

Delta DCIM Product Introduction

02/09/2021
Delta / Jesse.Zhuo

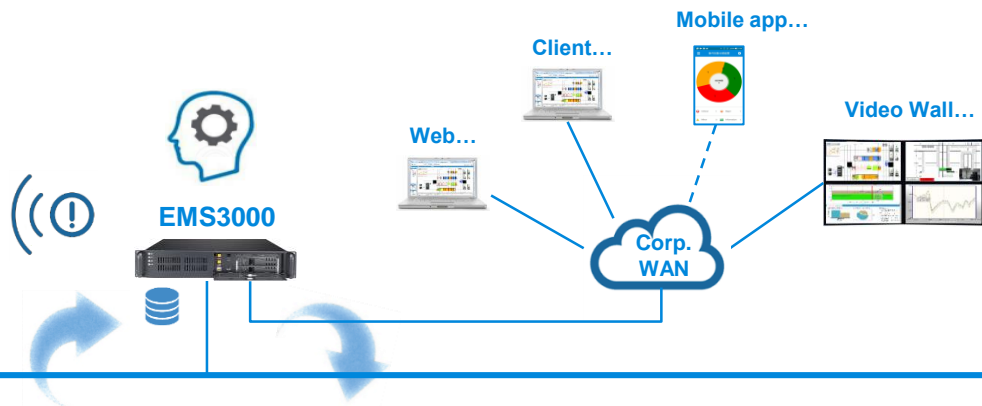
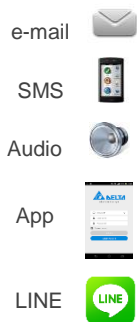




Infrasuite Manager EMS3000

<http://infrasuite-manager.deltapowersolutions.com/>

Application



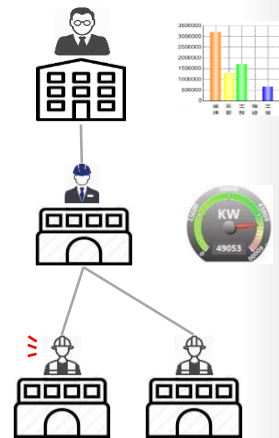
Data Collection

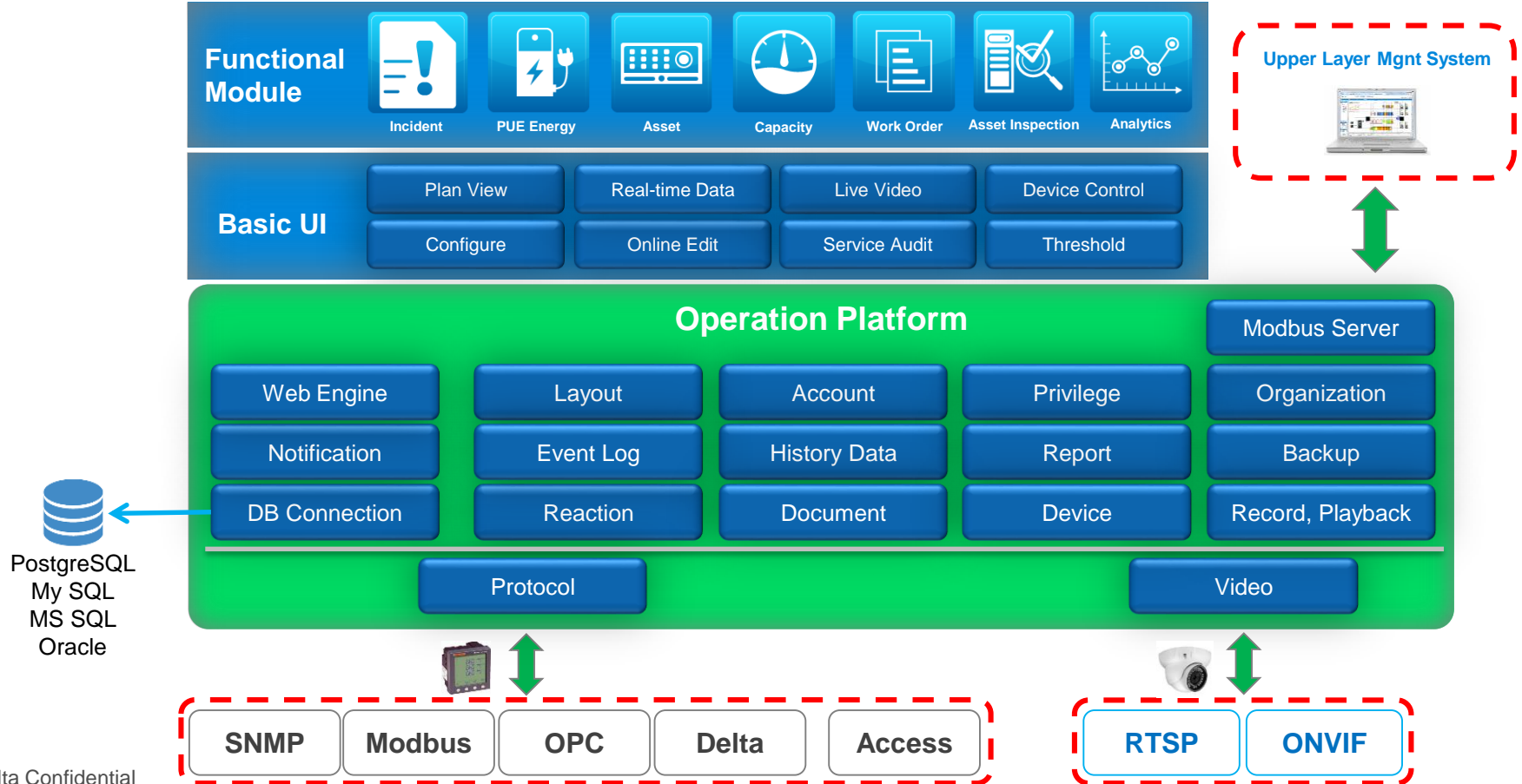


Device



Organizational Privilege







Brilliant Architecture Design, Expand On-Demand



Operation

EMS3000 Module



Incident



PUE
Energy



Asset



Capacity



Work
Order



Asset
Inspection



Analytics

Function	Site Scale	Target Customer
Datacenter Operation	Small, Medium, Large	All
DCIM (Datacenter Infrastructure Management)	Medium, Large	Enterprise, Banking, Government
DCFM (Datacenter Facility Management)	Large	Banking, Co-Location

Module Combination to Satisfy Management

Datacenter Operation



Operation



Incident



PUE Energy



Asset



Slide Show

DCIM (Datacenter Infrastructure Management)



