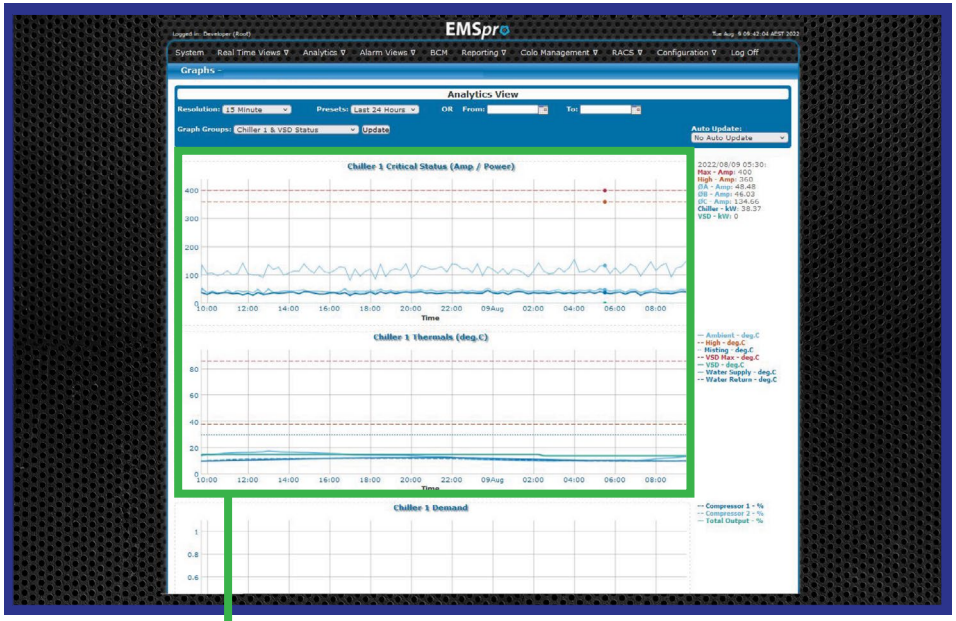


Diagram 11

The graphs display real-time data over the past 24 hours, such as how much power the chiller is drawing and the temperature of the cooling water going in and out.

EMSpro Alarm Summary/ Configuration

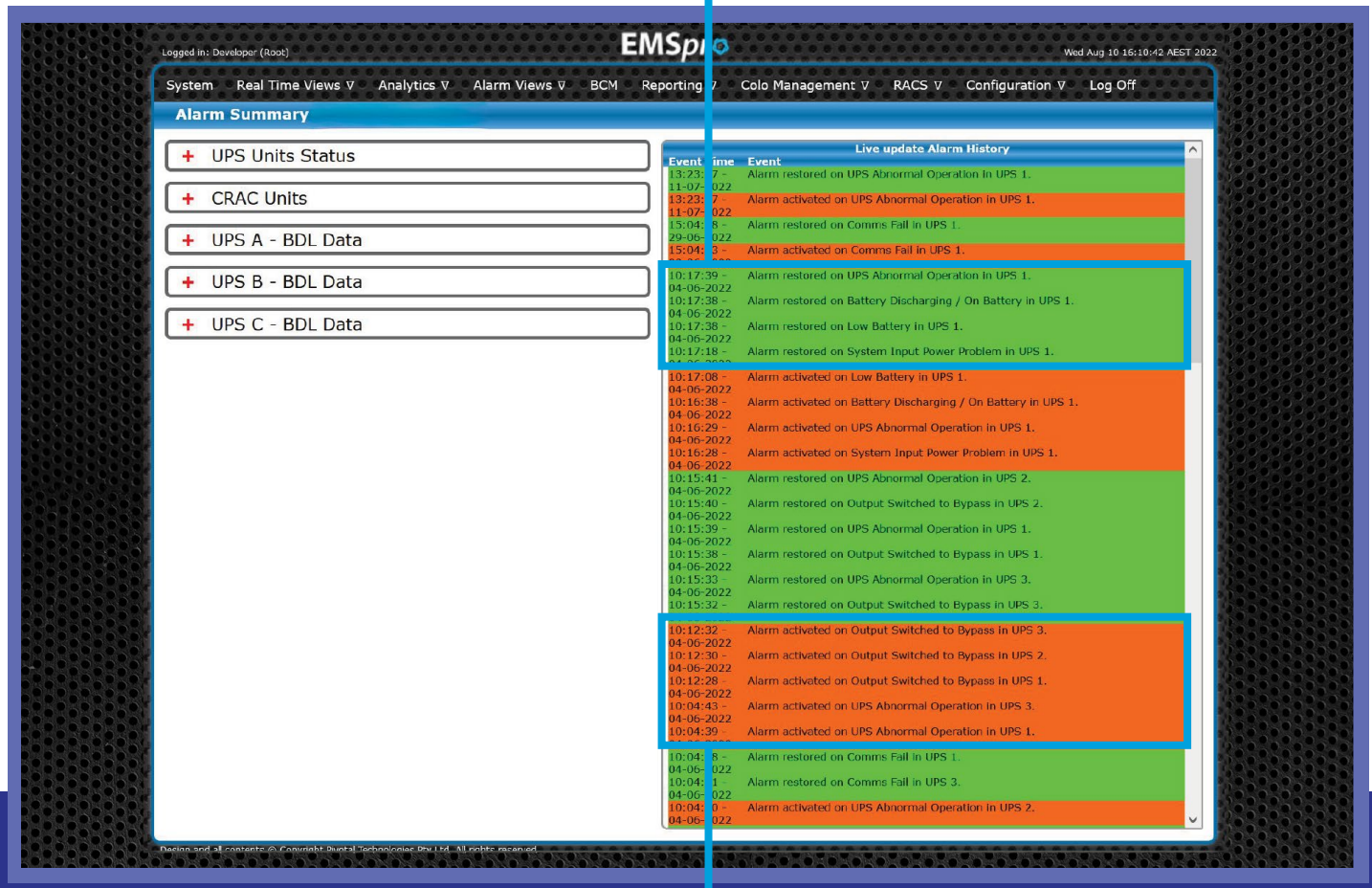


Diagram 12

Show when those alarms were cleared or restored back to normal.

