



Cabinet level access security has become critically important for all data centers and server rooms. More and more IT managers have recognized this need and are upgrading their cabinets with secured Door Lock access control.

Our DL series provides data center managers a complete networked solution with **monitoring, control, alarm & reporting**. It allows cabinet access remote management - saving traveling time / costs and hence increases the data center operation efficiency.

Key Benefits

>>> Affordable Price

A basic cabinet can be upgraded with Our DL Series access control at an affordable price.

>>> Compatibility

Hardware - Our DL handle is already designed for some global IT branded cabinet models. Other cabinets just need to make a custom handle mounting cut-out on the door to suit our DL handle.

Software - We offer software for remote management. Besides, our DL Series also supports SNMP for integration to the existing BMS of data center. Users can use their own platform for a centralized management.

Smartcard - Our DL handle caters for the 2 most common alternatives - **Proximity** & **MiFARE** format. The users can keep using their existing Smartcard to apply on the cabinet access system if their Smartcards are in either format as above.

>>> Functionality

Functionality is not limited to cabinet access management. In addition to cabinet access control, DL Series can be further expanded to PDU and environmental management. Users can remotely manage the above devices via the provided software.

>>> Expandability

The managing capacity of DL Series is expandable to a maximum of 3000 cabinets. And control box GUI allows up to 100 concurrent client access to remotely manage the locking handles. DL Series provides the scalable flexibility to the data center projects, especially to the project with several phases.

Key Hardware - Control Box - DL-2001 & DL-2002

Control Box consolidates all the hardware components in a cabinet and controls the management functions. All control boxes in cabinet can be connected to each other for centralized management.

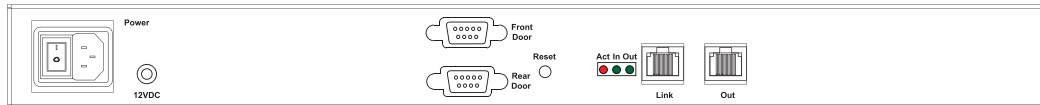
DL Series offers 2 optional control box models :

DL-2001 for **Cabinet Smartcard Access**

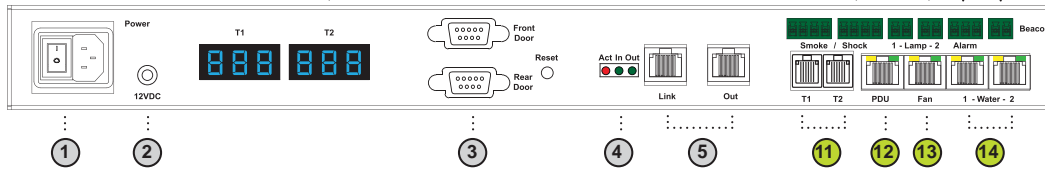
DL-2002 for **Cabinet Smartcard Access + PDU / Fan / Environmental Management**



DL-2001



DL-2002

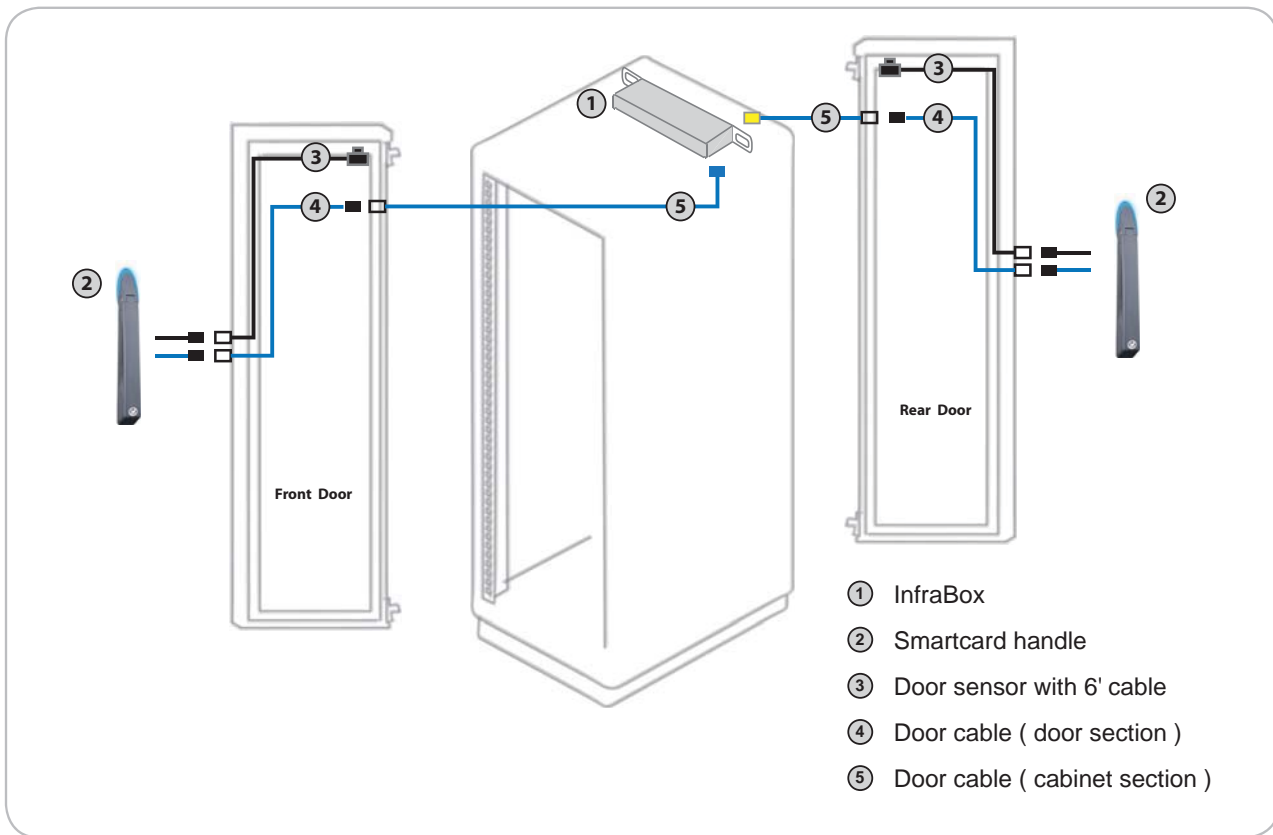


- ① Power input
- ② Dual power input (option)
- ③ Door cable DB-9 connector x 2
Connect to the front and rear handle
- ④ "Act in Out" LED
- ⑤ Daisy chain RJ45 port x 2
(Link & Out)
- ⑥ Temp. LED display x 2
- ⑦ Smoke / Shock sensor port x 2
- ⑧ LED Light Bar port x 2
- ⑨ Port for 3rd party alarm board x 1
- ⑩ LED beacon port x 1
- ⑪ Temp. & Humid. sensor port x 2
- ⑫ PDU port x 1 (RJ-45, up to PDU daisy chain level x 4)
- ⑬ Fan unit port x 1 (RJ-45, up to fan unit daisy chain level x 2)
- ⑭ Water sensor port x 2

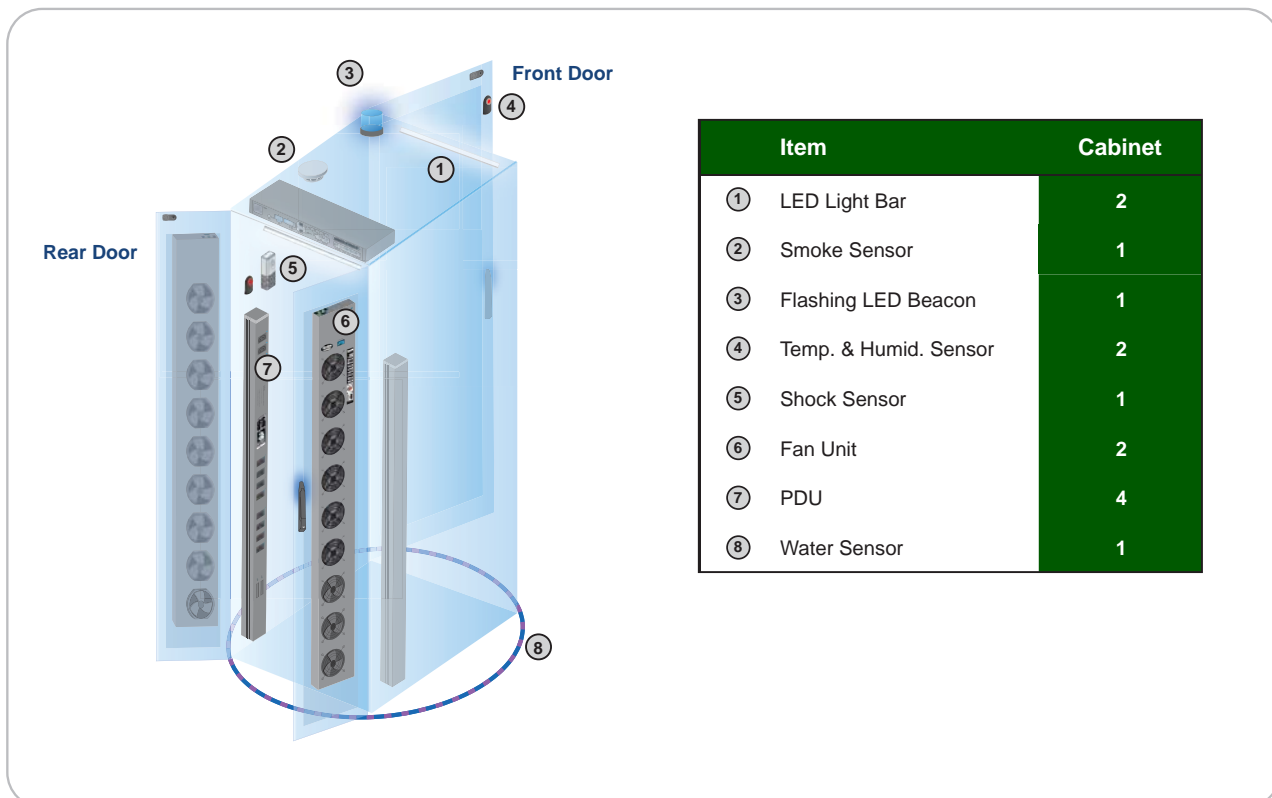
Specification	
Product Dimension (W x D x H)	400 x 135 x 39.7 mm / 15.7 x 5.3 x 1.6 inch
Net Weight	1.06 kgs / 2.3 lbs
Power Consumption	Auto-sensing 100 to 240VAC, 50 / 60Hz, Max. 48 Watt
Operating Temperature	0 to 55°C Degree
Storage Temperature	-5 to 60°C Degree
Relative Humidity	5~90%, non-condensing
Mounting	1U Rackmount
Safety Regulatory	FCC & CE certified
Environmental	RoHS2 & Reach compliant by SGS