Operation



Incident



PUE Energy



Asset



Capacity



Work Order



Analytics

DCFM (Datacenter Facility Management)



Operation



Incident



PUE Energy



Asset

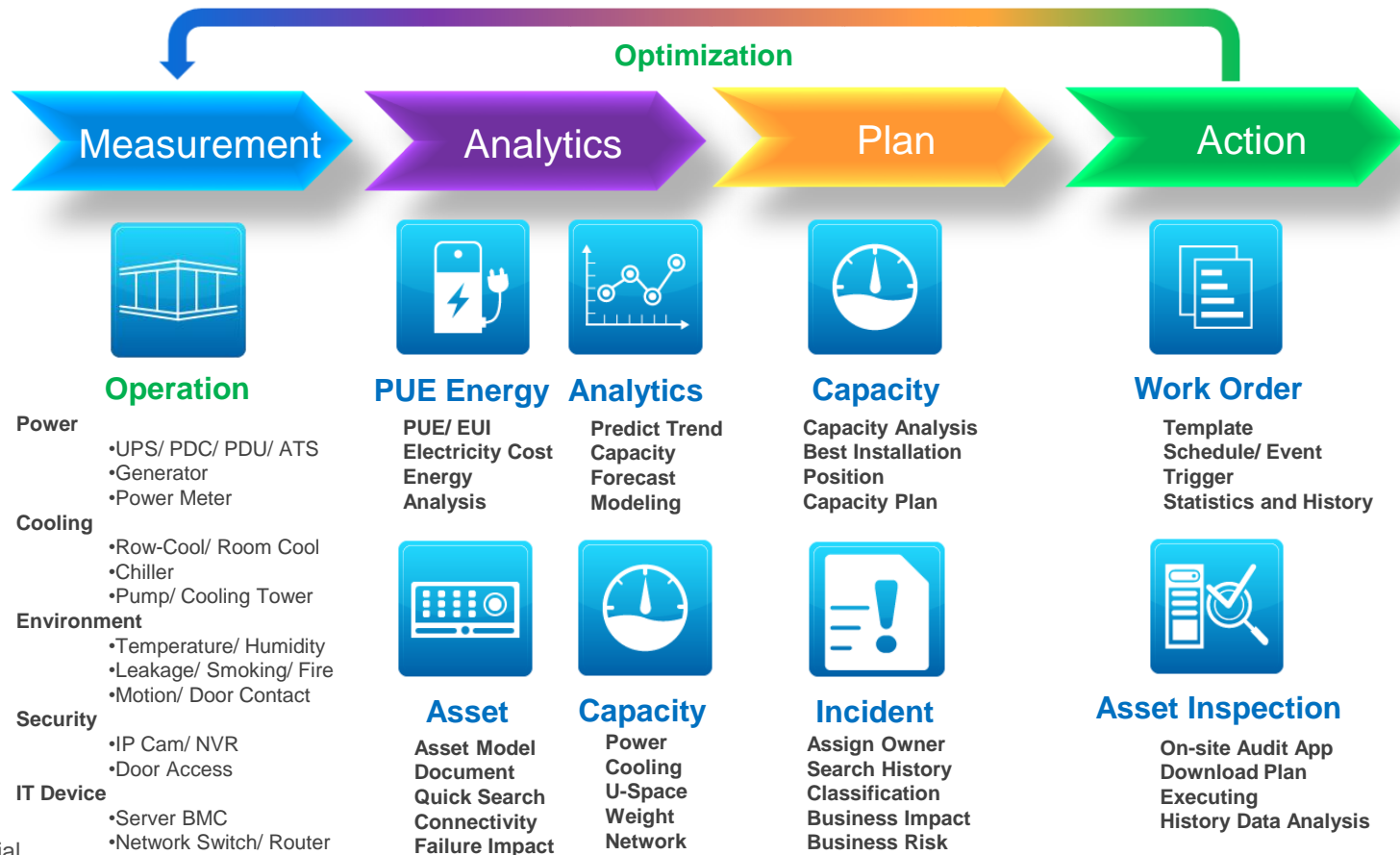
Asset
Inspection

Work Order



Analytics

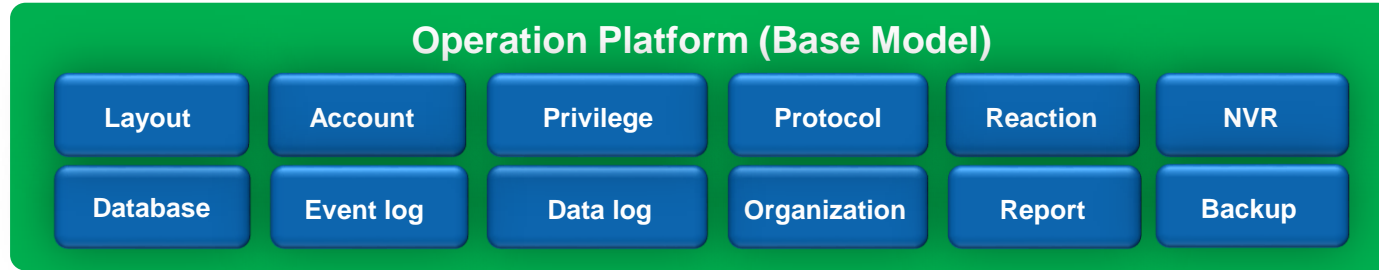
Management Philosophy to Optimization





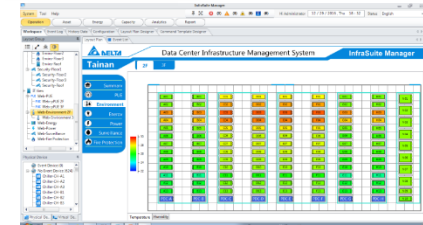
Key Functional Module Introduction

<http://infrasuite-manager.deltapowersolutions.com/>

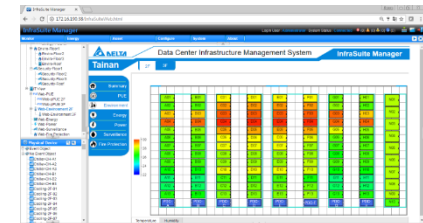


InfraSuite Manager Base Model enables vendor-agnostic device(include camera) integration. Provide real-time device operation status, data, failure and metrics in the designed layout plans.

- Diverse layout components to design the floor plans in a single project for both of the web and Windows application interfaces.
- Organizational privilege access to reduce the human error.
- Built-in a report generator tool that allows for customization to individual business needs.