Indicates active alarms, such as abnormal UPS operation, low battery, or input power problems.

EMSpro Branch Circuit Monitoring

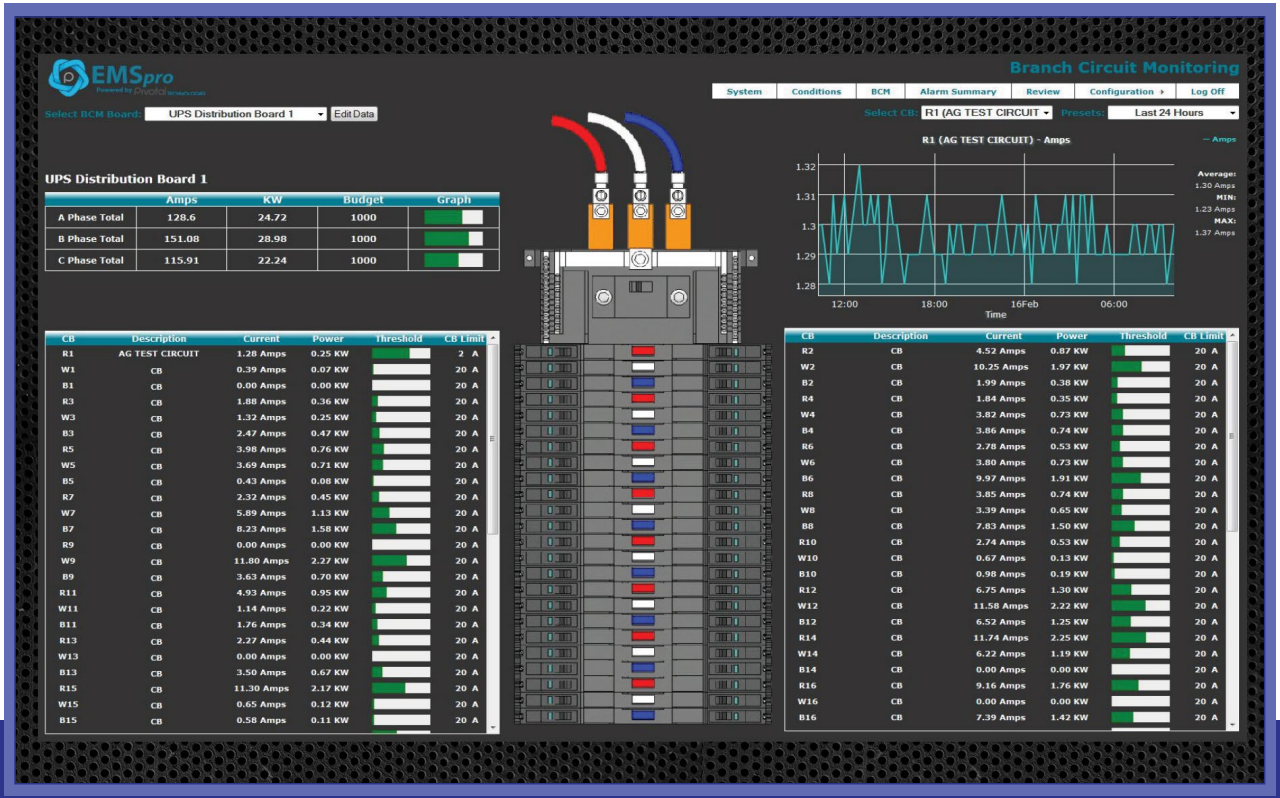


Diagram 13

The Branch Circuit Monitoring energy management system can provide the user with easy access to highly accurate and reportable energy measurements, allowing the user to monitor energy consumption throughout the workplace in a concise and meaningful way.

It can measure real time energy usage from a range of different inputs and devices including individual switchboard circuits, sub main switchboard feeders, mechanical services, generators and main switchboard incoming supplies.

EMSpro Reporting Platform

- User-configurable Excel-based alarm summary
- User-configurable Excel-based Input History reports
- Excel based rack power & customer aggregate reports
- Email alerts with historical trending report on all analogue sensor data