Installation - Control Box - DL-2001 & DL-2002

Key Hardware Installation Diagram - InfraBox / Handle / Door Sensor





Installation Diagram - PDU / Fan / Sensor / Peripheral



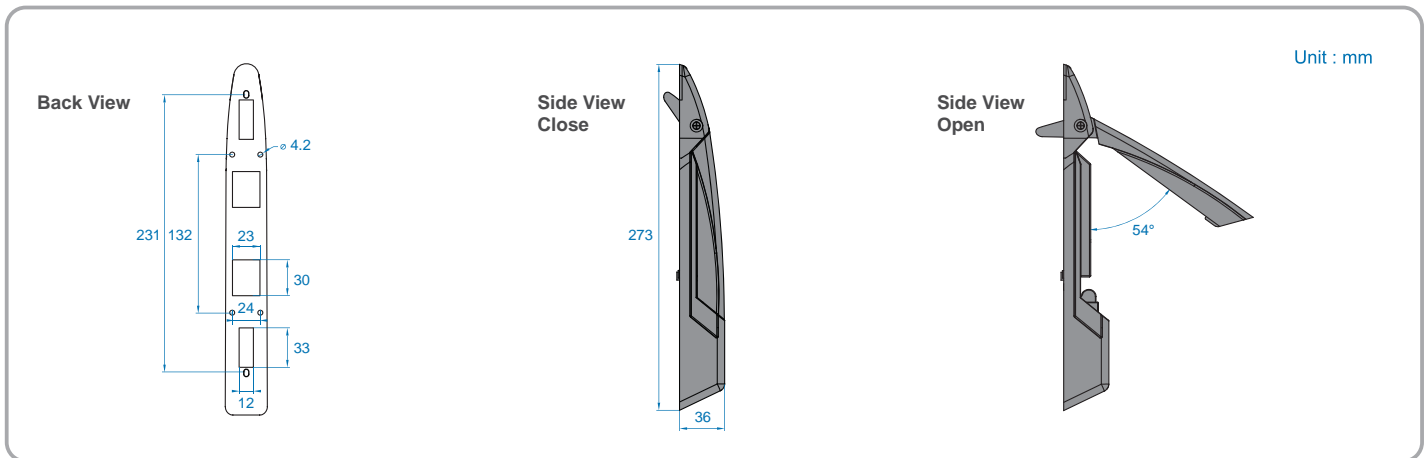
Key Hardware - Handle - DL-1003 (For CR16xx Series only)

The patented DL-1003 door lock handle is designed specially for CR16xx cabinets. Cabinet manufacturers just need to make a custom handle mounting cut-out to suit DL-1003. It is an alternative for users who look for a stylish and different outlook design.



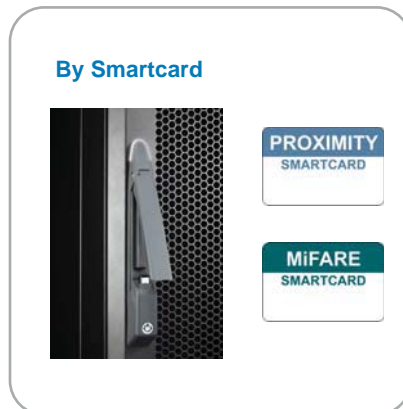
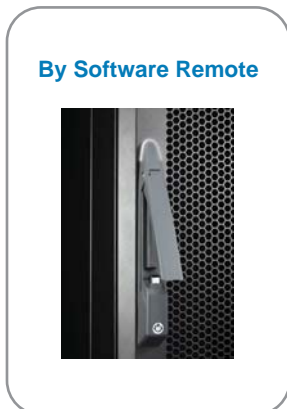
DL-1003P	Features	DL-1003M
	Intelligent design with patent	
	Universal mounting design for global branded cabinets	
	Dual locking system (electronics and mechanical lock)	
	Electronic lock released either by smartcard or software	
	✓ Proximity 26-bit smartcard compatible	
	MiFARE 26-bit smartcard compatible	
Cabinet access status and alarm indication by LED FC CE RoHS REACH		

Mounting Cut-out



Handle Releasing

DL-1003 handle allows 3 lock releasing ways - by Software remote, Smartcard or Mechanical key.



Key Hardware - Handle - DL-1004

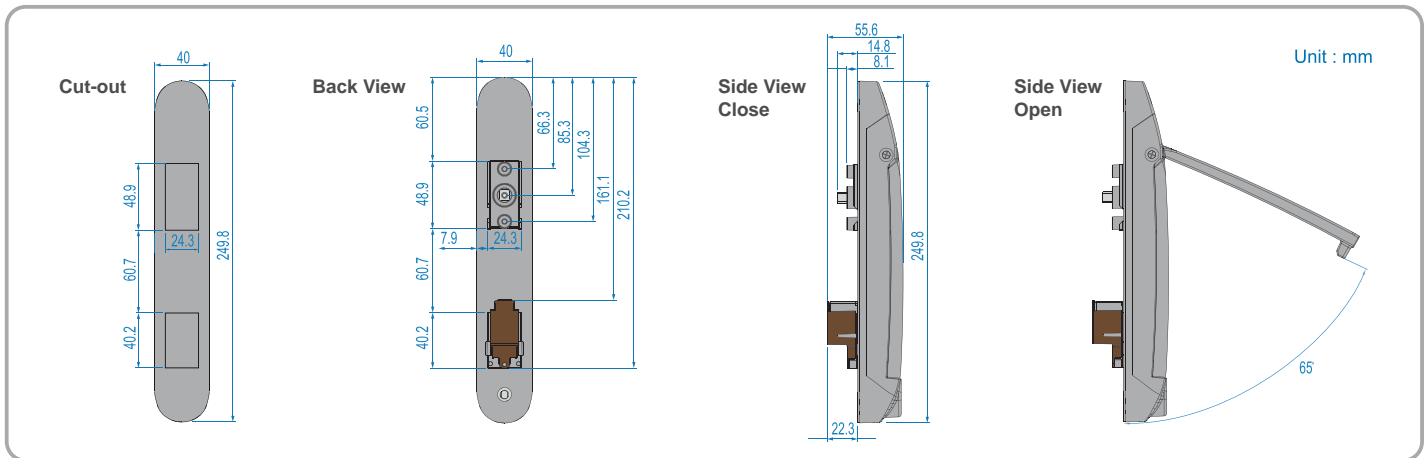
The patented DL-1004 handle is an intelligent design with universal mounting cut-out. Most global branded cabinets have applied a standard handle cut out dimension on the door. To achieve the highest level of interoperability offered in the cabinet industry, the DL-1004 handle applies the same mounting dimension. It avoids costly and complicated door customization for the smartcard handle integration.

Worldwide patents on appearances, mechanism, functions and connections.



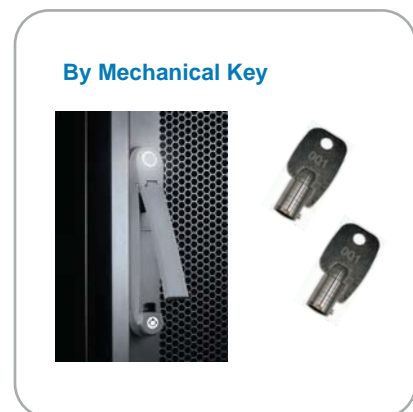
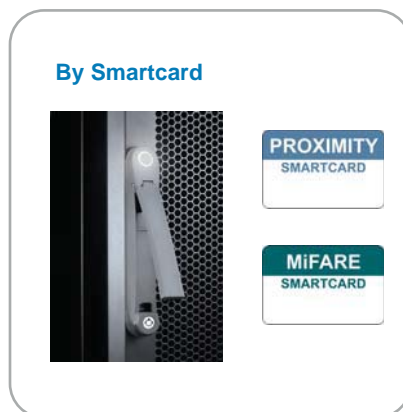
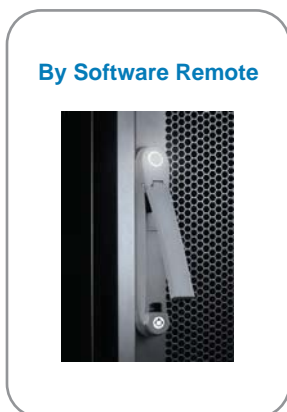
DL-1004	Features	DL-1004	
	Intelligent design with patent		
	Universal mounting design for global branded cabinets		
	Dual locking system (electronics and mechanical lock)		
	Electronic lock released either by smartcard or software		
	✓ Proximity 26-bit smartcard compatible		✓
	MiFARE 26-bit smartcard compatible		
	Cabinet access status and alarm indication by LED		
	FC CE RoHS REACH		

Universal Mounting Cut-out



Handle Releasing

DL-1004 handle allows 3 lock releasing ways - by Software remote, Smartcard or Mechanical key.