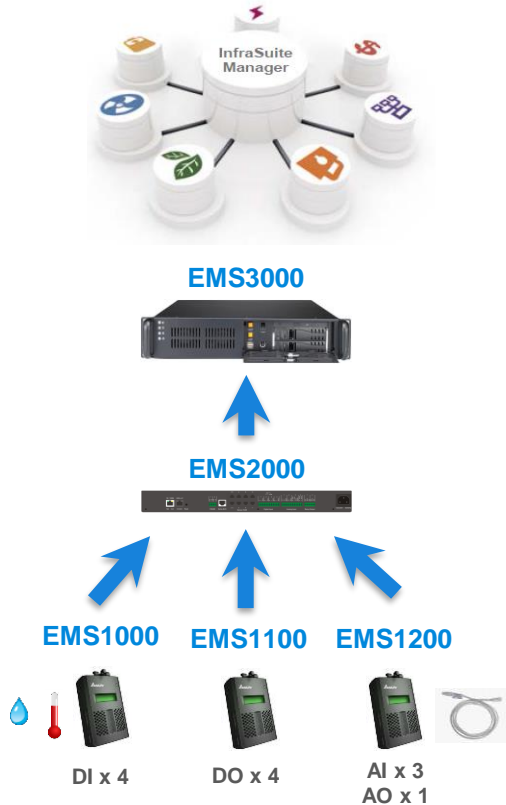


Windows Client



Web Interface

Monitor All of the Equipment



● Environment

- Temperature, humidity, leakage detection, motion detection, door magnetic, flow , pressure, wind speed, irradiance meter, ...etc.

● Power

- Generator, transformer, UPS, power distribution (PDC, PDU, ATS, STS, ACB), power meter, ...etc.

● Cooling

- Chiller, fan, valv, flow meter, temp/ humidity, cooling, PLC, ...etc.

● Security

- Door access, controller, magnetic lock, camera, ...etc.

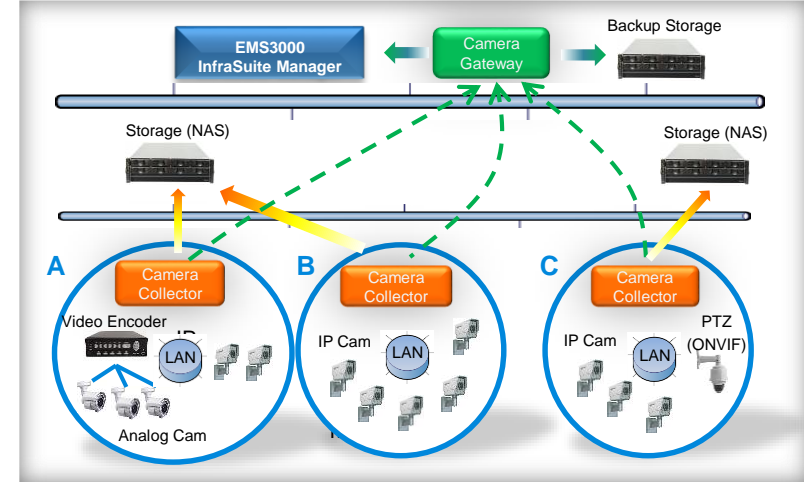
● Network

- Switch, router, ...etc.

Build-in NVR to Seamless Integrate the IP Camera

● Advantage

- Support distributed architecture to manage more than 1000 cameras.
- Work with EMS3000 to configure all of the cameras from a single portal. To identify the cameras in the layout plans and interact with the other facilities.
- Has the ability to manage the storage and backup space, the operation status of cameras and camera collector servers.



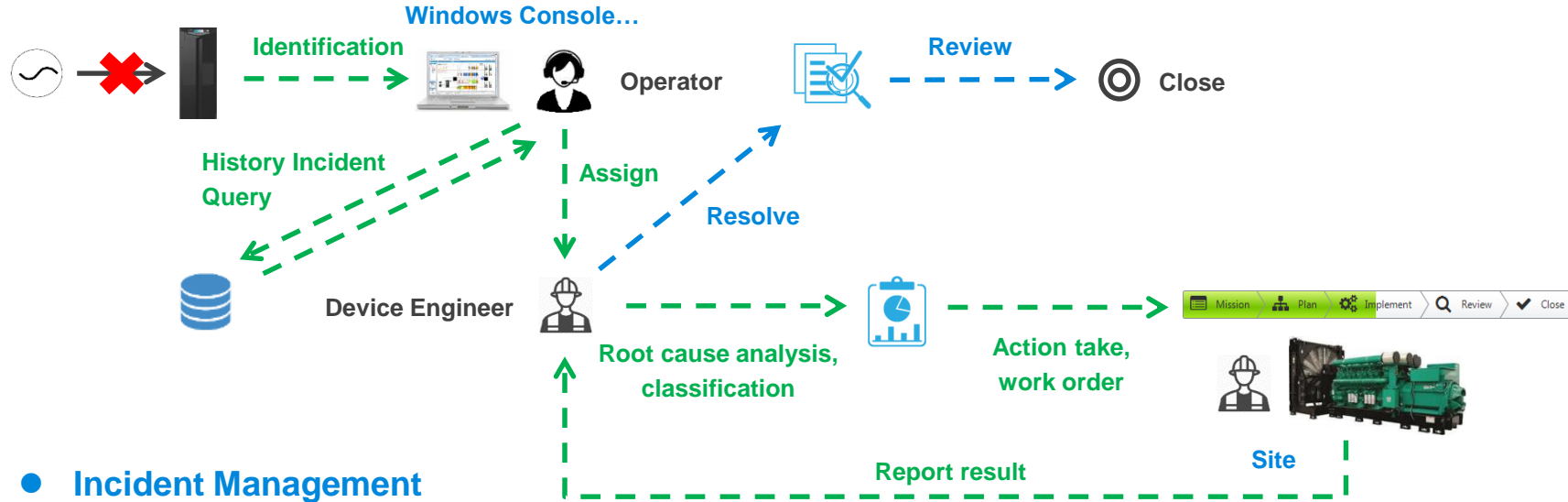
● Record – Playback

- Support event trigger, full time, schedule and manual recording.
- The storage path can be assigned for each Camera Collector server, the backup action can be triggered automatically by a pre-configured thresholds.
- The record can be open directly from EMS3000's event log, need not to query from the NVR console.





React and Get the Incident Resolved with Best Quality



● Incident Management

- The management platform that developed based on ITIL-defined processes and stages.
- It helps the users to quickly record and classify the incidents occurred in the data center, assigning tasks to appropriate handlers and rising up the failure elimination efficiency.
- The graphs and trend charts make it more efficient to track the incident/failure elimination status. The history records of these processes can be the references if there is a similar incident/failure occurs again in the future.