EMSpro Reports: Configuration

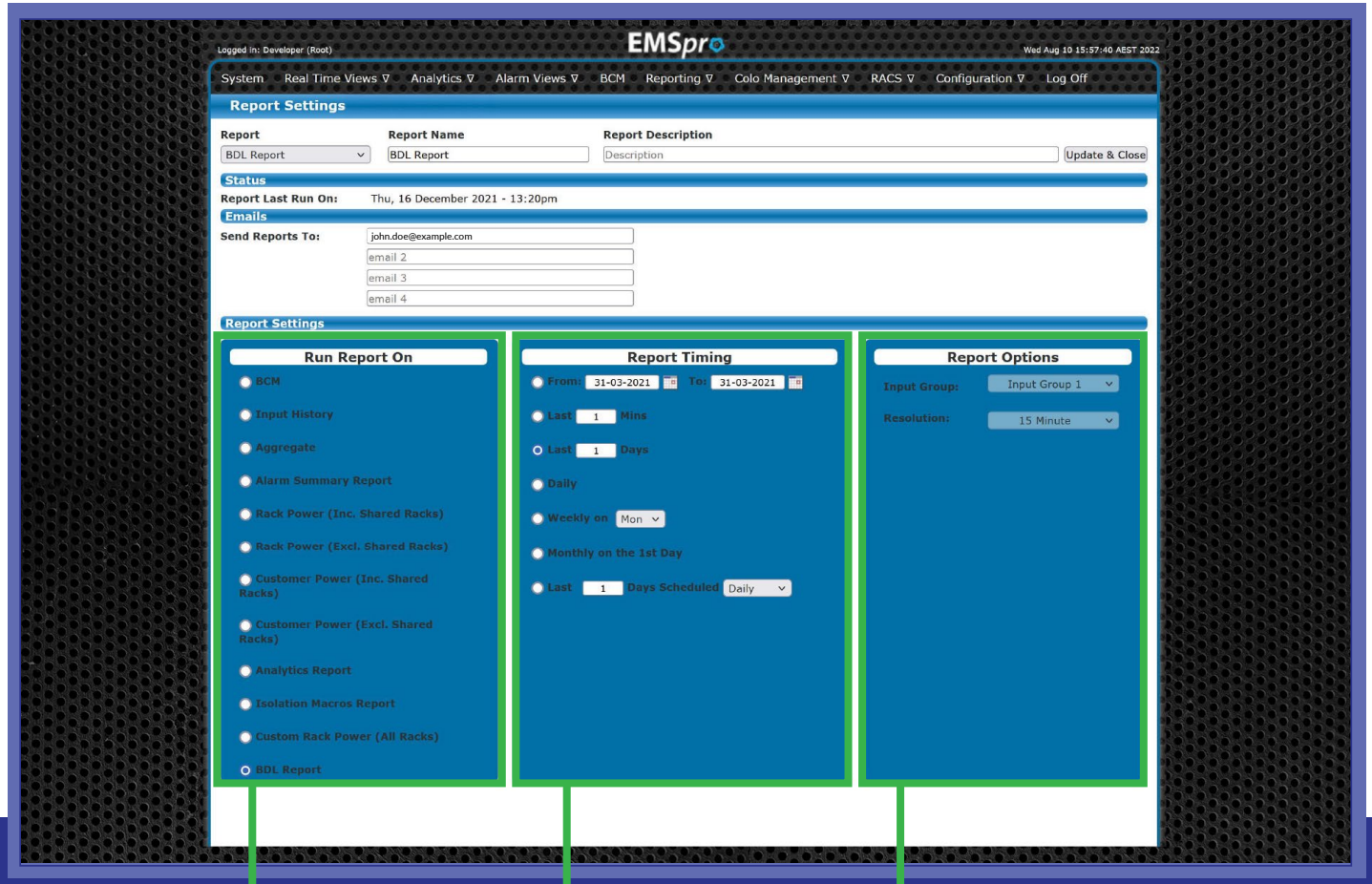


Diagram 14

Lets the user choose what type of data to include, such as power usage, alarm history, or battery logs.

Allows scheduling reports by minutes, days, or recurring intervals (daily, weekly, monthly).

Configures technical details like the input group and data resolution (e.g., 15-minute intervals).

EMSpro Report Status Summary

ID	Report Name	Type	Status	Scheduled Run	Last Run		
01	TROY PHELAN	BDL - 30 Days	Idle	N/A	15:29 08-06-2022	Run Now	Edit Report
02	BDL Report	BDL - 1 Days	Idle	N/A	13:20 16-12-2021	Run Now	Edit Report
03	Report 3	History - Date Define	Idle	N/A	Never	Run Now	Edit Report
04	Report 4	History - Date Define	Idle	N/A	Never	Run Now	Edit Report
05	Report 5	History - Date Define	Idle	N/A	Never	Run Now	Edit Report
06	Report 6	History - Date Define	Idle	N/A	Never	Run Now	Edit Report
07	Report 7	History - Date Define	Idle	N/A	Never	Run Now	Edit Report
08	Report 8	History - Date Define	Idle	N/A	Never	Run Now	Edit Report
09	Report 9	History - Date Define	Idle	N/A	Never	Run Now	Edit Report
10	Report 10	History - Date Define	Idle	N/A	Never	Run Now	Edit Report
11	Report 11	History - Date Define	Idle	N/A	Never	Run Now	Edit Report
12	Report 12	History - Date Define	Idle	N/A	Never	Run Now	Edit Report
13	Report 13	History - Date Define	Idle	N/A	Never	Run Now	Edit Report
14	Report 14	History - Date Define	Idle	N/A	Never	Run Now	Edit Report
15	Report 15	History - Date Define	Idle	N/A	Never	Run Now	Edit Report
16	Report 16	History - Date Define	Idle	N/A	Never	Run Now	Edit Report
17	Report 17	History - Date Define	Idle	N/A	Never	Run Now	Edit Report
18	Report 18	History - Date Define	Idle	N/A	Never	Run Now	Edit Report
19	Report 19	History - Date Define	Idle	N/A	Never	Run Now	Edit Report
20	Report 20	History - Date Define	Idle	N/A	Never	Run Now	Edit Report
21	Report 21	History - Date Define	Idle	N/A	Never	Run Now	Edit Report
22	Report 22	History - Date Define	Idle	N/A	Never	Run Now	Edit Report
23	Report 23	History - Date Define	Idle	N/A	Never	Run Now	Edit Report
24	Report 24	History - Date Define	Idle	N/A	Never	Run Now	Edit Report
25	Report 25	History - Date Define	Idle	N/A	Never	Run Now	Edit Report
26	Report 26	History - Date Define	Idle	N/A	Never	Run Now	Edit Report
27	Report 27	History - Date Define	Idle	N/A	Never	Run Now	Edit Report