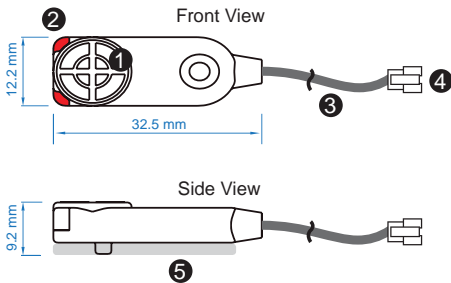
Key Hardware - Door Sensor - DLS-101 & DLS-102

Door Sensor is an important component which should never be overlooked.
DL Series provides high quality, durable and precise door sensors to ensure 100% right door detection. 100% right door detection.



(I) Inductive Door Sensor, pair (DLS-102I)

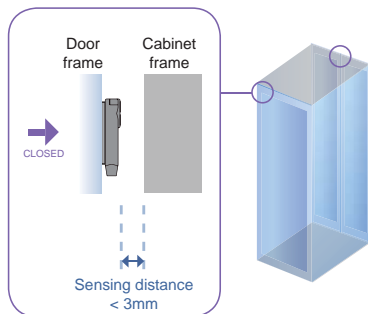
- light weight / adhesive
- easy setup for existing cabinet retrofit
- no custom cutting required on doors



1	Sensor area
2	Red LED (light up while door opening)
3	2m cable
4	Cable jack (connect to handle)
5	2mm adhesive tape

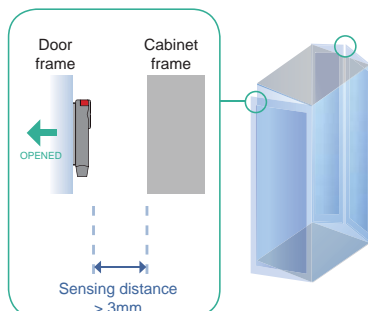
DOOR CLOSE

- Close door
- Inductive sensor detects the cabinet frame
- **DOOR CLOSE SIGNAL** sends out



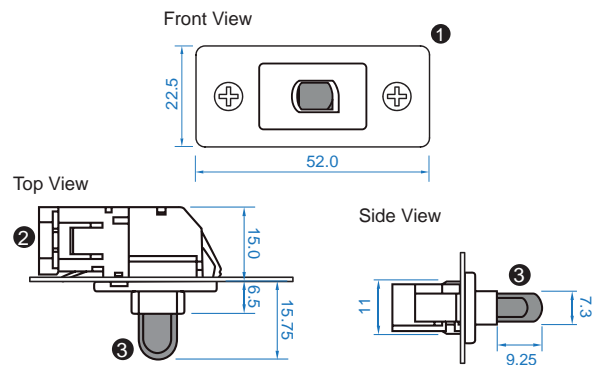
DOOR OPEN

- Open door
- Inductive sensor loses detection with cabinet frame
- Red LED of sensor light up
- **DOOR OPEN SIGNAL** sends out



(II) Mechanical Door Sensor, pair (DLS-101)

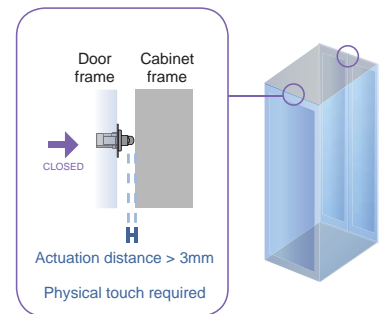
- low cost / precise
- cost efficient integration to new cabinet
- custom cutting required on doors



1	Steel mounting plate with 2 screw holes
2	Cable connector
3	Press button (total travel distance : 9.25 mm) (min. actuation distance : 3.00 mm)

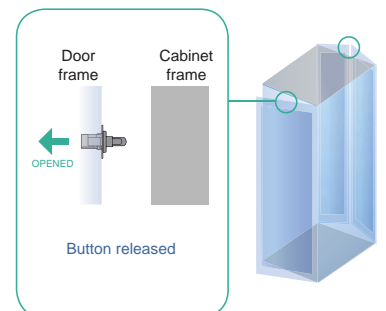
DOOR CLOSE

- Close door
- Sensor button is pressed on
- **DOOR CLOSE SIGNAL** sends out



DOOR OPEN

- Open door
- Sensor button is released
- **DOOR OPEN SIGNAL** sends out



Network Setup - DL Series

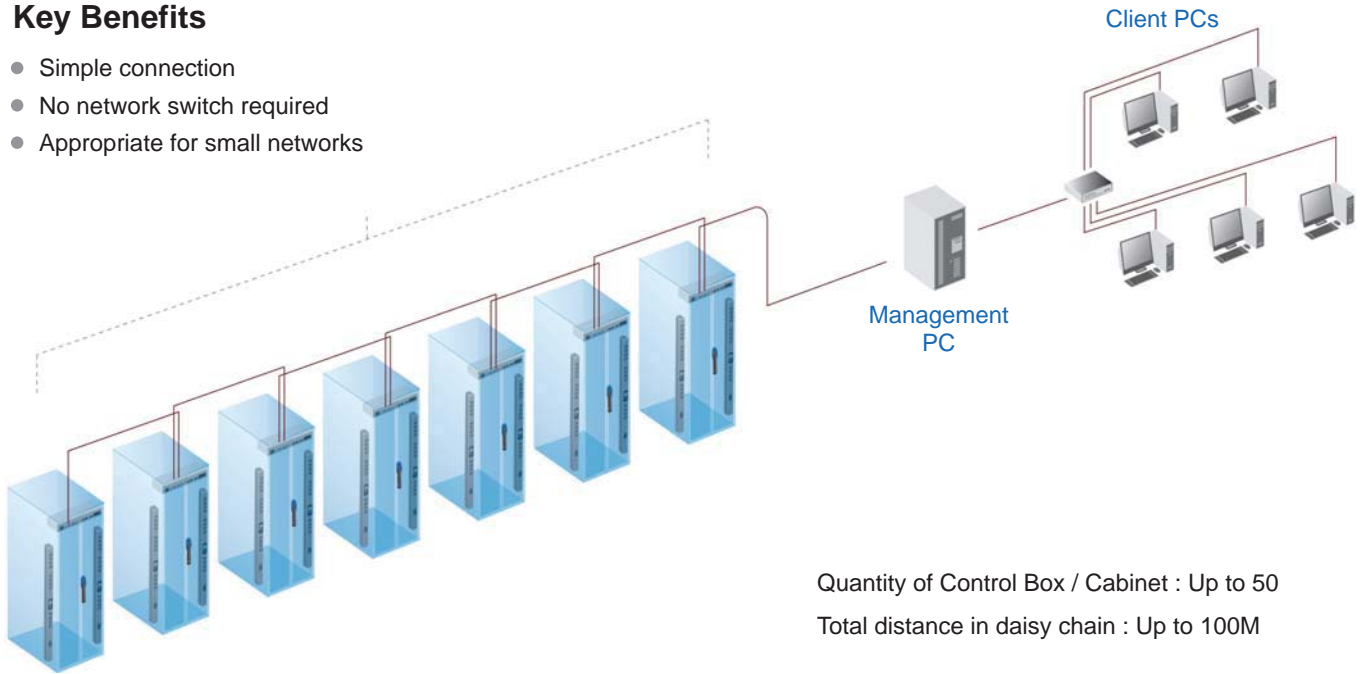
DL Series provides 3 connection ways - **Daisy Chain , Star , Mixed.**

Which connection users apply is related to the site scale, environment and users' requirements.