Energy Index Calculation & Analysis

● PUE

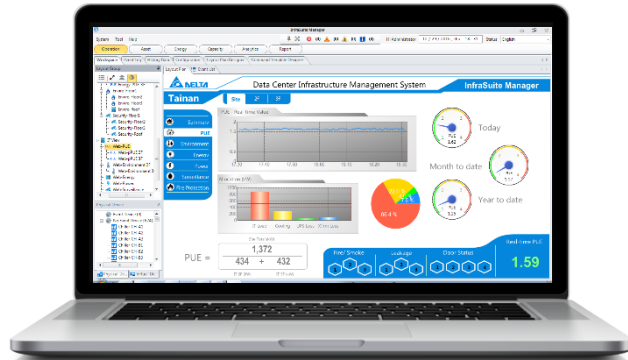
- Provide current and historical PUE indicators to enable data center managers to understand how much infrastructure energy is consumed per unit of electrical energy used by IT equipment. Energy consumption can be classified to find the basis for improving energy efficiency.
- Depending on the site configuration, it can meet PUE measurement level 1, 2, 3 and time interval 'Y', 'M', 'W', 'D'.

● Electricity Fee Calculation

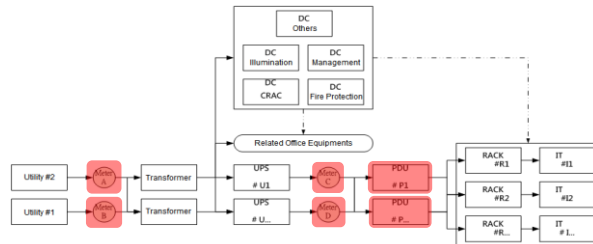
- The collected power meter kWh data can be used for electricity fee analysis. The electricity rate formula can be flexibly set and then the electricity bill can be generated according to the specified time zone.

● Energy Usage Analysis

- The tariff formula can be designed according to the time period, and each organization can individually set its own electricity fee formula.
- Power and energy analysis based on electricity meter or organization.

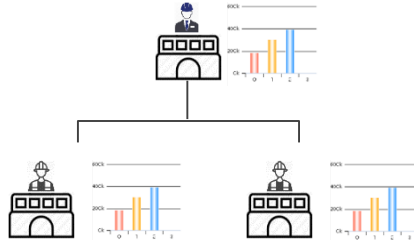


$$\text{PUE} = \frac{\text{Total Power Consumption}}{\text{IT Power Consumption}}$$



Translate, Classify & Ranking

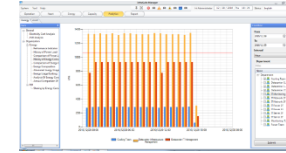
Organization, Formula, Statistics



Formula

分類	項目	單位	10月1日至10月30日 (本月以外推)	10月以外推
電力計費 (用戶電費)	電費	元	120.10	—
電力計費 (用戶電費)	電費	元	262.50	—
電力計費 (用戶電費)	電費	元	226.20	173.20
電力計費 (用戶電費)	電費	元	—	173.20
電力計費 (用戶電費)	電費	元	47.20	34.60
電力計費 (用戶電費)	電費	元	47.20	34.60
電力計費 (用戶電費)	電費	元	3.98	3.90
電力計費 (用戶電費)	電費	元	2.06	1.96
電力計費 (用戶電費)	電費	元	3.00	2.91
電力計費 (用戶電費)	電費	元	2.06	1.96
電力計費 (用戶電費)	電費	元	2.06	1.96

Statistics



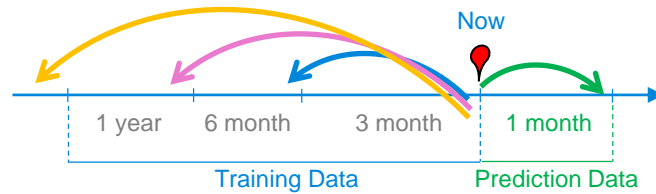
Energy Usage Analysis

- Tariff formula can be configured for multiple time segments then assign to an organization.
- A organization can includes power meters, PDUs or PDC branches to calculate the power consumption.
- Power and energy analysis for power items or organizations.

Asset Analysis

- Rack power ranking by average and peak power for organization.
- Asset expiration report.
- Asset inspection analysis.

Rack Load(KW)	Time Period	Average KW	Average KW/Rack Load (%)	Rank
6	2018/10/01-2018/10/01	2.83	47.12 %	1
6	2018/10/01-2018/10/01	2.83	47.12 %	2
6	2018/10/01-2018/10/01	2.83	47.12 %	3
6	2018/10/01-2018/10/01	2.83	47.12 %	4
6	2018/10/01-2018/10/01	2.83	47.12 %	5
6	2018/10/01-2018/10/01	2.83	47.12 %	6
6	2018/10/01-2018/10/01	2.83	47.12 %	7
6	2018/10/01-2018/10/01	2.83	47.12 %	8
6	2018/10/01-2018/10/01	2.83	47.12 %	9
6	2018/10/01-2018/10/01	2.83	47.12 %	10
6	2018/10/01-2018/10/01	2.83	47.12 %	11
6	2018/10/01-2018/10/01	2.83	47.12 %	12
6	2018/10/01-2018/10/01	2.83	47.12 %	13



● Implementation Method

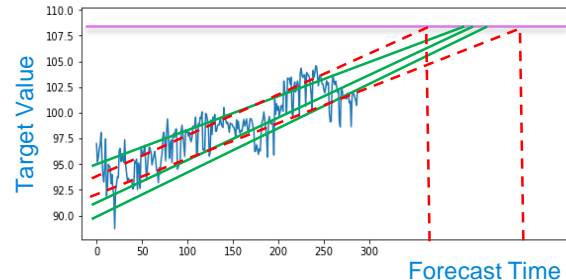
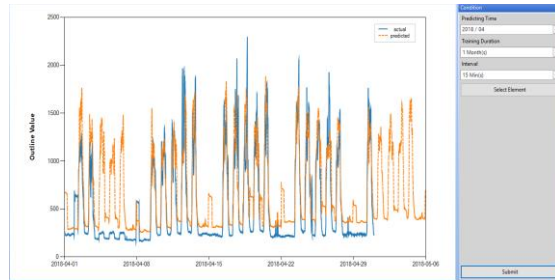
- Because each project is different in configuration and application, the existing EMS3000 historical database (1 year) must be used for the learning materials to model and predict.

● Predict Target Trends

- Used to predict the target trend for the next month, the target can be selected such as total power trend, network traffic or water consumption. The trend screen shows the predicted and actual curves and provides an RMSE error for reference.

● Forecast Capacity Expiration Date

- Assist the data center operator to understand when the current power and cooling capacity will be fully occupied. According to this, you can arrange to purchase new equipment or build a new datacenter in advance.



