Digital Solutions Division

ACT Government | ACT Health

St-05 Comms Room & Associated Support Infrastructure Requirements

(Combined document from ACT Public Health standards ST-05, ST-06 & ST-07)

Communications, UPS & Battery Rooms

Please Read

IMPORTANT COMPLIANCE REQUIREMENTS

Note: The following instruction applies to all documents in this library.

This is a controlled document and is reviewed on an annual basis. The last review was carried out on September 2019. If you are viewing this document after September 2020, you shall need to contact the sender to confirm you are working from the latest revision.

It is the responsibility of the contractor/vendor to read and adhere to the procedures, processes and guidelines set out in the following document when quoting for or carrying out work for ACT Health Directorate (ACTHD).

If you have questions or require clarification of any of the procedures, processes or guidelines in the following document please contact the sender of the document in writing with your questions so that a formal response can be provided. If any specific requirement is unclear, it is expected that clarification shall be sought from the Health Digital Solutions Division (DSD) - ICT architect(s), rather than a decision made and a design implemented and based on unclarified assumptions.

These standards are applicable to ALL Canberra Health Services (CHS) and ACTHD sites or any work funded by ACTHD (e.g. Calvary, ACTHD provided NGO sites) unless specifically exempt.

All Greenfield Health sites are expected to be fully compliant with all appropriate standards.

Brownfield Health sites undergoing refurbishment shall be fully compliant unless an exemption is provided by DSD Infrastructure Hub.

In the event of any design non-compliance issues, a Departures document shall be completed and submitted to DSD Infrastructure Hub. These issues shall be resolved, in consultation with DSD Infrastructure Hub, as soon as possible within the project process and explicitly prior to site handover.

While some test cases have been cited within these documents as examples, the list is not exhaustive, and all appropriate test procedures shall be formulated, approved prior to testing and testing shall be performed by the client system administrators before full acceptance can be signed off by the Director of ICT Infrastructure Hub.

IMPORTANT:

Any departure from the standard, whether intentional or in error shall require a completed Departures Document to be submitted to DSD infrastructure Hub for approval.
Any non-compliant designs without a pre-approved Departures Document by completion of the project or a nominated milestone or gateway, shall require remediation by the Head Contractor at the Head Contractors cost.

Document Major Version Release

(to review detailed document updates click here Amendment history)

Version	Summary of Changes	Author	Date
2020.1.0	Released version	Nitin Saxena	30/03/2020
2021.0.1	Annual review – Removed repeating content, combined St-5, 6 & 7	David Richards	30/03/2021
2021.0.1	Removed fire specifications	Mitchell Jamieson-Curran	01/04/2021

Document references

Document	Version	Location

Document default review cycle

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Date	Version	Comments
Mar 2020	2020.1.0	Released date and version
Mar 2021	2021.1.0	Combined St-5,6 & 7
Mar 2022	2022.1.0	(Next review date)

Document Owner

Name	Location
Senior Director, Critical Systems and Infrastructure	DSD, Technology Operations, ACT Health

Contents

Document Overview

i. Purpose

The purpose of this document is to outline the requirements for building communication and UPS/Battery rooms to ensure that they shall meet Australian Standards and the requirements of the Health Directorate as well as offer information pertinent for ongoing maintenance and future expansion.

This standard provides for consistent implementation and shall be applicable to all Health Directorate buildings.

Australian Standards require a minimum level of health and safety features to be provided in the design of these types of rooms and these standards shall always form the base line requirements.

This document contains minimum requirements for the establishment of new Floor Distributor (FD) Rooms, Building Distributor (BD) rooms, with or without separate Uninterruptible Power Supply (UPS)/Battery rooms.

For buildings that require High Availability (HA) for the infrastructure hosted within the Building Distribution (BD) rooms, standards are also provided for diverse connectivity to the UPS units installed within the building.

The term communications rooms (sometimes shortened to Comms rooms) shall be used as a generic term to describe any of Floor, Building and/or Campus Distribution rooms.

ii. Document Layout

This document is divided into two sections:

- Pre-ICT fit-out; and
- Post ICT fit-out.

The separation between the two occurs in greenfield comms room builds, where it is often a requirement to have the room available for pretesting building systems ahead of comms room being fully completed.

1. Pre-ICT Fit-Out

Pre-ICT fit-out section provides details of the ICT requirements when a new communications room has been built, data cabinets fitted with locks, power and cooling installed and the communications rooms have been thoroughly cleaned.