Diagram 15

The EMSpro Report Status Summary, which provides an overview of all system reports, their types, statuses, scheduling, and execution history.

Users are given manual control to execute reports immediately via the **Run Now** option or modify their configurations using **Edit Report**. Highlighting that while the reporting framework is in place, these can be scheduled or run manually, providing flexibility depending on operational needs.

Excel Based Alarm Summary

Provides a detailed list of alarms across different data centre areas and equipment. Enabling operators to quickly review alarm activity, assess environmental or equipment risks, and take corrective action based on trends in threshold breaches or abnormal readings.

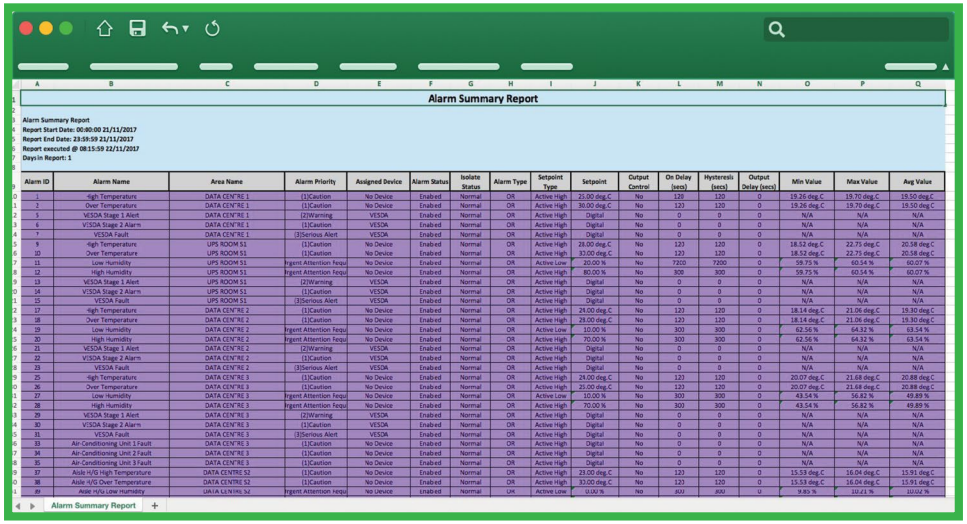


Diagram 16. The data highlights common alarms like High Temperature, Over Temperature, High Humidity, and VESDA alerts.

Excel Based History Reports

Logs historical sensor data at defined time intervals. It is particularly useful for trend analysis, capacity planning, and validating environmental compliance in controlled environments.

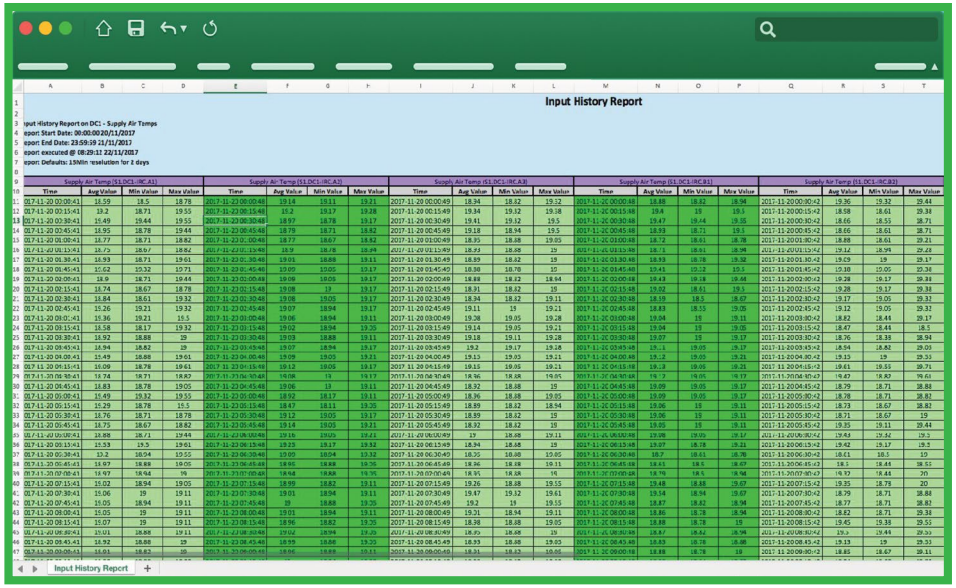


Diagram 17. The table captures time-stamped readings of critical parameters such as Supply Air Temperature, showing minimum, maximum, and average values over short intervals

EMSpro Email Reporting with Historical Trending

This indicates the issue and resolved status.

An overlay graph illustrates the temperature trend over time.

The graph shows a steady increase in temperature, peaking above the threshold and triggering the alarm condition, before dropping back below the setpoint as the system stabilized.