< I > Daisy Chain Connect all control boxes by Cat5/6 cable, and no any network switch required

Key Benefits

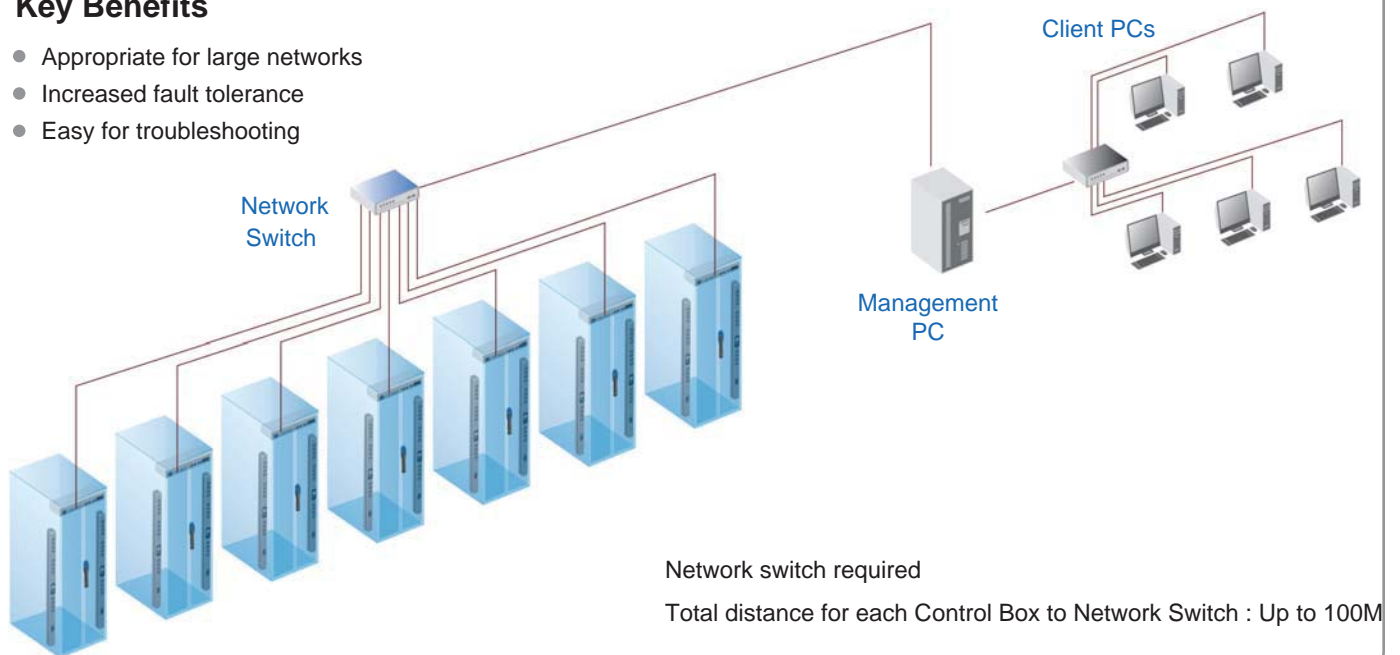
- Simple connection
- No network switch required
- Appropriate for small networks



< II > Star Connect to network switch by a point-to-point connection

Key Benefits

- Appropriate for large networks
- Increased fault tolerance
- Easy for troubleshooting

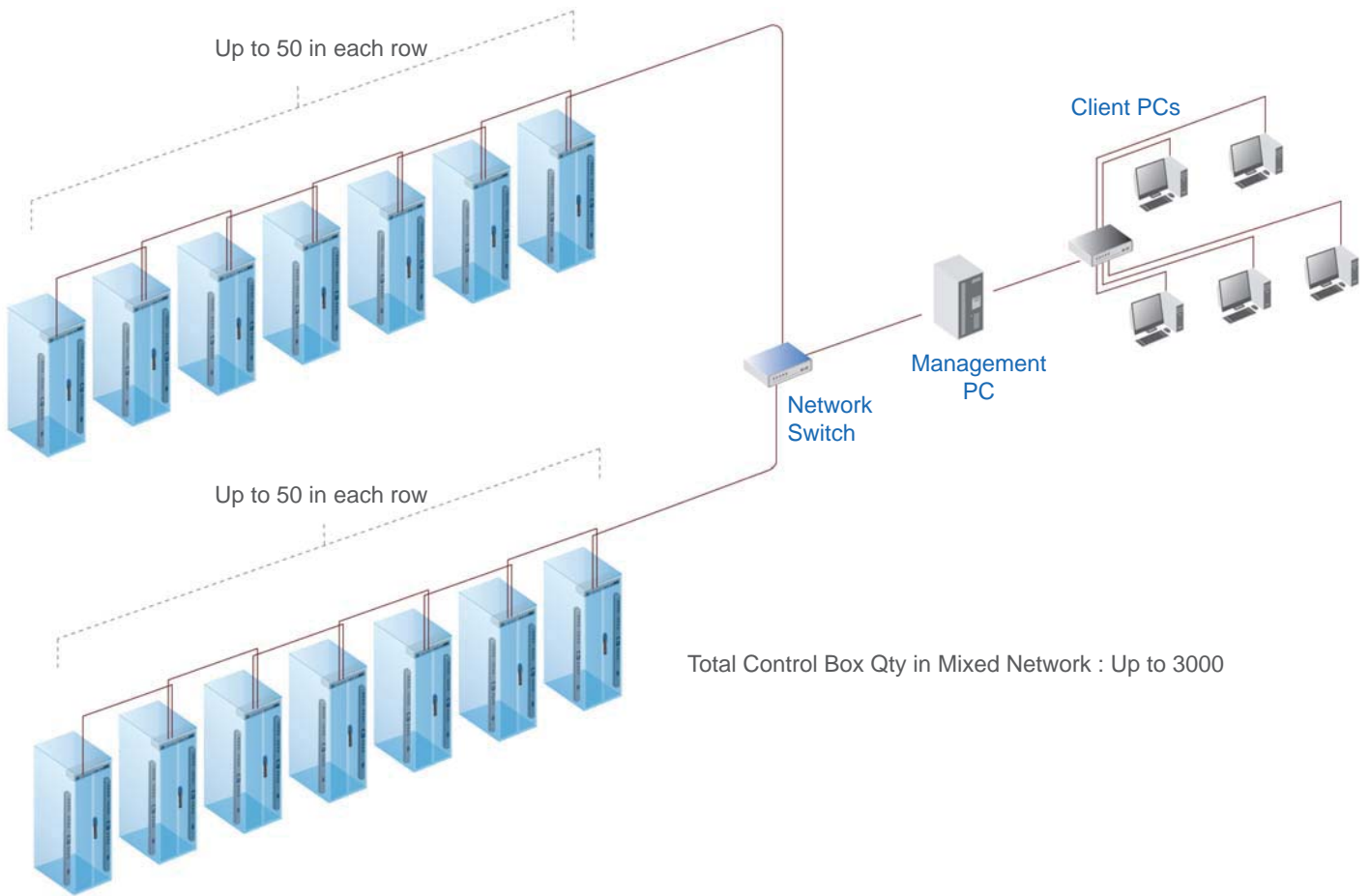


Network Setup - DL Series

< III > Mixed Combining daisy chain with star connection

Key Benefits

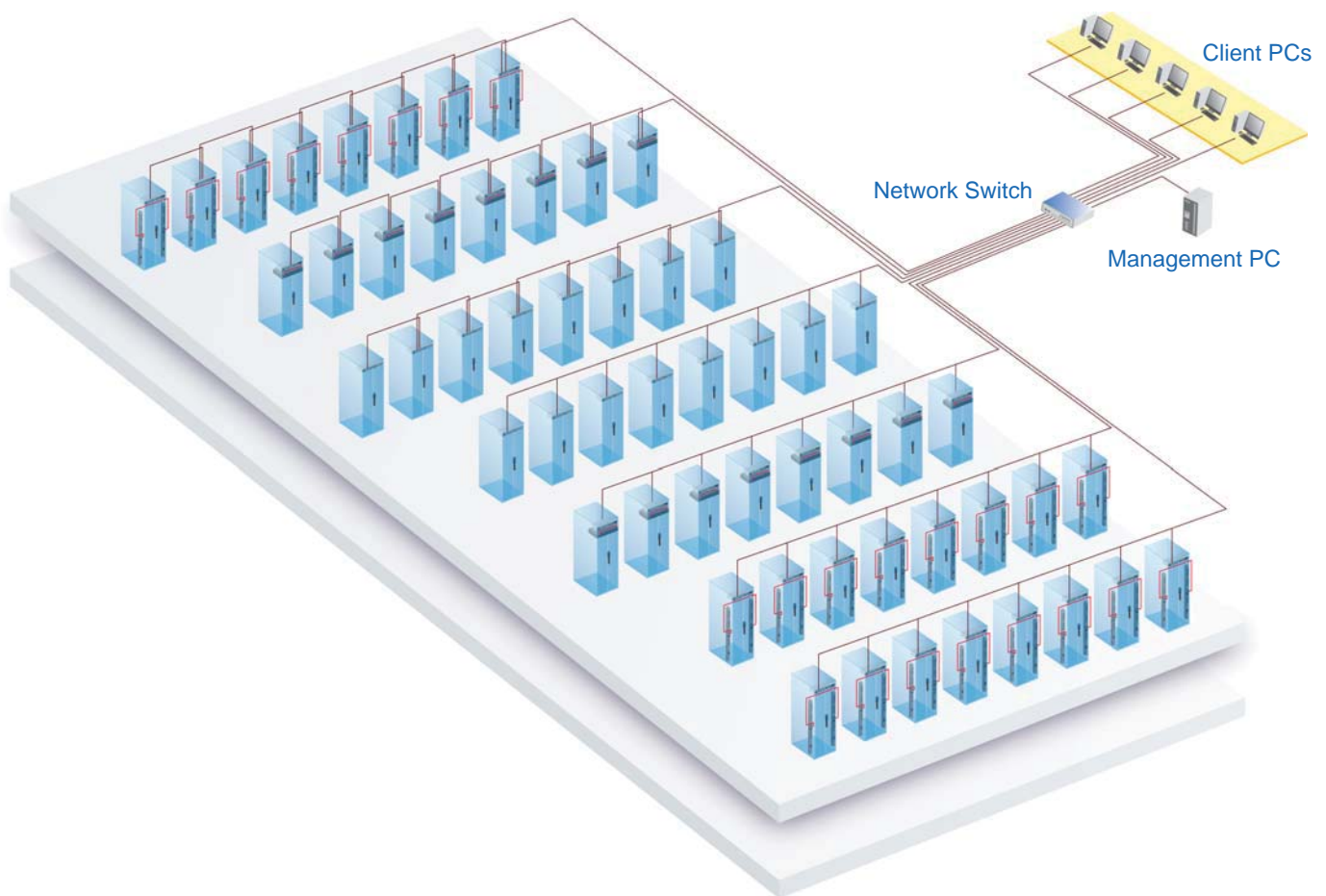
- Most effective and practical for large scale of networks
- Take all advantages of Daisy Chain and Star connection
- Flexible to meet a variety of network environments and needs



< I > Data Center

By mixed connection, DL Series can be scalable up to 3000 cabinets. DL-2002 and DL-2001 Control Boxes can be coexisted in the same network. Users are enabled to manage and remotely access all cabinets under a centralized and user friendly GUI.