2. UPS Fit-Out

At this stage however, no active ICT infrastructure is installed, except for the ICT UPS which shall be installed, tested and certified. If this is located in a separate dedicated room it shall still be treated in the same way for timing

The active ICT equipment is installed in the following phase of the project.

3. Post ICT Fit-Out

Post ICT fit out section provides details of the ICT requirements when the cabinets have been populated with the proposed active equipment such as network switches and appliances/servers for non-clinical systems along with any wall mounted devices (e.g. I-Star). It also includes completion of permanent labelling of all devices, fittings and fixtures and external room labelling.

iii. Reasoning

Most hospital services use some form of ICT and have the requirement for a reliable and highly available connection to the Health network is paramount. To provide these services, suitably designed communications rooms and reliable power supplies are mandatory.

Providing completely diverse power paths from generation to utilisation; at minimum one generator/essential and one standard grid supply/non-essential or the possibility for two generator feeds per UPS, shall provide HA power at greater than 99.999% availability when implementing dual corded devices.

This situation includes provision of:

- Dual power sources per UPS;
- A UPS unit and associated Batteries installed in separate BDs or in separate dedicated fireproof and ventilated UPS/Battery rooms;
- Dual power bus, one from each UPS, to each data cabinet in each FD communications room; and
- Dual corded equipment or dual power supplies*.

**Note: where equipment has a single power supply, a static or Automatic Transfer Switch (ATS) can be used in the cabinet(s) to provide automatic switching between the two power sources. This shall not however, remediate a failure of the equipment power supply unit. It shall reduce the availability figure by the equipment power supplies Mean Time Between Failure (MTBF) rating.*

Additional systems, power requirements and dimension requirements are required to support equipment housed in these rooms. This includes continuous power and suitable environmental environment, such as air conditioning, which need to be sustained. Failure to comply with these requirements shall result in the ICT equipment shutdown or failure.

Correct number of communications rooms and positioning is critical in complying with the maximum Ethernet copper cable length for $Cat6_A$ of 90m which shall include termination lengths within cabinets and vertical rises and falls through walls. As right-angle cable paths are required by Australian Standards, experience has shown, that on a plan view, a route length of 80m when using right angle path route provides a good guide to achieving the 90m standard under field conditions.

Centralised UPS units, located in the BD communications rooms or purpose-built UPS rooms, are the recommended UPS architecture for a building rather than several smaller UPS units for the building. This architecture shall provide cost savings due to reduced power usage and superior “green ratings”.

Generator backed feeds to each UPS shall provide a higher failover capability, rather than that provided by one generator (essential) and standard non-generator (non-essential) circuit power, however this creates a situation when circuit boards need to be shut down, that both UPS shall loose power. Therefore, the preferred option is to have one UPS on Essential and one on Non-essential. For buildings such as an ERC which have a higher availability requirement it is suggested that a manual change over switch be installed on the non-Essential DB to allow manual cutover to an essential supply as required.

Both BD, FD and UPS/Battery Rooms, are designed to provide a structured and stable environment to host network equipment used to supply network capability to each floor and connect buildings to the Health and ACT Government Networks.

1 Comms Room Pre-ICT Fit-out

This section describes the specification for the physical room itself and the ancillary equipment fitted prior to the ICT fit-out. For further background information please refer to Appendix B. through **Error! Reference source not found.**

1.1 Design Constraints

Adhere to all applicable Australian Standards for ICT, electrical and building code clearances.

With respect to the overall room design, location, size, number and type of data cabinets, Air-conditioning, i-star positioning the following SHALL occur:

1.1.1 Before any building project design work is done, DSD Infrastructure Hub shall be given opportunity to present to the builder and their designated ICT and architectural team on the specific requirements of Communications room design and the implementation of, and compliance with ICT Health standards.

1.1.2 Communications room design, location and sizing shall be signed off by DSD Infrastructure Hub at the design stage and prior to commencement of construction.

1.1.3 DSD CSI SHALL sign off acceptance of the wall positioning in relation to wall mounted devices, cabinet rows and their positional association with distribution boards (DBs), Air-conditioning and wall mounted controllers, as there can be potential issues with incorrect positioning and proximity of these as follows:

1.1.4 Electrical devices (i.e., DBs, Controllers etc) shall not be located directly under air conditioners.

1.1.5 Air conditioners shall face the front side of the data cabinet rows to allow a back to front air flow. It is therefore necessary for Air-conditioning drip plumbing to be designed appropriately from the beginning to meet this requirement i.e. design ALL ceiling heights, air-conditioning mounting heights, position and correct drainage fall ratios, to allow for plumbing the HVAC drainage to access appropriate waste water removal points. All open tundish drain funnels shall be external to the comms room.