Diagram 18

Rack Configuration and Allocation Management

EMSpro Colocation Management:
Rack Configuration

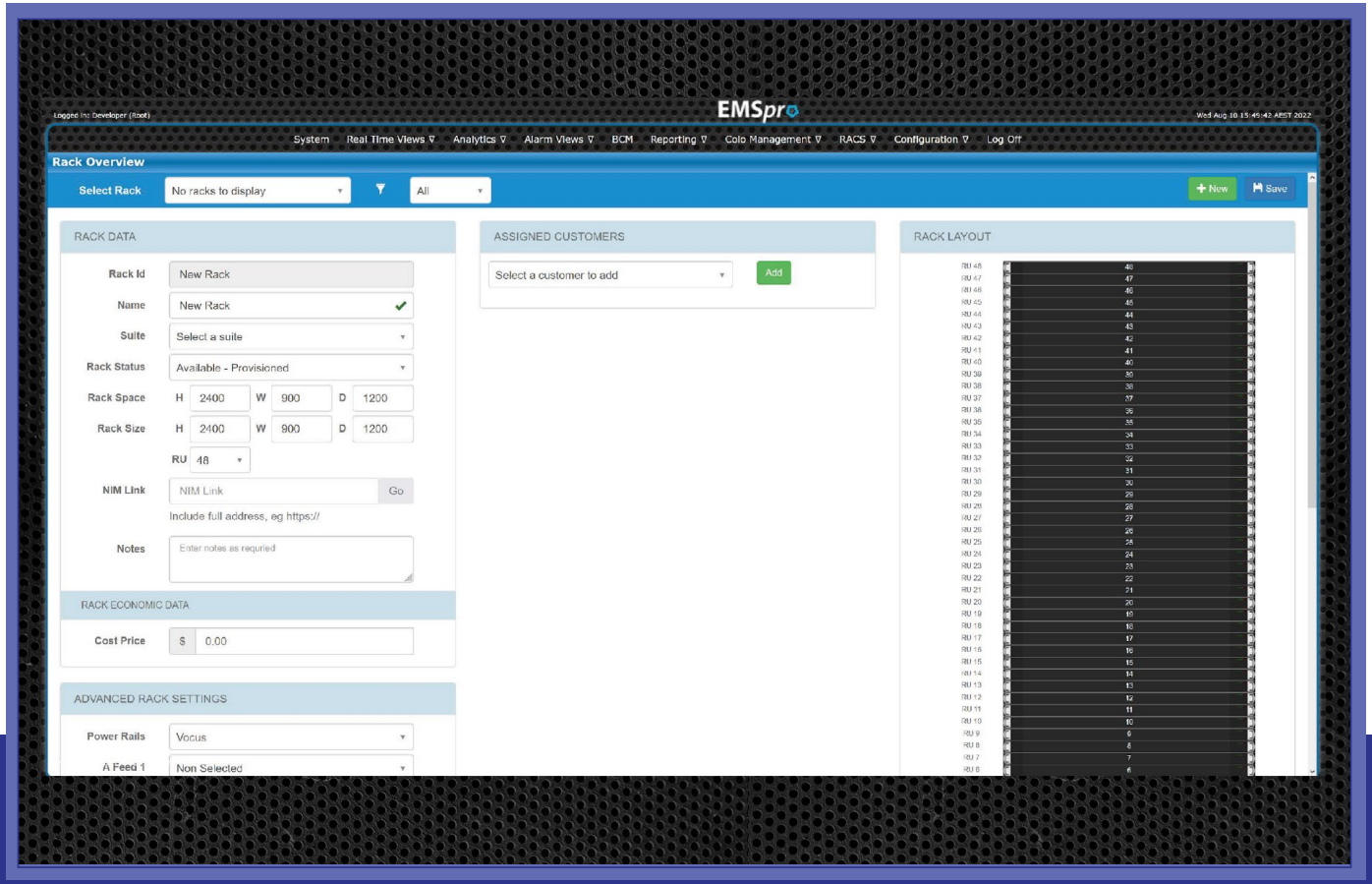


Diagram 19

This portal is used to configure and provision new racks. It allows administrators to define rack details and assign them to customers.

Supports rack-level provisioning, capacity assignment, and customer mapping in the data centre.

Client Profiles

This portal provides input fields to store and manage customer details. It allows for maintaining user contact details and storing related documentation.

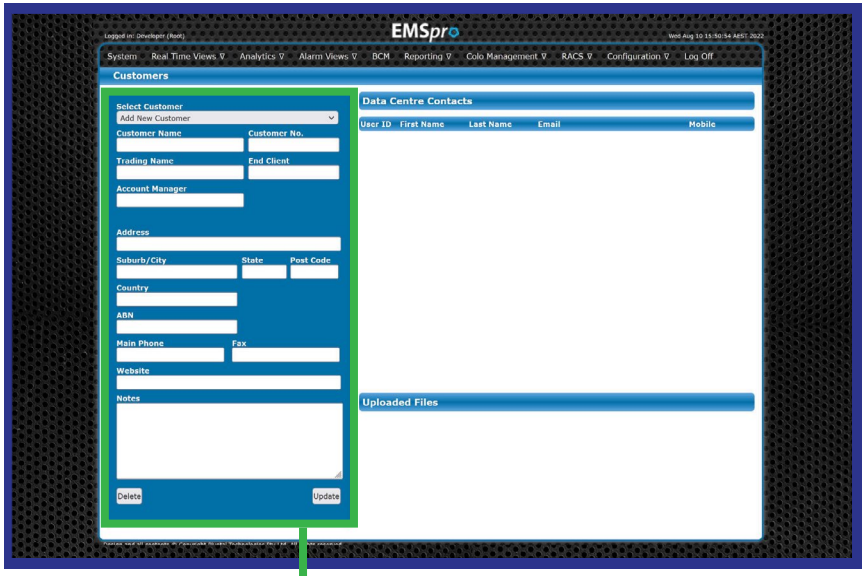


Diagram 20

Input fields for customer details. Ensures all customer records and key contacts are centralized for efficient account management.