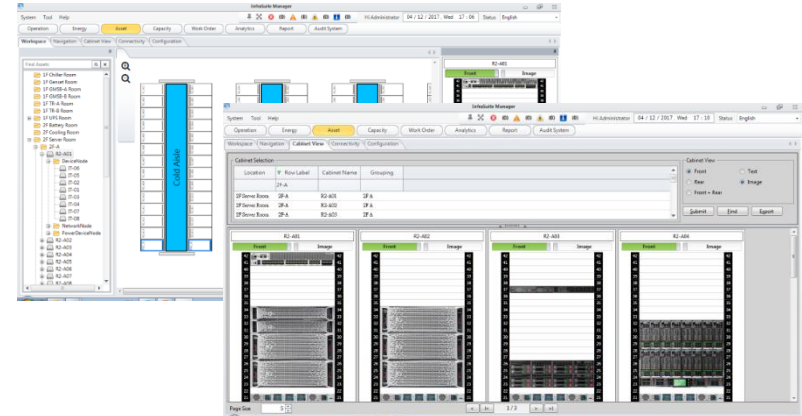
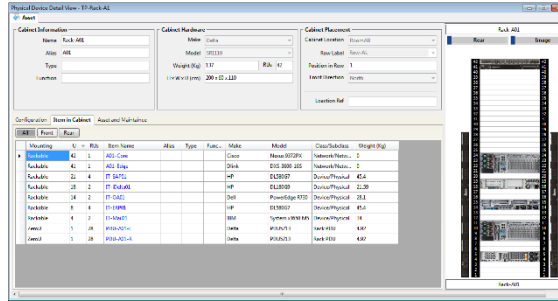
Comprehensive Asset Management

● Advantage

- Include the facility and IT equipment.
- Quickly classify and search any asset in the system.
- The asset information can be export to and import from an Excel file for the batch application.
- The document management for specification, manual, purchase order, OI, ... can be reserved in the system.
- With asset expiration analysis and rack power ranking analysis.

● Rack Management

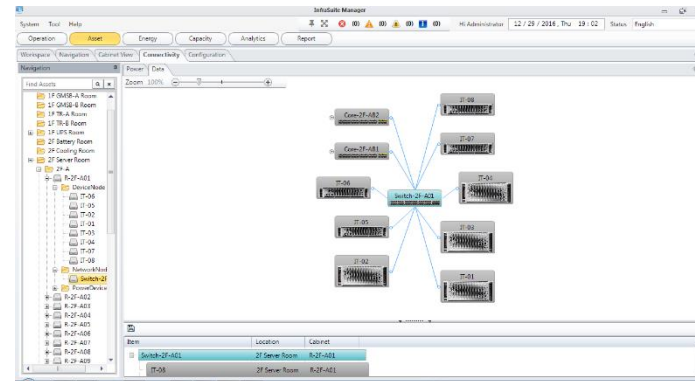
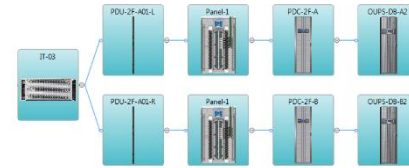
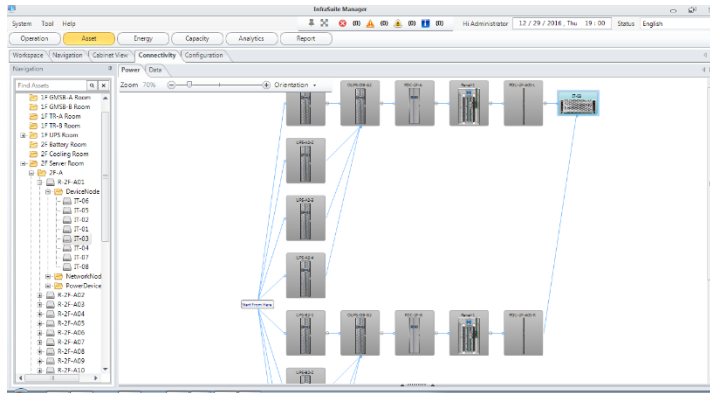
- Racks can be grouped as rows, islands, rooms or sites.
- Rack IT devices, e.g., servers, blade, switching hub) and power devices(i.e. PDU) can be displayed as images or texts.
- Provide the cabinet view and the result can be export as an excel file.

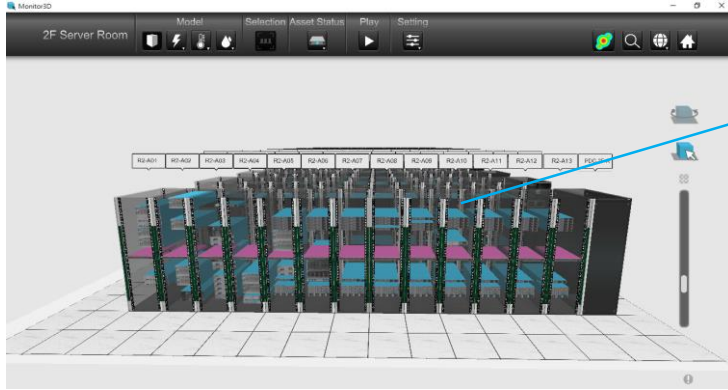


Keeping an Eye on the Connectivity

• Device Relationship Analysis

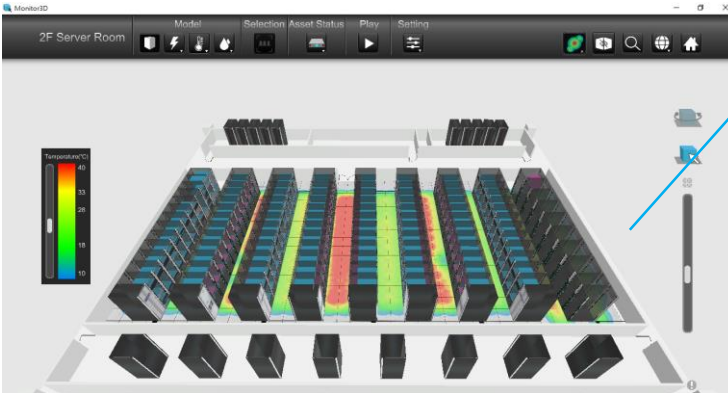
- **Power Port:** Display the relationship between the power supply, power conversion and power usage devices. Analyze the upstream and downstream equipment for failure impact analysis.
- **Data Port:** Display the relationship between the network, patch panel and the terminal devices. Select the network device to list the related connection devices.





3D Browse:

This function can automatically generate 3D view according to the floor plan design, and can perform operations such as cruising, rotating, zoom in and out.