1.1.6 Water and drainage pipes shall not traverse any Communications room ceiling space.

1.1.7 Airconditioning ducts shall not traverse any Communications room ceiling space.

1.1.8 All in-building structured cabling, Patch and fly leads shall follow specifications as laid out in ACT Public Health standard St-02.

1.1.9 A laminated A4 copy of the cable colour standards chart shall be provided by DSD CSI and clearly posted at the end of each cabinet row.

1.1.10 WAN fibre pathway to first BD switch cabinet shall be via “yellow fibre duct” or cable basket mounted above cabinets unless other methods have been approved prior to 100% FSP. Fibre duct shall be ‘snap together’ type such as a Krone or W&B -fibre style duct. Noting a dedicated fibre pathway is provided through all ACT Health custom SRA cabinets for ease of running fibres between cabinets in a protected manner. Unless otherwise stated specifically, fibre guides are not required in floor distributer room designs.

1.2 Comms Room Location

1.2.1 The Building Distributor (BD) communications rooms shall be a minimum of 10m apart and located in separate Fire Zones.

- Ideally on adjacent corners/ends of the building if the building is less than 80m length; or
- Approximately a third of the way in from either end of the building if the building is between 80m and 240m length.

1.2.2 The Floor Distributor (FD) communications rooms shall be located within 80m cable path length of all data outlets, when using a right-angled grid path on plan views.

Note: The 80m right angled grid for cable paths, provides a vertical allowance of 10m for differences in height from floor to ceiling or traversing over or around ducting and other utilities. In addition, there shall be the standard 10m allowance for patch and fly leads.

1.2.3 Cat6A structured cabling within the walls and ceiling space (i.e. tested channel warranty length) shall not be longer than 90m and therefore Communications room locations shall be designed appropriately so as not to exceed this standard.

Note: The two Floor Distributors on each floor shall be no more than 80m apart from each other.

1.3 Cable Testing and Certification

1.3.1 Three days prior to the Pre ICT fit-out inspection, the installers data cabling test results shall be provided to DSD for review. Cable test results shall comply with the public health and manufacturer standards before hardware installation of DDTS hardware proceeds. Patching cannot proceed without compliance of cable test results.

1.3.2 All data cabling shall be tested for compliance with relevant industry and Australian cabling standards. Test results shall be provided to manufacturer by the cabler for review and compliance verification. Following DSD's acceptance of the manufacturer's review and final certification after project is completed, the manufacturer shall provide installation "Channel" and Application warranty.

1.4 Floor Loading Rating

1.4.1 The designed floor load rating shall be appropriate for the expected weight of all equipment within the communications room. Sufficient allowance shall be made to ensure the rating is adequate to cater for a fully populated room and when the equipment is fully expanded regardless of the expected initial utilisation. The communications room could potentially host several fully populated data cabinets, Uninterruptible Power Supply (UPS) units and UPS batteries.

1.4.2 The floor loading capacity shall be provided by the head contractor to DSD, for review, during the design stages of the project and prior to finalisation of capacity.

1.4.3 When UPS units and batteries are located in the same room, additional consideration shall be given to ensure sufficient distribution of the concentrated weight loads.

1.4.4 At minimum the UPS and battery floor ratings shall be calculated to allow for one additional UPS power module and the required additional batteries / cabinet for delivering 30 minutes of power at 4 years of the battery life.

1.5 Floor Surface

1.5.1 The floor surface shall be conducive to moving heavy loads with minimal impedance and without damage under normal operational conditions.

1.5.2 The floor surface shall be smooth with no chips or dips.

1.5.3 There shall be no floor surface irregularities that may cause trip hazards or impede the ability to smoothly move bulky and heavy equipment such as UPS units and batteries.

1.5.4 When an entrance or access to the communications room or the surrounding environment is one of the following:

1. Accessed from a plant room.
2. Access is external – an external door from the building.
3. Sewage/storm water pit/examination lid is located within 3m. or
4. Where external fire sprinklers may discharge water outside the room, the communications room floor shall be a minimum of 25mm higher than the surrounding floor levels to avoid potential water ingress into the communications room with the following constraints:
   a) Greater differential may be required if there is a greater risk of ingress.
   b) Ramp surfaces shall be provided to traverse the barrier by heavy wheeled equipment for access to and from the room.
   c) Ramps shall shall be appropriately sign posted and marked to avoid becoming a trip hazard.