Rack Reporting

Consolidates allocation and capacity data, this report supports strategic capacity planning, sales tracking, and operational resource management within colocation facilities.

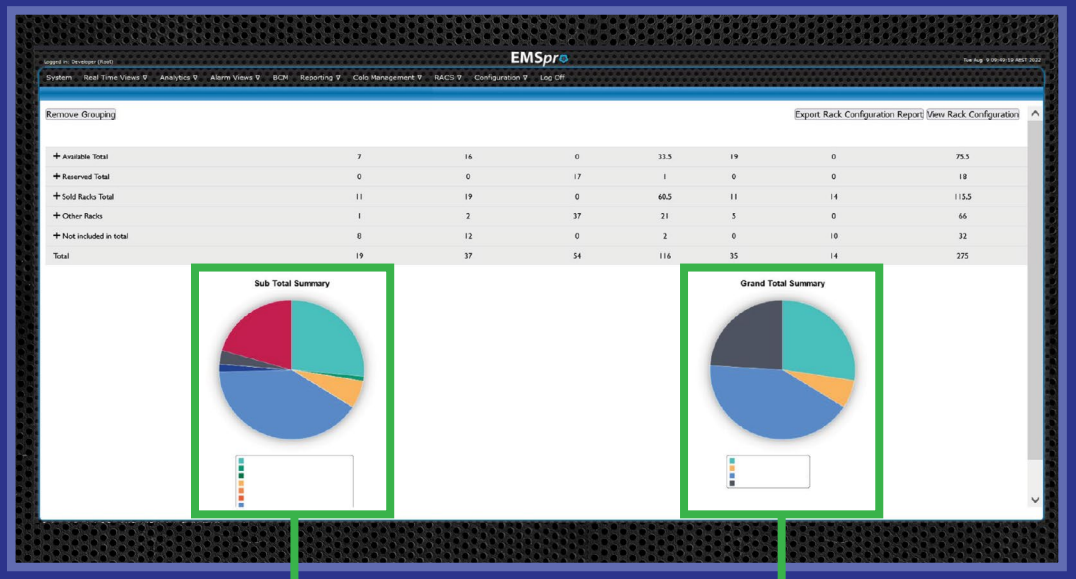


Diagram 21

Delivers a clear visual representation of utilization trends, enabling operators to quickly evaluate resource distribution.

RACS Overview

The **Rack Access and Control System** displays key metrics, security controls and trend graphs.

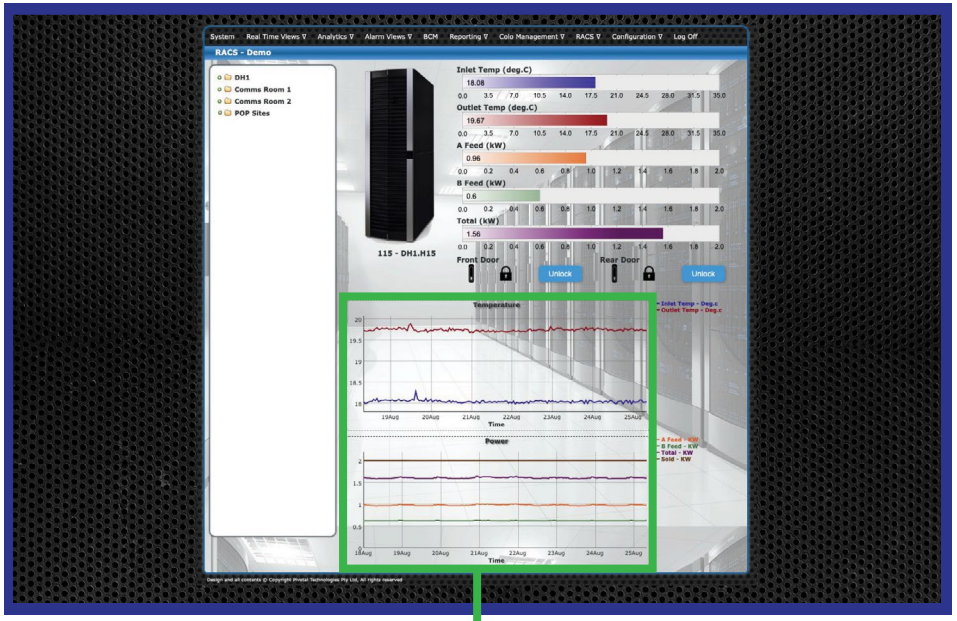


Diagram 22

Trend graphs showing temperature variations and power usage over time, giving operators visibility into thermal and electrical performance.

User & Alert Settings

This allows administrators to configure user details and features an alerts section for a wide list of UPS-related events.