- Connect the 1st InfraBox in each daisy chain to the network switch
- Connect the management PC and client PCs via the network switch
- Up to 3000 Infraboxes / Cabinets



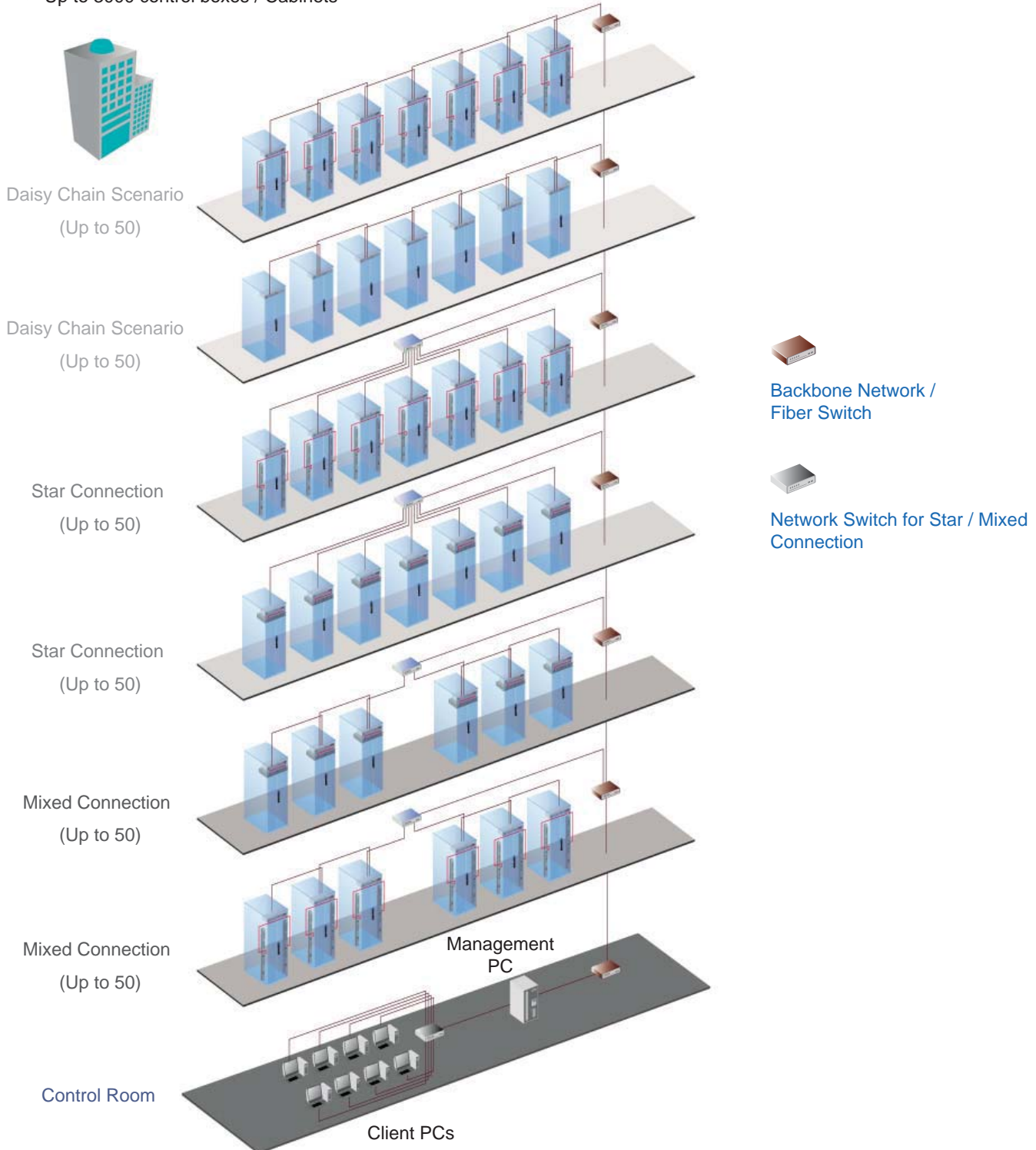
< II > Intelligent Building

It is essential for a Multi-Storey Intelligent Building to be applied with a centralized management system for the building's mechanical and electrical equipment such as security, power, ventilation, and lighting systems, etc.

DL Series system allows equipment to be distributed throughout a building simply by deploying an Ethernet network. To keep capital costs down, DL Series can also be cascaded between boxes up to 100m over a Cat5/6 cable. Signal weakness problem for long distance between Control Boxes can be solved by applying network hubs with repeater function.

Setup Scenario in the whole Intelligent Building

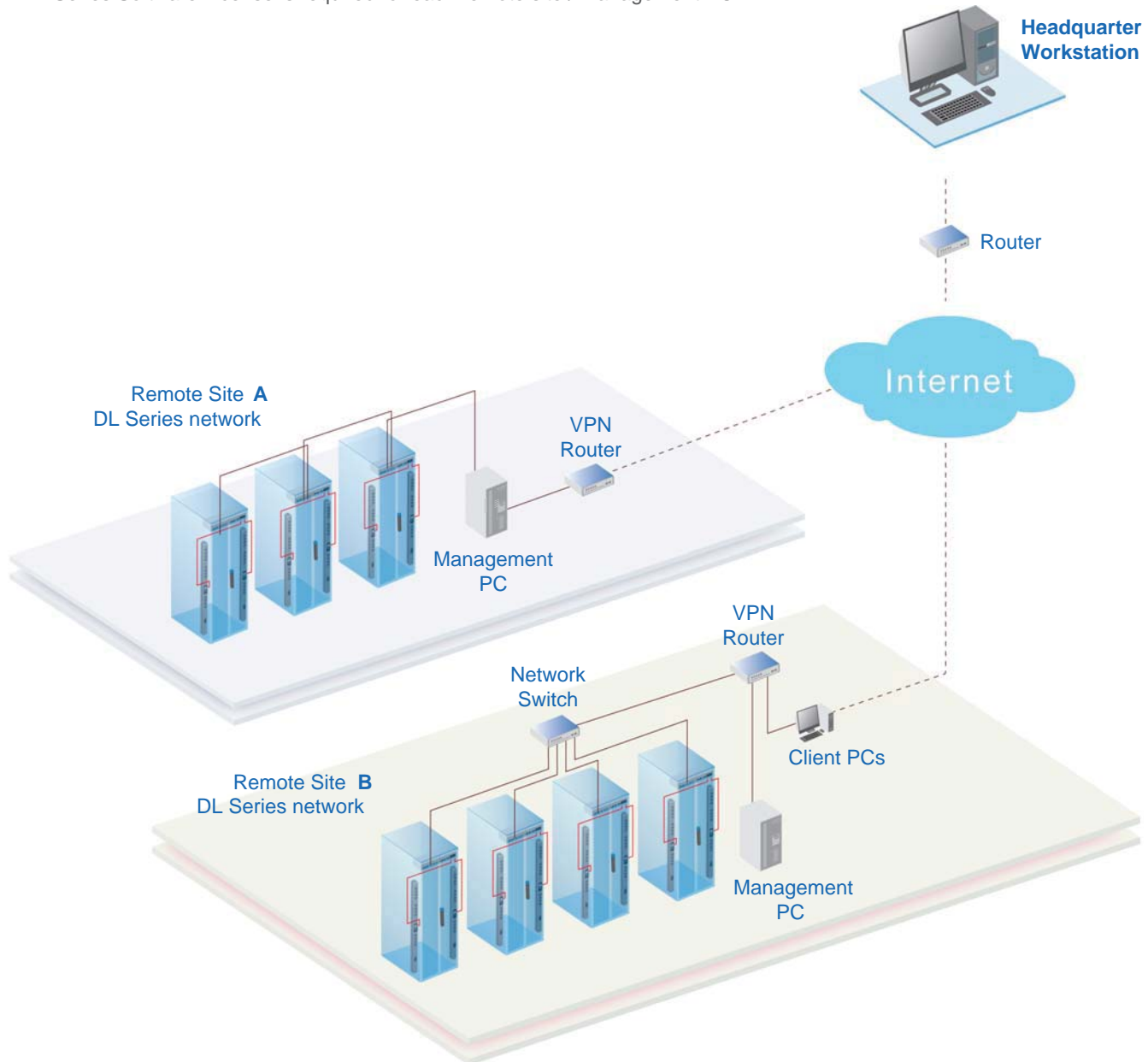
- Connect the DL Series network in each floor via the network ethernet / fiber switch
- Up to 3000 control boxes / Cabinets



< III > Remote Site

DL Series can be also applied to the remote site for access and monitoring over IP anytime and anywhere.