1.5.5 The floor surface and floor/wall join shall be protected against dust and water ingress by way of: one of the following:

1. The floor shall be covered with a commercial grade anti-static vinyl of a speckled finish in a **light-coloured grey** background. This shall be continuously extended to at least 100mm up the wall on all sides with corners heat welded. A separate side skirt, welded or glued-on, is **not** acceptable.
2. An alternative option is for the floor to be sealed with multiple coats (minimum of 2) of hard-wearing epoxy style paint to at least 100mm up the wall, making sure the floor/wall transition is smooth and adequately implemented to ensure a fully sealed and continuous coating.

1.6 Communications Room Size

1.6.1 The room shall be sized, to host all the required initial services and allow for potential increase in the number of equipment hosted in the room. The minimum size shall vary depending on the designated room type as per the following examples:

a. Building Distributor room – with or without UPS/Batteries collocated.

b. Clinical Area Floor Distributor – 3 cabinet standard layout.

c. Admin Area Floor Distributor – 2 cabinet layout.

d. Utility Floor Distributor – 1 cabinet layout.

e. External / car park – specialised, dual-walled, outdoor, integrated HVAC data cabinet to meet the requirements.

The designated type shall be provided by the DSD solutions architect after assessment of the business requirements.

1.6.2 The following sections describe the minimum requirement for each of the designated room types. Additions or increases in size may be indicated where Business Analysis indicates higher or additional requirements.

1.6.3 There shall be a minimum of two Building Distributor (BD) rooms per building.

1.6.4 A BD room shall contain a minimum of two cabinets but shall generally have more depending on what quantity and type of services feed from any FD component. The first cabinet shall host incoming fibres, Floor Distributor interconnect fibres and a BD switch.

1.6.5 When also used as an FD room, the BD data cabinet shall be the first cabinet in the row against the wall and labelled "A". Other cabinets for FD functionality shall then follow and be labelled sequentially "B, C, etc.

1.6.6 If also used as an FD room, the FD rules in section **Error! Reference source not found.** apply.

1.6.7 Communications rooms shall have the capacity to host an additional data cabinet to provide for future expansion. Sizing shall follow the following minimum formulas:

1. **Room width** [*minimum*] = 1.1m [*cabinet depth*] + 1.1m [*front clearance*] + 1.0m [*rear ASNZS clearance*] + 0.2 [*plus any additional wall mounting wide*] [***usually = 3.4m***].
2. **Room length** [*minimum*] = (number of required cabinets + [*spare addition cabinet space]*) x 0.8m [*cabinet width*] + 1.5m [*walkway + Electrical boards*].
3. **Additional length**. Additional space may be required to accommodate other equipment, risers, wall mounted items etc without impeding on the minimum space requirements above.

Note: In addition, architectural and engineering clearances shall be incorporated for OH&S requirements around electrical DBs and access ways.

1.6.8 Communications rooms designated for use as a floor distributor shall be provisioned with an initial minimum three data cabinets

1.6.9 Space shall be provisioned for any additional future cabinets required.

1.6.10 A & B UPS electrical circuits shall be provided for each existing and future cabinet space.

1.6.11 Cabinets shall host FD patch panels, network switches, Infrastructure and Health Support Services (IHSS) critical nonclinical and potentially biomedical devices.

1.6.12 Any alternative size shall be approved by the DSD CSI Solution architects. As each site/building/floor shall vary according to their purpose, all communications rooms sizes shall be approved by the DSD CSI solutions architects during the Preliminary Sketch Plan (PSP) stage or equivalent.

Note: The data cabinet equipment layout shall be provided with the Shared Services ICT Conceptual design document.

Note: Any additional components or inclusions within the room shall require specific design and larger size room. Any alternative size needs to be approved by the DSD Solution Architects. As each site/building/floor shall vary according to their purpose, all communications rooms sizing shall be approved by the DSD solutions architects during the Preliminary Sketch Plan (PSP) stage.
See diagram *Error! Reference source not found.*

1.7 Data Cabinets

The Health Directorate has standardised on purpose-built data cabinet models from Server Racks Australia (SRA) for implementation in all the communications rooms. These data cabinet configurations include customisations and additional components such as in-built deep vertical cable trays, specific vented double doors, security panels, PDU's and Earthing strips which are not provided with a "standard" flat pack style cabinet.