Rack Power Usage:

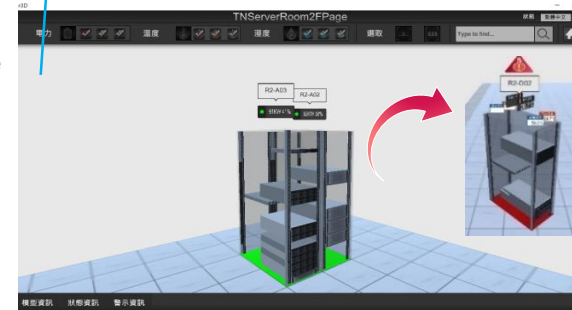
The rack power load and design rating are counted to display different color alarms to warn the current rack power consumption.

Rack Detail:

The 3D rack detail view allows the user to know the location of the actual assets in the rack, which can be used to check whether they interfere with each other.

Temperature/ Humidity:

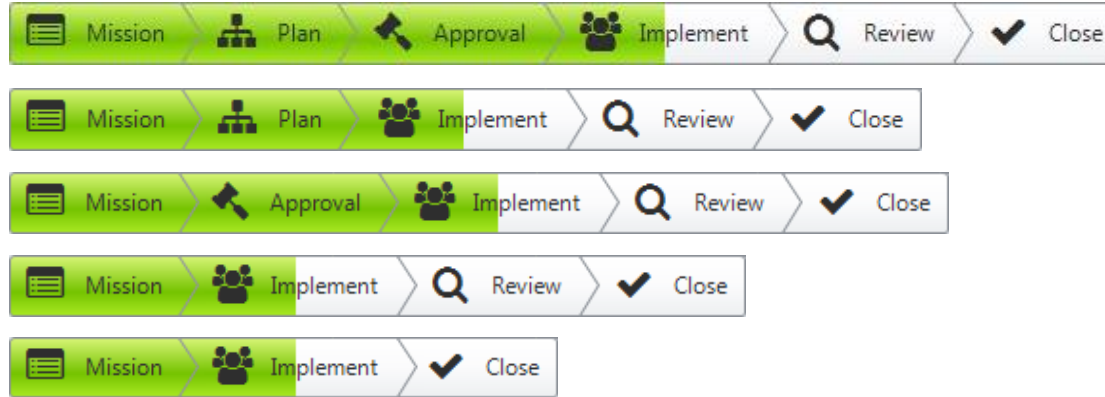
Collect the inlet air temperature and humidity of the rack, and display different alarm in different colors.



Work Flow Process Selection & Role Define

- **Work Flow Type**

- Customized process templates can be designed for various types of work flow.



- **Roles**

- Define the roles who are involved in the work order.
(E.g., Owner, Planer, Approver, Reviewer & Worker...)



Work Order Module – Tracking Tasks at Your Fingertips

● Advantages

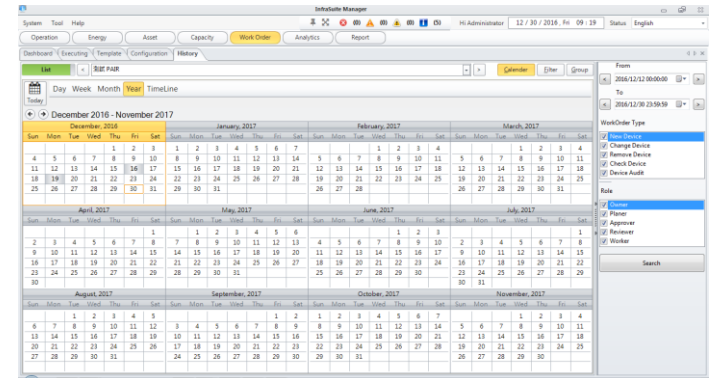
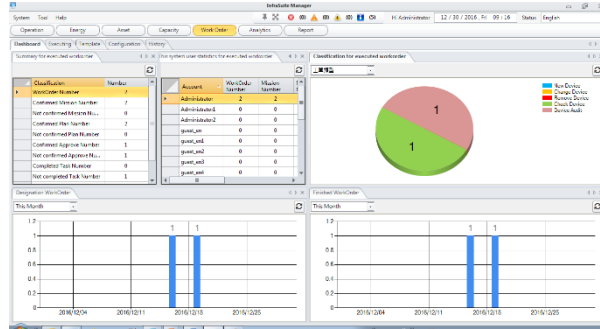
- Provide an all-in-one platform for more convenient signing and approving process.
- Templates can be flexibly designed for different purposes.
- Can be viewed in a calendar for more convenient task management.
- Provide dashboards for statistical work orders.
- Work orders can be scheduled, event triggered or manually triggered.
- You can upload files to the specified work order template in advance, such as operation instructions, equipment specifications, maintenance manuals, etc.

● Work Order

- Work order types can be customized for different applications.
- After the work order is triggered, send an e-mail to the responsible person.
- The file can be uploading during the work order such as live photos and check forms. Save the file in the work order.

● History

- Track work orders by date/time, owner and work orders for view and export.
- Can check the signing process, personnel execution time points, retention files, etc.



● Advantage

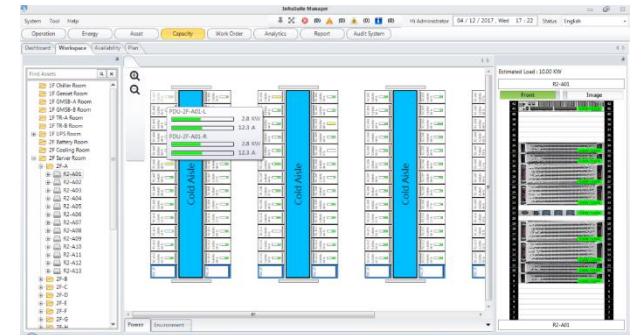
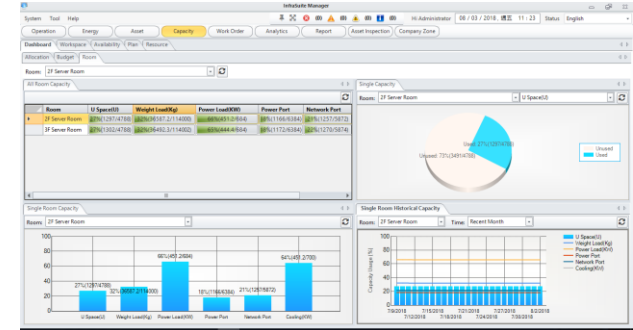
- Calculate the capacity of rack weight, space, power, socket and network usage. Analyze available capacity according to room and rack.
- Base on the existing configuration, to recommend the optimal placement of new IT equipment.
- The plan can be combined with the current capacity usage to display the planned capacity usage status.
- Provide organizational resource budget and allocation process.
- Provide an interface for organizations to check the resource usage.