DL Series Software License is required for each remote site / management PC

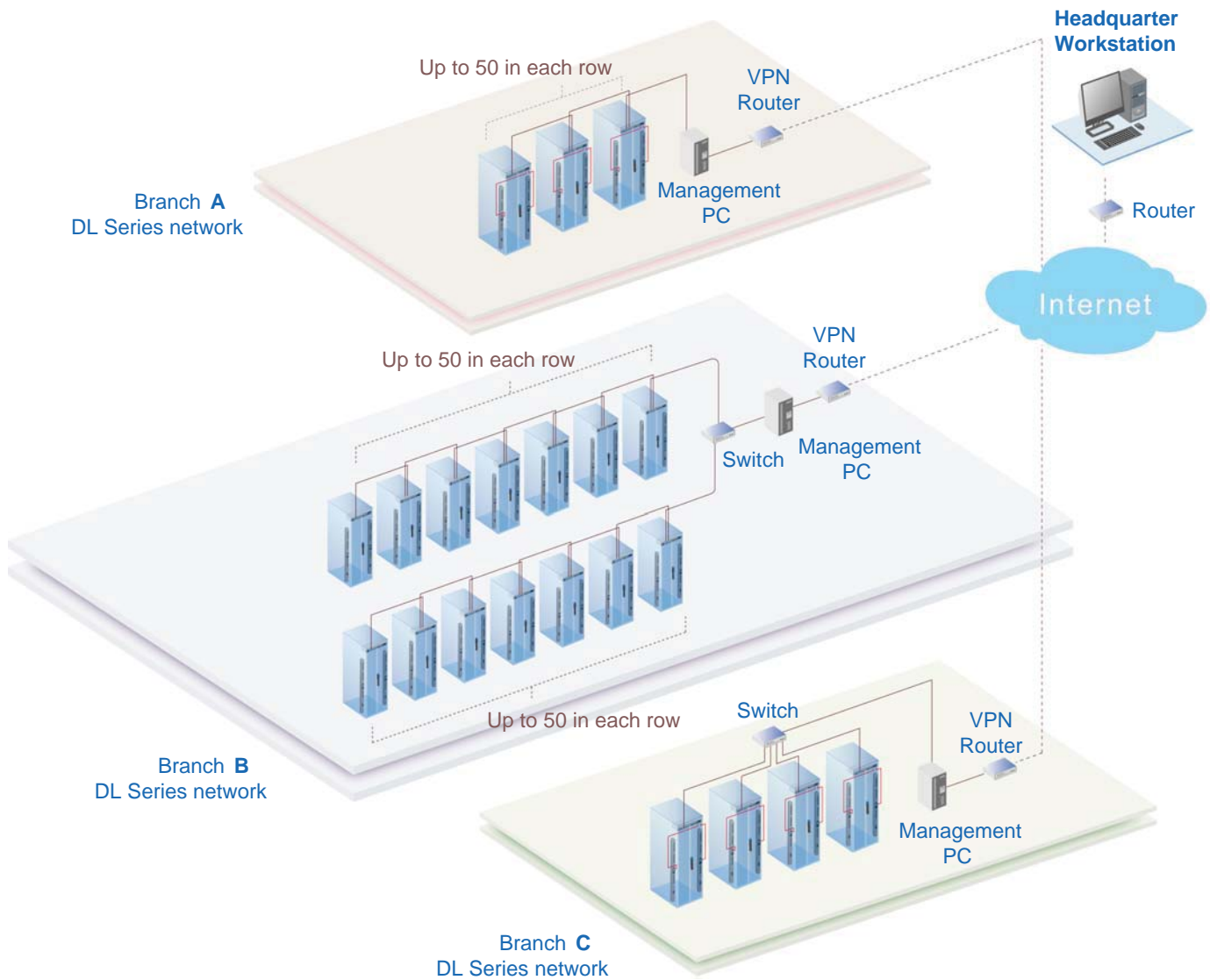


Application - DL Series

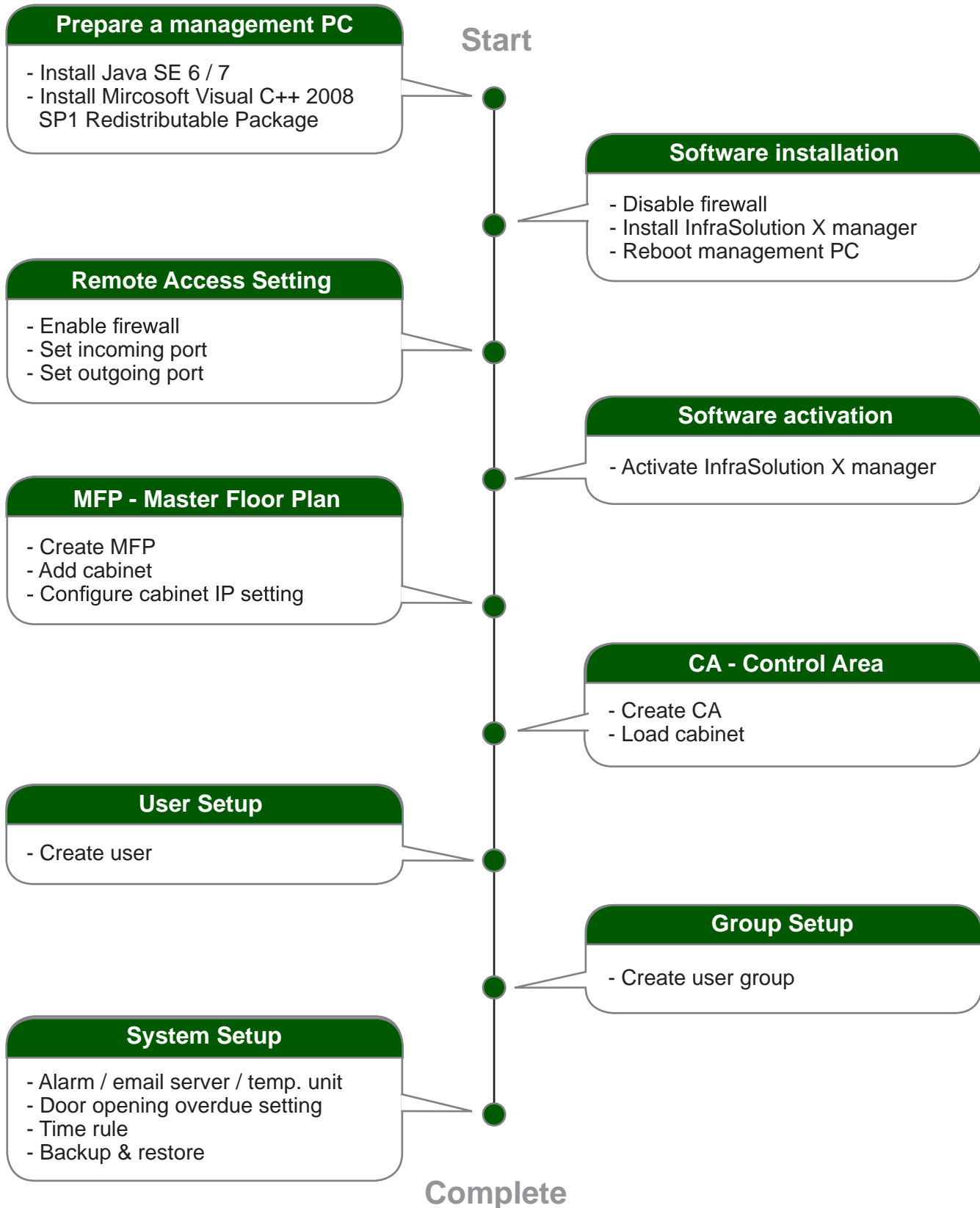
< IV > Branches

For a global or scalable company, it is vital to remote access and monitor the network of their nationwide and worldwide branches. DL Series provide an ideal solution to keep an eye on cabinet access security and environmental condition.

DL Series Software License is required for each remote site / management PC



Tips for System Setup - DL Series



Management Software - DL Series

DL Series Manager **X-ISM** is a LICENSED cabinet management software to monitor up to 3000 cabinets remotely.

Each Control Box connects a pair of smartcard handles to secure the cabinet access control, and connect a variety of sensors to provide an environmental monitoring solution. To enhance the functionality, up to 1920 x kWh PDU / 960 x Fan Unit can be monitored through X-ISM Manager as well. Up to 100 concurrent users can access the management software remotely to achieve the demand of multi-user / multi-tasking in nowadays' time sharing data center operation.