1.7.1 DSD shall specify required model numbers for each room configuration.

1. The standard BD and FD cabinet footprint allocation is 800mm x 1100mm.
2. Each BD/FD cabinet (except for external cabinets) shall have 45 Rack Units (RU).
3. A colour coded "A and B" 32A PDU (**EN1337x7031-O** and **EN1337x7031-G** respectively) shall be supplied with each SRA cabinet.
4. A temperature and humidity sensor shall be installed centre of the front and rear doors (Enlogic EA9103)
5. Cabinets shall be labelled front and rear with correct Communications room name-number and cabinet ID (e.g., FD2.2-A…B…C…).

1.7.2 Cabinet locations, clearances and fixtures shall comply with the following:

1. The first cabinet "A" when viewed from the front shall have its left-hand side adjacent to and against the wall.
2. All cabinet double doors, front and rear, shall be able to be opened to a minimum of 90° without impedance.
3. The minimum clearance between the cabinet front and the wall, any wall mounted fixtures or other obstruction shall be 1100mm.
4. The minimum clearance between the cabinet rear and the wall or any wall mounted fixtures or other obstructions, shall be 1000mm.
5. The second and subsequent cabinets shall be bolted to each other with the supplied baying kit while maintaining all clearances mentioned above.
6. In communications rooms where there are two rows of cabinets, a ceiling hung gantry shall be installed to provide hot/cold corridor construction with appropriate cyclic HVAC .
7. Where space is left for a spare cabinet, it shall be fully provisioned and ready for implementation of the cabinet in future. While it may not be initially installed, all clearances mentioned previously shall be adhered to ensure future compliance.
8. All power and data cable trays shall extend appropriately as if a spare cabinet was installed and screw power outlets for 'A' Essential UPS supply and 'B' Non-Essential UPS supplies shall be fitted.

9. The minimum clearance for the end of row walkway is 1500mm to the wall or any wall mounted fixtures or obstructions. This is in addition to the space reserved for the spare cabinet.
10. The Communications room shall not contain a suspended ceiling
11. Solid walls shall extend up to a solid concrete ceiling/floor above. In this case, cable baskets shall be exposed, and cable ladders used with all waterfall edges at right-angle bends on the path to the cabinet.
12. Structured cabling shall only enter the cabinet it shall be permanently terminated in and shall not pass-through other cabinets.
13. All cabinets shall have each of their earth bars wired back to the communications room, wall-mounted earthing bar earthed together using the inbuilt Earthing bars.

1.7.3 All cabinets shall be fitted with an Automatic Transfer Switch (ATS) that is approved and sourced by DDTS ICT Facilities.

External/ Car park (specialised outdoor pillar style cabinet**)**

1.7.4 In outdoor areas such as open car park spaces with no Utility room and limited requirements, the External/ Car park pillar style cabinet FD provides an interconnect between, the open area distribution cables and the BD or Campus Core (CC) switch pair. The External/ Car park FD shall not be used in any other situation at any time for space saving reasons and shall only be implemented with approval of DSD.

1.7.5 In External/ Car park FD areas where there is a limited data outlet requirement, with limited future expansion capability, the Floor Distributor can be, with DSD exemption, provided as an outdoor IP-rated enclosure as follows:

1. The enclosure shall be IP-rated for minimum dust and water ingress and securely mounted to a concrete plinth.
2. All active devices installed in the cabinet shall be either industrial or IP-rated.
3. Any additional components or inclusions within the enclosure shall require specific design and approval by the DSD Solution Architects.
4. Design and specification shall be provided by DSD CSI Solutions Architect.

Note: ICS -standalone cabinets have been found to be suitable for these situations. DSD CSI Solutions Architects shall provide the appropriate specifications and model.

1.8 Labelling

1.8.1 Cabinets shall be provided pre-labelled with Communications room name-number and cabinet ID according to their position in the room. The label names shall be finalised by with SRA as per below description and shall be checked by cabling installer.

1.8.2 Each cabinet shall be allocated a letter with “A” being the left most and sequentially incremented to the cabinets on the right.
For example, in building designated B13 a communications room “FD 2.2” provisioned with three cabinets, from left to right they would be labelled:
B13-FD 2.2-A , B13-FD 2.2-B and B13-FD 2.2-C respectively.

1.8.3 Shall the room have multiple rows of cabinets, then the naming convention shall continue from the left on each additional row.
For example, in the room previously noted provisioned with two rows of three cabinets with first row from left to right, the front row would be labelled:
B13-FD 2.2-A , B13-FD 2.2-B and B13-FD 2.2-C respectively and the second
B13-FD 2.2-D , B13-FD 2.2-E and B13-FD 2.2-F respectively.