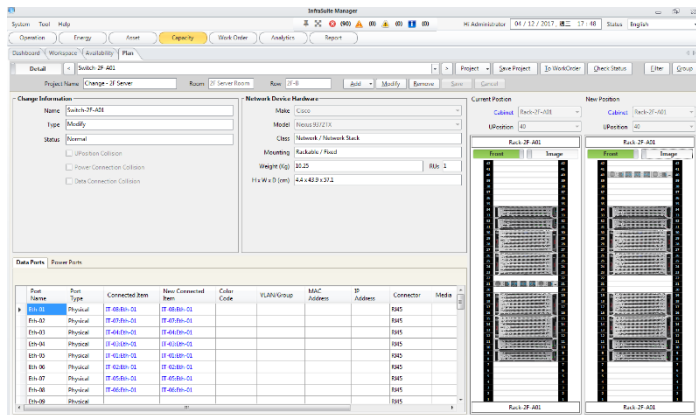
● Dashboard

- Calculate the availability by room based on the power load, power inlet, network port, weight and U-space.

● Rack Level Management

- Calculate the remaining rating power, weight and U-space for each rack.
- The rack component can display the current power consumption
- The rack component can display the related color for the assigned temperature/ humidity sensor.





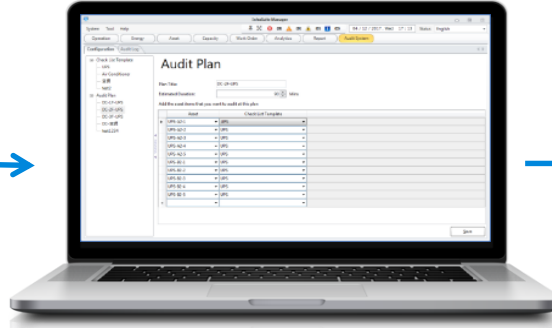


Asset Inspection Module – Easy Maintenance, Simple to Use

EMS3000

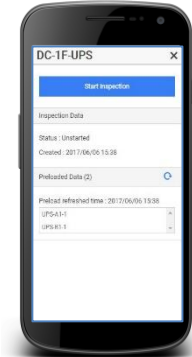


Plan



Execute

Inspection app



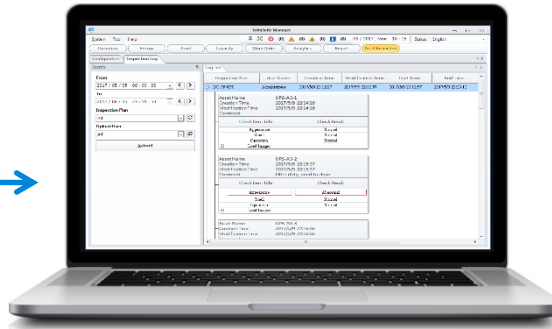
Asset
QR Code

Reduce the
abnormal event,
extend the
equipment lifecycle

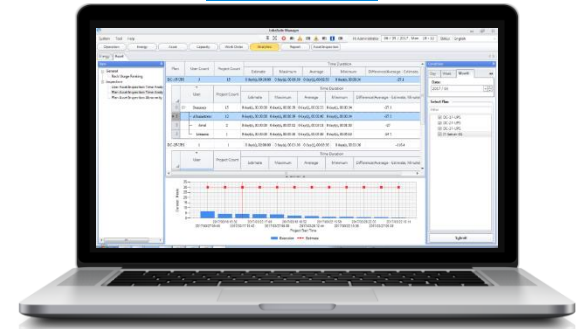


Review

History Log



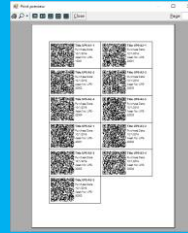
Analysis



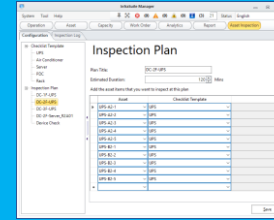
EMS3000



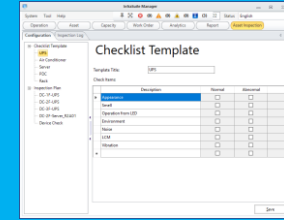
➤ Generate QR Code



➤ Create Plan



➤ Define Checklist



Workorder



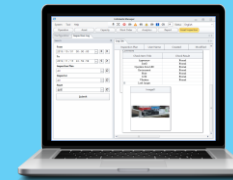
Inspection app



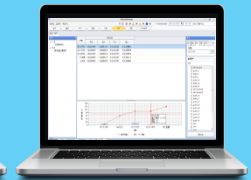
Review



History Log



Analysis





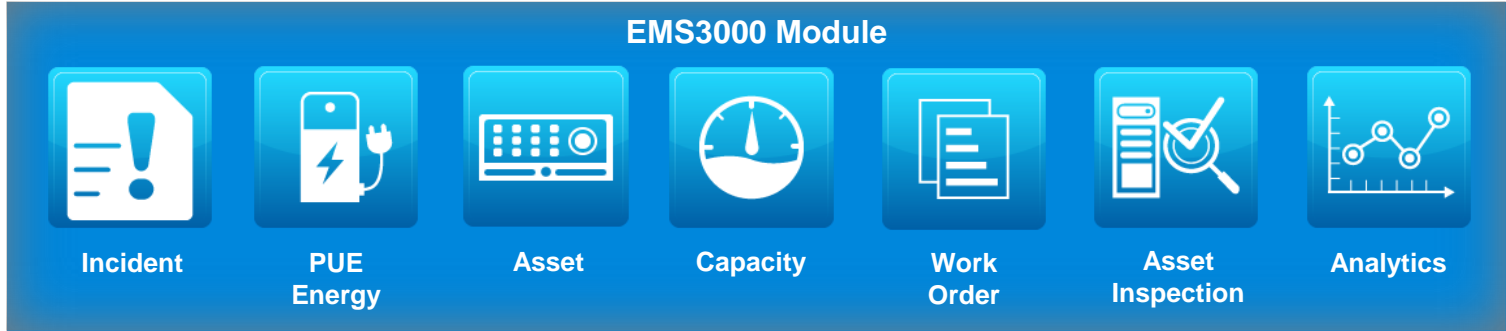
Success Story

<http://infrasuite-manager.deltapowersolutions.com/>

Our Customers



Operation



Application

(Manufacture, telecom, education, government, financial, hospital, entertainment, energy, traffic, enterprise, ...)