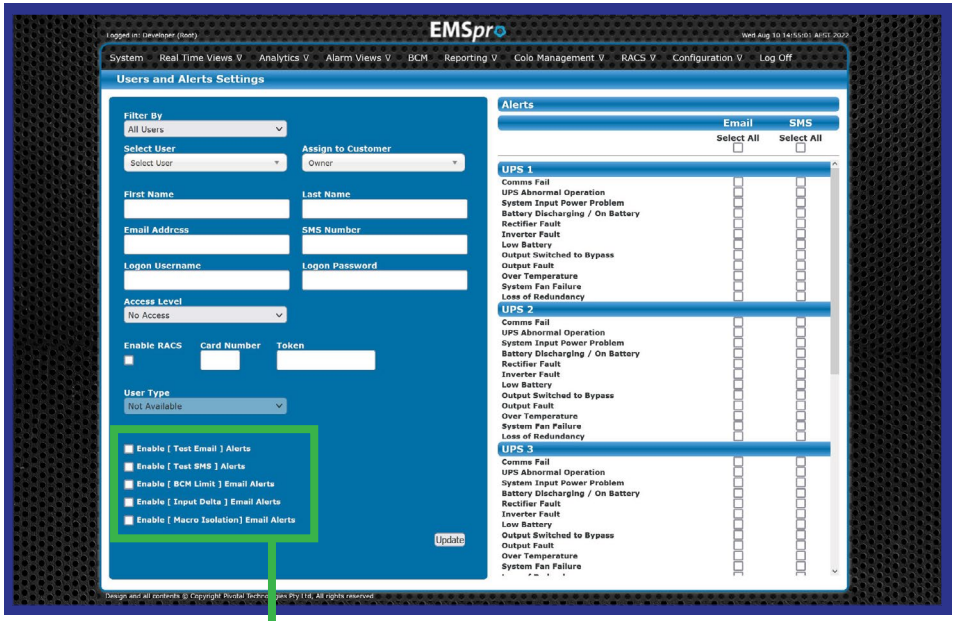


Diagram 23

Administrators can allow notifications via email or SMS.

This ensures that users receive real-time alerts tailored to their responsibilities, enhancing both incident response and system reliability.

OUR PROPOSAL

EMSpro Solutions for your site

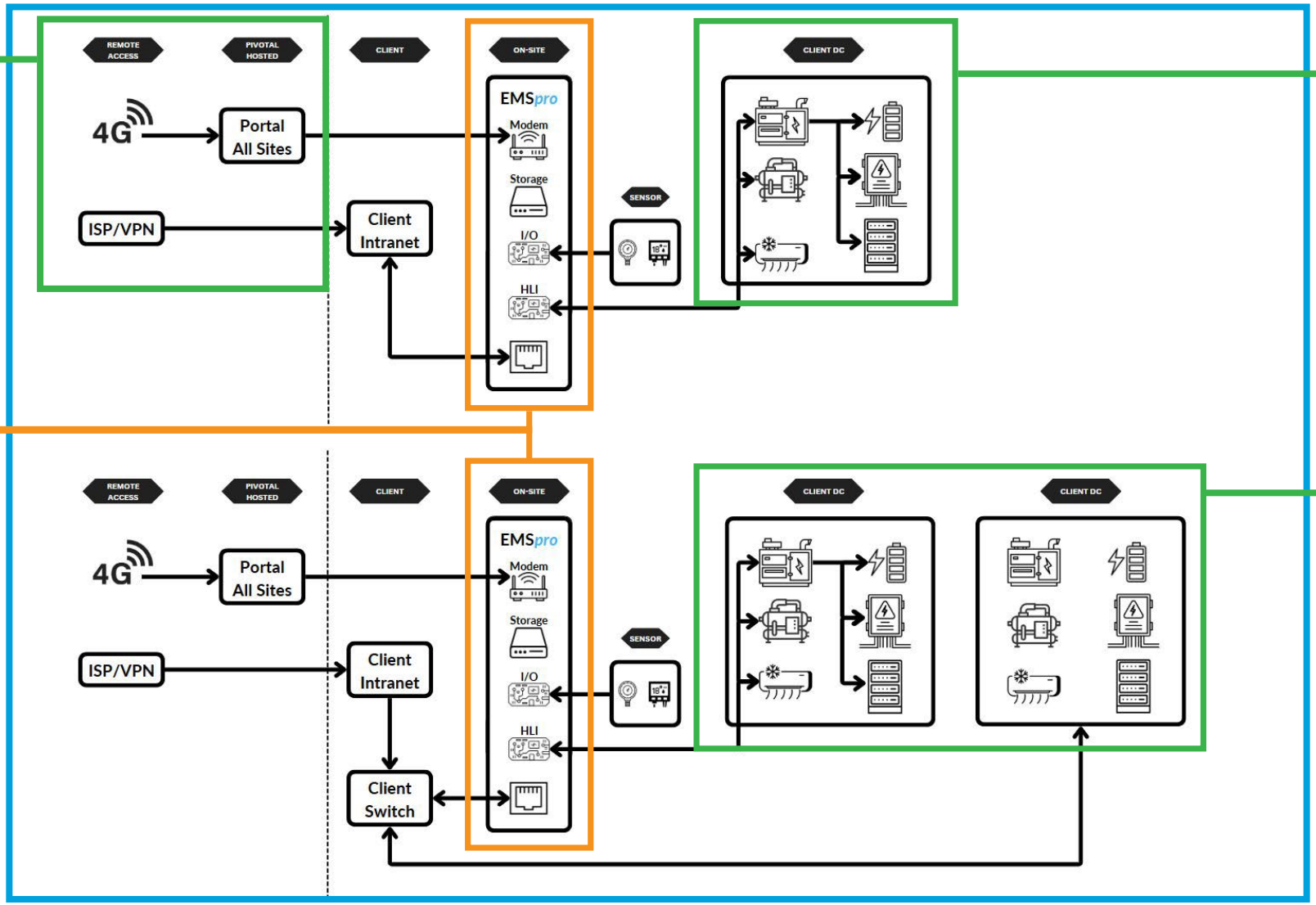
- EMS to monitor and consolidate all site points displayed in one convenient location and platform.
- Secure connection between EMSpro and new BMS system via Modbus RS-485 connection.
- Moxa MGate 3170/80 ethernet to serial Modbus gateway to enable secure communication pathway between existing BMS and EMSpro.
- Result is Secure Local Control with Remote Monitoring.