1.8.4 All significant equipment (as noted below) shall be labelled with Trafolyte style labels with black text on a white background stating the agreed ID of the device. At a minimum each of the following devices shall be labelled with minimum 10mm text size:

- Servers, appliances and NVRs.
- Switch stacks.
- Wall based controller.

1.8.5 All UPS fed GPOs and cabinet 32Amp screw outlets shall be labelled with Trafolyte style labels with black text with minimum 10mm text size on a white background stating the UPS and outlet ID.

1.8.6 All other labelling in room shall be permanent Trafolyte style with black text with minimum 10mm text size on a white background and appropriately sized for the labelled item. Sizes shall be confirmed and signed off by the DSD Project Manager.

1.8.7 No other type of labels shall be acceptable unless they are interim labels while permanent Trafolyte.

1.9 Walls

1.9.1 Walls shall span from floor to hard ceiling/floor above to ensure room is physically secure from unauthorised access and also for fire rating.

1.9.2 Wall surfaces shall have a smooth, flat clean white painted finish:

1. Wall surfaces are to be flat and without holes or imperfections.
2. Wall surfaces are to be either plastered or rendered, with brick/block joints finished flat/flush (i.e., not tuck pointing and no apparent proud concrete extrusions in joints, any minor damage or divots in blocks shall be filled and smooth before painting).
3. Wall surfaces shall be sealed and painted with at least two coats to minimise dust and shall be wiped clean of all dust before handover.
4. **Unsealed brick or Besser blocks** and/or **"tuck pointing" shall not be accepted** as a final finish due to their porous nature. The wall shall be sealed first, then painted three times at a minimum, until there is a solid surface of contiguous paint with no apparent pin cushioning effect.
5. Walls and ceilings shall be painted white.

1.9.3 Wall space shall be sufficient to cater for wall mounted equipment whilst still complying with all other standards.

1. Wall space shall be reserved for wall mounted equipment. This may include but is not limited to Power Distribution Boards, air conditioners, iSTAR controllers and associated cabling trays.

2. Depending on depth of wall mounted equipment an additional 100-200mm clearance shall be added to adjacent cabinet and DB door openings.
3. All electrical DB's shall maintain minimum 600mm clearance from door.

1.10 Clearances and Installs above Cabinets

1.10.1 The clearance height above cabinets to ceiling, any other hard fixture or cable tray, that shall provide obstruction to vertically mounted power outlets and their easy removal vertically, shall be a minimum of 350mm.

1.10.2 If captive power outlets are mounted to trays above cabinet, a minimum of 350mm clearance from the top of the cabinets, but no higher than 500mm above the cabinet top to allow safe connection of cabinet PDU plugs.

1.10.3 Cable trays with rolled edge waterfalls shall be fitted above the cabinets.

1. Trays shall be sized for 50% additional capacity allowing for growth.
2. Either a "yellow fibre duct" with curved waterfalls shall be provided next to the cable trays specifically for incoming fibre cables to the first cabinet (e.g. in BD) or a separate small cable tray, anaconda or separated barrier portioned on the existing cable tray to avoid damage to fibre (in FD's).

1.11 Lighting

1.11.1 Lighting shall be strip LED lighting.

1.11.2 Lighting shall be operational at room handover even if only on a temporary supply.

1.11.3 Lighting circuits shall be on a building Essential circuit, but not the Essential UPS circuit.

1.11.4 Manual light switches shall be provisioned for Communications rooms.

1.11.5 Circuit shall trip with activation of room-based EPO.

1.11.6 Communications room lighting shall not be connected to any BMS, Dali, KNX or other digital control system. This is due to the unique emergency power control solution for communications rooms.

1.11.7 Lighting levels shall be sufficient, 500-1000 lux at middle RU of data cabinet front and back, to allow adequate illumination of both the room and the equipment within the cabinets such that there is:

1. Adequate visibility of rack contents from both front and back.
2. Sufficient illumination to enable installation and maintenance staff to operate within the data cabinets without the use of extra portable lighting.
3. Lighting shall run **parallel to the front and the back of the cabinet pod for the length of the pod**, except where obstructions do not allow it. Any departure from this layout shall be approved by DSD project manager.
4. Lighting shall be located on the ceiling between 100 to 300mm out from the cabinet frame. Except where obstructions do not allow it. In this case, the Head Contractor shall provide the lighting layout to the DSD project manager for review and approval.

1.12 Air Conditioning and Environmental

1.12.1 The equipment offered shall operate continuously and without degradation in performance, for 24 hours per day, 365 days per year for an ambient temperature of between 18° & 27°C.