MEDIATEK



CTBC

bytestnet
DATACENTERLOSSINGEN



National
Taiwan
University



STTelemedia
Global Data Centres





CTBC



CTBC BANK

It is the first trust-investment company listed in Taiwan. As of September 2017, it is the second largest credit card issuing bank in Taiwan (calculated as a valid card). There are 150 branches in Taiwan with overseas branches (offices, branches, sub-branches and offices in the US, Canada, Japan, Indonesia, Philippines, India, Thailand, Vietnam, Malaysia, Hong Kong, Singapore, China, Myanmar and Australia). Sub-branch branches), a total of 107.

● Client's Needs:

- Power system, cooling system, access control system, fire protection system, temperature and humidity, and room status, construction a complete maintenance process between company-server room-equipment.
- The DCIM system is divided into four modules: operation module, environmental monitoring module, facility management and workflow management module.

● Delta's Solution: EMS3000

- ✓ InfraSuite Manager base model
- ✓ Functional Module: Energy
- ✓ Functional Module: Asset
- ✓ Functional Module: Capacity





Mediatek

MediaTek is a pioneering fabless semiconductor company, and a market leader in cutting-edge systems on a chip for wireless communications, HDTV, DVD and Blu-ray. MediaTek created the world's first octa-core smartphone platform with LTE and our CorePilot technology released the full power of multi-core mobile processors. MediaTek is headquartered in Taiwan and has offices worldwide.

● Client's Need:

- Facility Monitoring in datacenter: Power, cooling, environment and RTU
- PUE Calculation
- Facilities and IT asset management required.
- Work Order function required.

● Delta's Solution: EMS3000, EMS2000, EMS1000

- ✓ InfraSuite Manager Base Model
- ✓ Functional Module: PUE Energy
- ✓ Functional Module: Asset
- ✓ Functional Module: Incident
- ✓ Functional Module: Work Order





TSMC



TSMC, the world largest dedicated semiconductor foundry based in Hsinchu science park, Taiwan, is the global leader in semiconductor industry. The continuity of the operations of lab and manufacturing is crucial to the success of its business and the selection of UPS is critical to sustain seamless power supply

WW No.1

- **Client's Needs:**

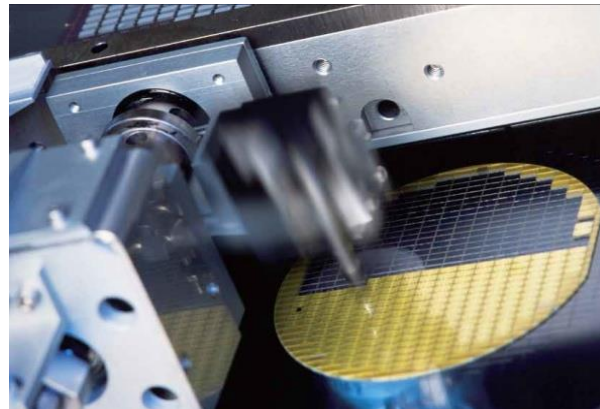
- Measure all of the existed devices' power consumption in the datacenter without adding additional meters.
- Calculate the level 1 PUE for each room and the datacenter.
- To cope with the needs of ever expanding in datacenter management.

- **Delta's Solution: EMS3000**

- ✓ InfraSuite Manager base model
- ✓ Functional Module: Energy

Integrate with InTouch to retrieve the flow and water temperatures

Build the virtual power meters to calculate the chiller energy (kWh)



Semiconductor Foundry



STT GDC



ST Telemedia Global Data Centres (STT GDC) is a fast-growing data centre provider headquartered in Singapore. With a global platform of data centres in the world's major business markets of over 70 facilities across Singapore, China, India and the UK, STT GDC offers a full suite of best-in-class, highly scalable and flexible data centre solutions, connectivity and support services that best meet customers' current and future colocation needs.

- **Client's Need:**

- Monitor the power facility devices in the datacentres.
- Need to calculate the energy consumption(kWh) and real-time power(KW) for each rack.
- Calculate the energy consumption based on the customer's rent racks.
- Generate the power usage report for each customer. (summary, single rack, power source).

- **Delta's solution: EMS3000**

- ✓ InfraSuite Manager base model
- ✓ Functional Module: Analytics
- ✓ Functional Module: Asset





Shanghai Disney

*The **Shanghai Disney Resort** is an upcoming theme park resort to be built by Walt Disney Parks and Resorts. This would be the first Disney park in mainland China and the second within the Greater China region, the other being the existing Hong Kong Disneyland. The resort is scheduled to open at the end of 2015.*



- **Application: Enterprise Datacenter**
- **Client's Needs:**
 - Monitor all of the facility devices in the datacenter: Power, cooling, environmental sensor, surveillance.
 - Measure all of the rack power consumption from PDU.
- **Delta's Solution: EMS3000, EMS2000, EMS1000**
 - InfraSuite Manager base model

Integrate 3rd party power, cooling devices.



Smarter. Greener. Together.

To learn more about Delta, please visit www.deltaww.com
or scan the QR code



English



Traditional
Chinese

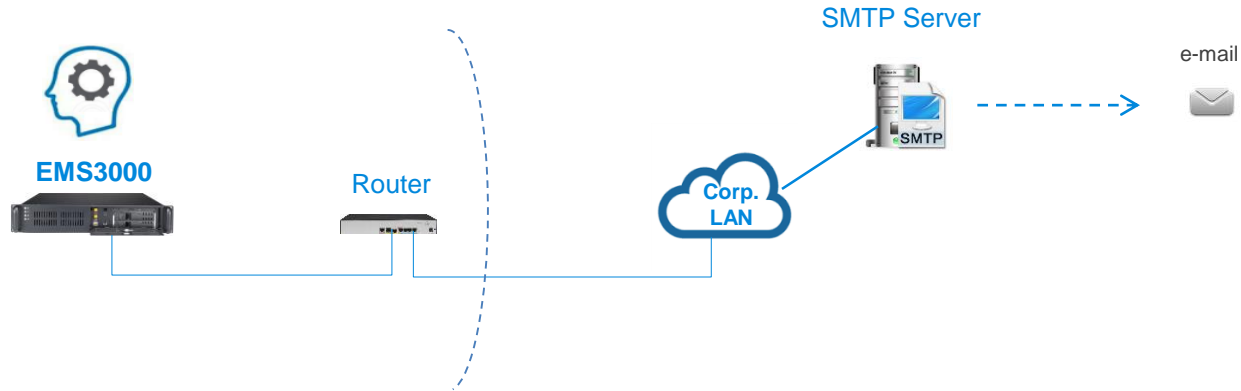


Simplified
Chinese



Diagram for Notification

- E-mail



- SMS