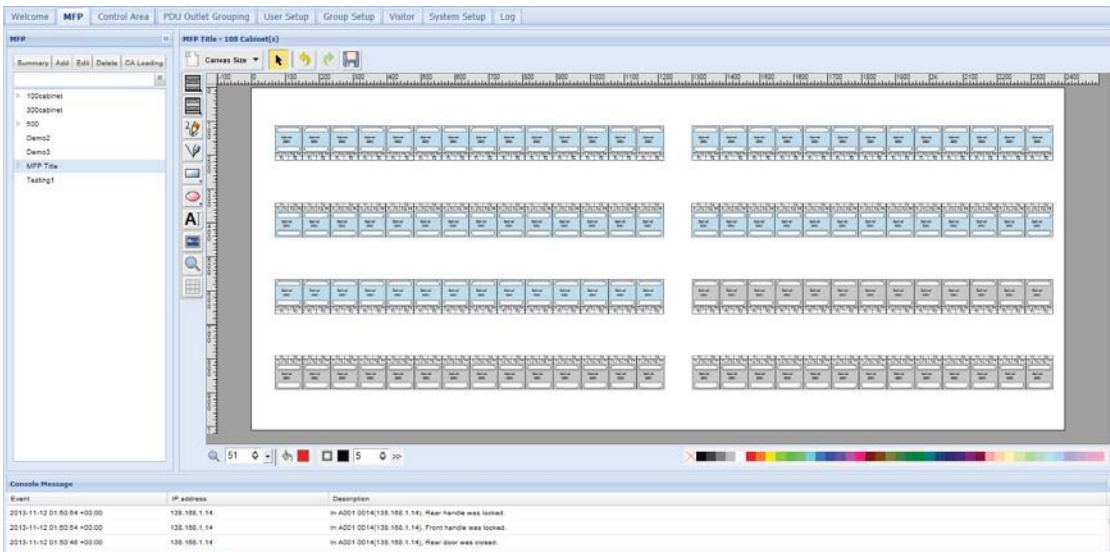


Features		X-ISM
Capacity	Control Box	3000
	Concurrent User	100
System Setup	Backup / Restore Setting	✓
	Time Rule Setting	✓
	Alarm Mail Server Setting	✓
	Audio and Visual Alarm Output Setting	✓
Cabinet Overview Door	Status of Door, PDU, Sensor & Fan Unit	✓
	Door Open by Remote	✓
	Last Door Open & Close Record	✓
Sensor / Peripheral	Status Monitoring	✓
	Temp-Humid Alarm Threshold Setting	✓
PDU	Energy Consumption kWh / Amp Monitoring	✓
	Outlet Level Measurement	✓
	PDU Outlet Schedule	✓
	Outlet Switch ON / OFF	✓
	Amp Alarm Threshold Setting	✓
	Amp Rising / Low Alert Threshold Setting	✓
	Temp-Humid Monitoring	✓
Fan Unit	CFM & Temp. Monitoring	✓
	Unit CFM (fan speed) Setting	✓
	Auto CFM Control Setting	✓
	Individual Fan Kit ON / OFF	✓
	Fan Unit ON / OFF	✓
Chart / Event / Reporting	System & Device Event Reporting	✓
	Temp-Humid Line Chart of InfraBox	✓

Management Software - DL Series

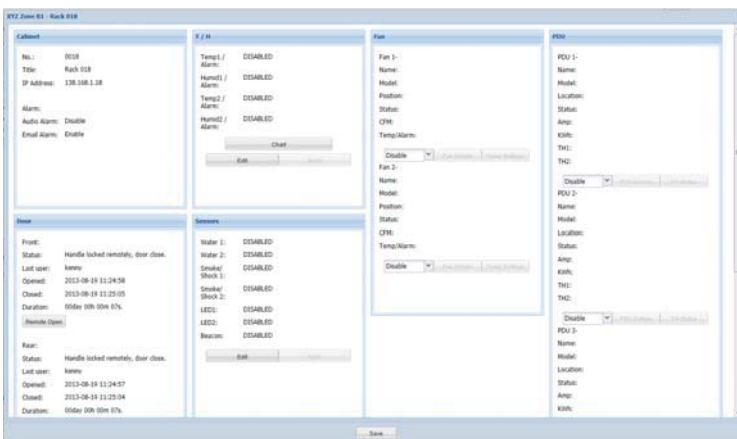
MFP - Master Floor Plan

- An actual Cabinet floor plan
- To create Cabinet & configure the IP setting for the cabinet.
- MFP can be more than one. No. of MFP is subject to the site scale & plan by floor, zone, building, branches or remote sites.



CA - Control Area

- To build a Control Area for some specific cabinets to monitor, configure & control.
- All cabinets In the CA should be loaded from the MFP.
- CA can be more than one. How many CA is subject to the User plan.
- CA has 2 modes : Edit mode & View mode.
- Under Edit mode, users can configure not only cabinets but also devices such as PDU, Fan unit & sensors.
- View mode is designed for users with limited authority so they can only monitor the status of Cabinet & device.



Management Software - DL Series

User Setup

- To create a user list for building the user group.
- Each user has his own login name & password for remote System login.
- Each user also has his own smartcard for cabinet access
- Before users join a user group, they can do nothing.

User

First Name: Peter
 Last Name: Chan
 Title: IT Manager
 Staff ID: 12345678
 Dept: MIS
 Phone: (852) 3310 0700
 Mobile: (852) 6789 5600
 Email: Peter.Chan@abc.com
 Company: ABC Company
 Smart Card No.: 10809901
 Issue Date: 2013-08-15
 Expiry Date: 2015-08-14
 Login Name: Peter
 New Password: ●●●●●●
 Confirm Password:
 Enforce to change password in next login
 Email Alert
 User Suspended

Photo upload:

User Group

- To form a user group from the User list.
- To define the user group with authority and which Control Area(s) to monitor & access.
- Each user subordinated to only ONE user group.
- If the user wants to join one more user group, a new login name, password & smartcard number MUST be assigned.
- Each user group MUST select ONE time rule. All group user can access the cabinet according to the time period of the selected time rule.
- Without time rule assignment, All group user cannot access the cabinet.

Group

Summary | Add | Edit | Delete

Administrator Profile
 AAA
 Admin Group
 Simon
 test
 Operator Profile
 Monitor Profile
 Auditor Profile
 Unassigned user

Group Details

User(s)
 AAA
 Auditor
 kenny
 Monitor
 Operator
 Richard
 richard1

Control Area(s)
 ABC Company Zone A1
 ABC Company Zone A2
 walker
 XYZ Company Zone A3
 XYZ Zone B1

Authority Category

Setup
 Master Floor Plan
 Control Area (View mode only)
 Control Area (Edit & View mode)
 User Setup
 Group Setup
 Visitor

Device Configuration
 Door Remote Open
 PDU
 Sensors
 Fan
 MF T/H Sensors

System & Device Log
 User Activity
 System Setup
 MFP
 Control Area
 User
 User Group

Time Access Setting for User Group:
 Working hours
 Applied to:
 Smart Card Access
 Remote System Login

Time Rule

- To set time rules up to 32.
- Afterward, all time rules will be shown in user group for their selection.
- Only ONE time rule can be assigned to ONE user group.

System Setup - Time Rule

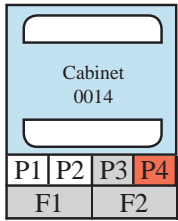
Time rule: Time Rule 06 Time Rule Name: Time Rule 06

Time Slot	Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
00:00 - 01:00	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
00:00 - 00:15	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
00:15 - 00:30	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
00:30 - 00:45	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
00:45 - 01:00	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
01:00 - 02:00	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
02:00 - 03:00	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
03:00 - 04:00	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
04:00 - 05:00	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
05:00 - 06:00	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
06:00 - 07:00	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
07:00 - 08:00	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
08:00 - 09:00	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
09:00 - 10:00	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
10:00 - 11:00	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
11:00 - 12:00	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
12:00 - 13:00	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
13:00 - 14:00	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
14:00 - 15:00	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
15:00 - 16:00	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Cabinet Icon - DL Series

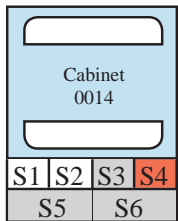
Cabinet icon has two layers, the layer one by default shows on all control area under view mode for status monitoring. User can click cabinet icon to switch to layer two.

Layer one



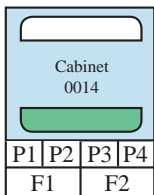
- show PDU status (P1,P2, P3, P4)
- if PDU is enabled & connected, P icon in WHITE color
- if PDU is enabled BUT disconnected, P icon in RED color
- if PDU is on alarm status, P icon also in RED
- if PDU is disabled, P icon in GREY color
- show Fan unit status (F1, F2)
- if Fan unit is enabled & connected, F icon in WHITE color
- if Fan unit is enabled BUT disconnected, F icon in RED color
- if Fan unit is on alarm status, F icon also in RED color
- if Fan unit is disabled, F icon in GREY color

Layer two

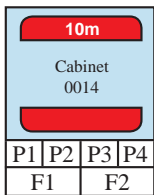


- show TH sensor status (S1, S2)
- if TH sensor is enabled & connected, S1, S2 icon in WHITE color
- if TH sensor is enabled BUT disconnected, S1, S2 icon in RED color
- if TH sensor is on alarm status, S1, S2 icon also in RED color
- if TH sensor is disabled, S1, S2 icon in GREY color
- show smoke & shock sensor status (S3, S4)
- if smoke & shock sensor is enabled & connected, S3, S4 icon in WHITE color
- if smoke & shock sensor is on alarm status, S3, S4 icon also in RED color
- if smoke & shock sensor is disabled, S3, S4 icon in GREY color
- show water sensor status (S5, S6)
- if water sensor is enabled & connected, S5, S6 icon in WHITE color
- if water sensor is on alarm status, S5, S6 icon also in RED color
- if water sensor is disabled, S5, S6 icon in GREY color

Door status

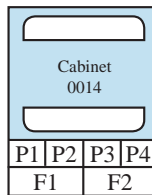


- ← - - Door close status in white
- ← - - Door open status in green

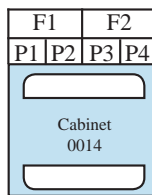


- ← - - Door open overdue status in red (show overdue time)
- ← - - Door alarm status in red (unauthorized open)

Door direction

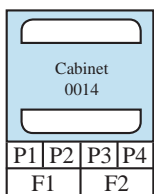


- ← - - Front door

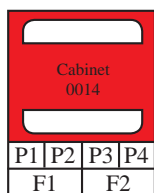


- ← - - Front door

Connection status

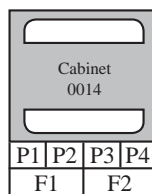


- ← - - Normal connection status (color in blue)



- ← - - Disconnection status (color in red)

Non-configure cabinet



- ← - - (color in grey)

In MFP master floor plan, the grey cabinet icon shows that the cabinet has not been configured with IP setting yet.