1.12.2 Humidity range is 40% to 60% Relative Humidity (RH).

1.12.3 Dew point temperature shall be 5.5ºC DP to 60% RH and 15ºC DP.

1.12.4 Air conditioners shall be set to maintain the correct operational temperature for all Communications rooms and UPS battery rooms:

1. The operational temperature setting is 22C.
2. The acceptable variance or tolerance is +/- 2C.
3. Positive room pressure is preferred to assist with dust ingress.
4. Air conditioners shall be placed on Hospital essential supply circuits and not on UPS essential circuit.
5. Circuit shall trip with activation of a room-based EPO.

1.12.5 Air conditioners shall be connected to the BMCS to perform the following tasks:

A. control communications room for:

1. Operational temperature; and
2. Operating times; and

B. Monitor and raise alerts for

1. Unacceptable temperature variations; or
2. Fault conditions.

1.12.6 Air conditioners shall be rated to maintain stable and consistent room temperature when all the systems located within the room are operational at full capacity.

1.12.7 By implication of the consistent temperature the HVAC units shall reside on a building Essential power circuit (but not UPS) to maintain cooling through power outages.

1.12.8 Units shall be sized according to:

1. Commercial rated HVAC units shall be rated for a minimum of 100% of the expected BTU.
2. Domestic rated HVAC units may use ~30% of capacity for dehumidifying and therefore are less efficient. If these types are utilised, they shall be rated for a minimum of 150% of the expected BTU.

1.12.9 Air conditioners shall be installed in redundant configuration of N+1, i.e., at any given time the total number of air conditioners less any 1 unit, either off or failed, shall be capable of cooling a fully populated room. For example, if two units are installed then each shall be capable of cooling the room on its own. If three units are installed, then any two of the three shall be capable of cooling the room.

1.12.10 Air conditioner on/off times shall be programmable and when an uneven number of units, shall be programmed to run in staggered 8-hour shifts (i.e., 4hrs apart) as explained below.

1. If two units are installed then they shall be cycled for alternate, 8 hours on, 8 hour off periods.

2. If three units are installed then they are to be cycled for 8 hours on, 4 hours off with a four-hour offset e.g., Unit 1 starts an 8-hour cycle, the first 4 hours overlaps with the last 4 hours from Unit 3 still on the previous cycle. After 8 hours, Unit 3 turns off and Unit 2 turns on. After another 4 hours Unit 1 turns off and Unit 3 turns on.

1.12.11 DX style Air conditioners in Communications rooms shall not "trip" under general FIP fire alarms.

1.12.12 Air conditioners shall be located to efficiently direct chilled air to the front of the cabinets. Units shall be located in front of the cabinets drawing warm air from above and across the cabinets and blowing chilled air down to the front of the cabinets.

1.12.13 Air conditioners shall not be located above live equipment or any expected location of "live" equipment as it may create the risk of electrocution or short circuit.

1. If unavoidable due to space constraints, drip trays are to be installed for protection even in systems that have "fully enclosed" drainage systems. This **shall require prior approval** from the DSD solutions architect.
2. Drainage systems shall be inspected on a regular basis (no less than bi-annually) as part of a scheduled Facilities Management maintenance schedule.

1.12.14 If there is a separate battery room for the UPS, then it shall also meet the above requirements.

1.12.15 Redundant air conditioners shall be connected to the disparate mechanical boards located within the communications rooms. I.e. HVAC unit A shall have its own circuit on mechanical board A, HVAC unit B shall have its own circuit on mechanical board B.

Note: If there are separate battery rooms for each UPS, a single air conditioner may be approved by DSD depending on the criticality of the site.

1.12.16 If industrial process cooling is deployed, the system shall provide redundancy within the system at all stages (active and passive) up to the BD room. Any failure or damage of any one component does not adversely affect the operation of the system suppling cooling.

1.12.17 Following the defects liability period, all Air conditioner equipment shall be placed on a Bi-annual maintenance regime.

1.13 Power, UPS and Distribution board (BD)

These requirements are in addition to the other items listed in the following sections.

1.13.1 The UPS Distribution Boards (DBs), for mains feeds, shall be clearly labelled 'Essential UPS A' and 'Non-Essential UPS B'.

1.13.2 The 'Essential UPS A' input side is connected to generator feed which shall "cut in" if main power supply fails.

1.13.3 If in some cases the UPS B side input is also fed from an "Essential supply", then it is to be labelled accordingly 'Essential UPS B' and shall connect preferably to a second generator.