EMSpro Topology with Secure Remote Access

Allows remote access for all monitored sites.

This unit collects real-time environmental and infrastructure data.

All data is stored onsite.



Connects directly to monitored assets, feeding back status, alarms, and telemetry.

Enables integration with multiple data centres while still allowing remote portal access.

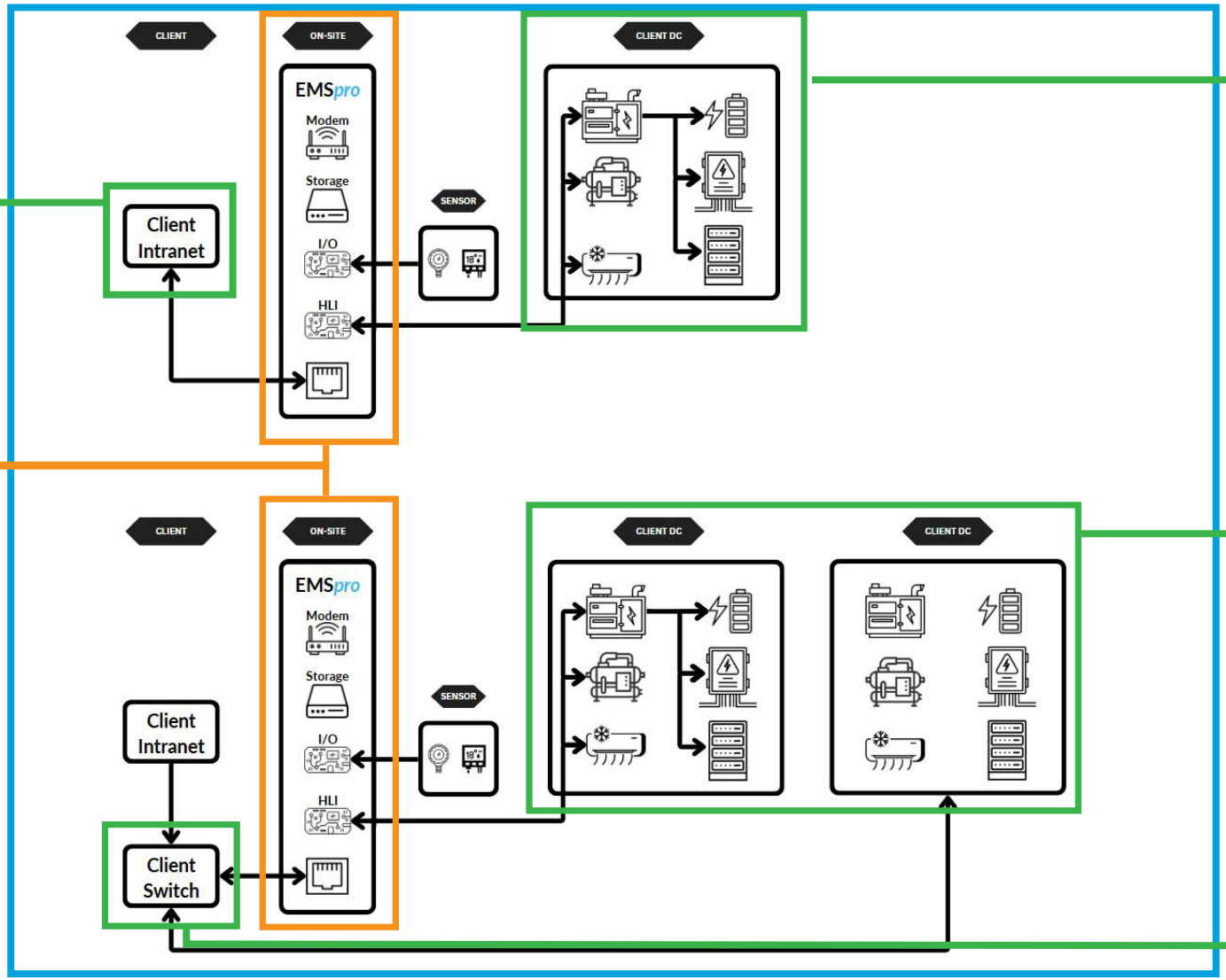
Diagram 24

EMSpro Topology No Remote Access

All communication stays within the client's intranet.

Same components as the remote-access model but restricted to local network communication only.

All data is stored onsite.



EMSpro integrates with one or more data centres, capturing telemetry from UPS, power distribution, cooling, and IT infrastructure.

A client switch manages EMSpro's communication across multiple connected DCs, still isolated within the client's private network.

Diagram 25

Thank you

Feel free to ask any questions you may have

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AWP MONITORING

Pivotal TECHNOLOGIES

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