In CA control area, the grey cabinet icon shows that the cabinet has been deleted in master floor plan. The user should remove this non-function cabinet from control area.

Functions - DL Series

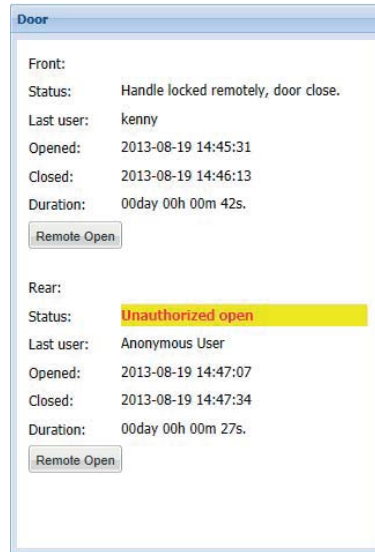
Cabinet Alignment

- Provided by MFP & CA
- For user to arrange the cabinet in a neat way
- Top / middle / bottom alignment
- Left / center / right alignment



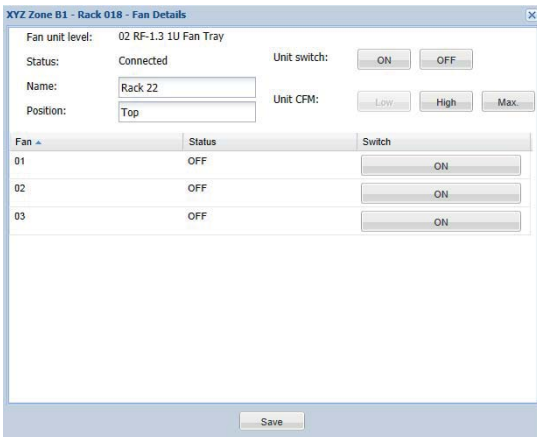
Individual Cabinet Door

- Door open by remote
- View the record of last door open & close record



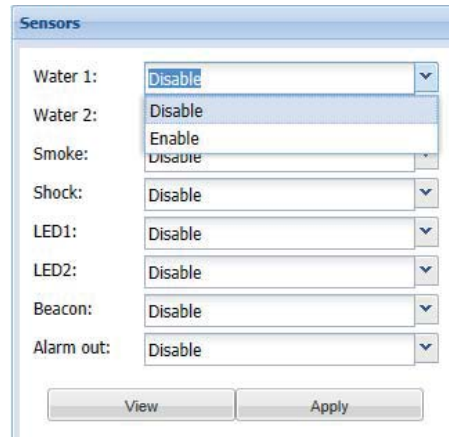
Fan

- Status
- Fan Unit Setting
- Temp. Setting



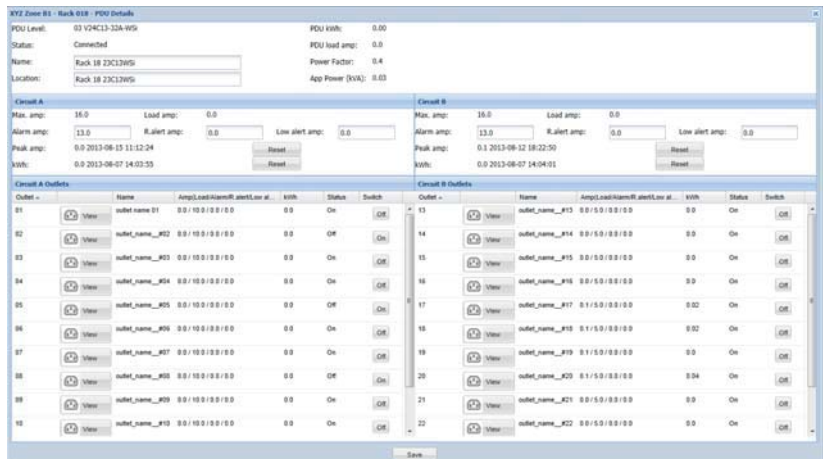
Sensor / Peripheral

- Sensor Status (provided by CA view mode)
- Sensor Setting



PDU

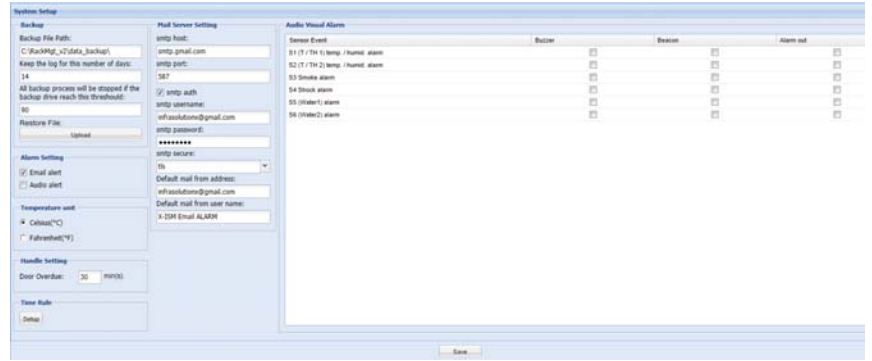
- Status
- PDU / Temp + Humid Setting
- Outlet Schedule
- Outlet Switch ON / OFF



Functions - DL Series

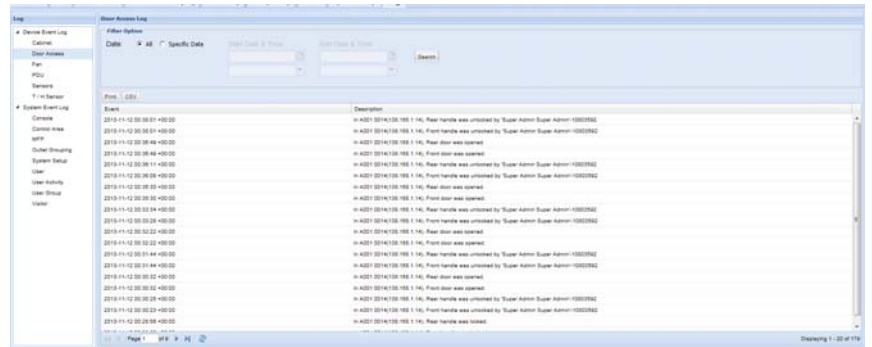
System Setup

- Backup & Restore
- Alarm Setting, Mail Server Setting, Audio Visual Alarm
- Temperature unit
- Door opening overdue setting
- Time Rule



Device & Event Log

- | | |
|------------------|-------------------|
| Devices : | System : |
| ➤ Cabinet | ➤ Console |
| ➤ Door Access | ➤ Control Area |
| ➤ Fan | ➤ MFP |
| ➤ PDU | ➤ Outlet Grouping |
| ➤ Sensors | ➤ System Setup |
| ➤ T/H Sensor | ➤ User |
| | ➤ User Activity |
| | ➤ User Group |
| | ➤ Visitor |



SNMP

InfraBox can manage the following connected devices via SNMP :

- Smartcard handles
- PDUs
- Fan Units
- Sensors
- Peripherals

SNMP

SNMP agent Enable Disable

SNMP polling

Read community

Write community

SNMP traps

Management station

Station IP

Trap port

Trap community

Accessories - DL Series

Individual Key Lock



- Up to 500 individual key-locks available

Part no. :

DLS-501 set of 2 for front & rear door

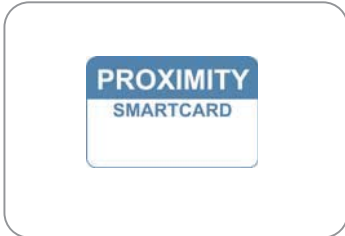
Unique Key Lock



- Unique key dedicated to single project / customer regionally
- For project size over 500 cabinets

Part no. : [Call for information](#)

Proximity Smartcard

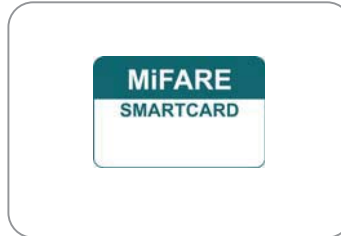


- **Proximity** 26-bit format
- Single card for multiple application
- Custom layout available

Part no. :

DLS-401P pack of 10

MiFARE Smartcard



- **MiFARE** 26-bit format
- Single card for multiple application
- Custom layout available

Part no. :

DLS-401M pack of 10

Proximity Card Reader



- Compatible to **Proximity** 26-bit Smartcard format
- Convenient way for Smartcard ID checking
- Driverless for easy installation

Part no. : **DLS-402P**

MiFARE Card Reader



- Compatible to **MiFARE** 26-bit Smartcard format
- Convenient way for Smartcard ID checking
- Driverless for easy installation

Part no. : **DLS-402M**