1.13.4 If the B circuit is supplied via the same generator, this shall be via a different DB and be manually switchable to a non-essential supply via an ATS.
Power Outlets and Distribution Boards in "BD's and FD's"

1.13.5 The Communications room shall have two discrete mains feeds labelled 'Essential UPS A' and 'Non-Essential UPS B'.

1. Each supply feed shall be backed by a UPS.
2. The '**Essential UPS A'** feed shall have a generator backup power feed by default.
3. If the '**Non-Essential UPS B'** side input is also fed from an "essential supply", then it is to be labelled accordingly '**Essential UPS B'** and shall also be connected to a generator.
4. The Non-Essential side shall also have a "break before make" switch to allow it to also be fed via this manual switchover to the Essential side during periods of extended power outages that are greater than 30 minutes.

1.13.6 There shall be a third and redundant fourth feed for Non-Essential, non-UPS backed power to service items such as Mechanical, Lighting, GPOs etc. in the rooms and shall be specifically shown in drawings provided at PSP stage by DSD architects.

1.13.7 There shall be two distribution boards within each communications room split into two sections: UPS and non-UPS supplies.

1.13.8 Distribution boards shall have a minimum 600mm clear access for the entire walkway to the exit or as specified in AS/NZS electrical standards whichever is the greater.

1. To conserve space in Communications rooms, DB doors shall be removable hinged type as clearances are measured from the open doors or when removed completely.
2. The clear access is not to be obstructed by the swing path of doors on other devices.

1.13.9 Distribution boards shall be securely mounted to solid walls (brick/concrete).

1.13.10 Distribution boards are to be clearly and correctly labelled with Trafolyte style labels.

1.13.11 The Distribution board supplying the primary 'A' supply shall be Orange in colour and all associated outlets shall be orange unless specified elsewhere in this document as blue.

1.13.12 The Distribution board supplying the secondary 'B' supply shall be Grey in colour and all associated outlets shall be grey unless specified elsewhere in this document as blue.

1.13.13 Main external labels to be a minimum 50mm in height.

1.13.14 The label/s shall include the DB ID on the exterior of the DB with the ID and its "feeding source" and also its defined role as per the following format:
A (Essential UPS), B (Non-Essential UPS); or
B (Essential UPS) as appropriate.
(e.g. Non ESS UPS B **DB-U1.1 fed from DBx.x**)

- Type of feed - 'Ess UPS' or 'Non Ess UPS';
- Number of feed - 'A' or 'B";
- Distribution board -UPS FED- - DB-U;
- Comms room number - 1.1 or 1.2 etc.

For example, a distribution board 'B' connected to the Non-Essential mains feed in the communications room 1.1 shall have the label **Non- Essential UPS B DB-U1.1**.

1.13.15 All circuit, circuit breakers, shall be permanently labelled with circuit ID on a Trafolyte style label, minimum 10mm height with text > 5mm high and be consistent with the ID text shown on power outlets (both screw and GPO styles).

1.13.16 Prior to communications room handover, the DB record page inside the Distribution Board shall be completed with all circuit details matching labelling format mentioned in section 2.13.6.

1.13.17 All breakers shall be appropriately shielded and covered to prevent accidental operation.

1.13.18 As per CHS electrical requirements, each DB shall be sized with additional 30% capacity.

1.13.19 Each data cabinet shall have dedicated 32 Amp Clipsal 56 series 250V, size 1, single phase, screw fix, three round pins switched sockets or a DSD Approved Equivalent Product (AEP) provided from each of the UPS distribution boards.

Note: standard screw outlet size is 32A but occasionally 32A shall be required in larger buildings - confirm with DSD solutions architects.

1.13.20 Each cabinet shall have one 32A Essential Circuit from UPS A and one 32A Non-Essential Circuit from UPS B. This includes future "spare" cabinet space(s).

1.13.21 Cabinet 'A' Circuits shall use an Orange 32A screw outlet and be labelled with the circuit ID.

1.13.22 Cabinet 'B' Circuits shall use a Grey 32A screw outlet and be labelled with the circuit ID.

1.13.23 Sockets are Clipsal 32A 250V – 56C332 to suit plug 56P332

1.13.24 Outlets are to be mounted no more than 500 mm above the top of the cabinets, to allow PDU cables to reach unstrained.

1.13.25 A clearance of 350mm shall be provided between the socket and any physical obstruction such as a cable tray, such that the screw plug can be easily removed from the socket and ensuring removing the power cables is not inhibited by low trays, hanging lights or ceilings, or if on chains, shall not hang in the way of cabinet doors or data cable entry points.

1.13.26 Mounting can be achieved, in preference of order, as either:

1. Below a suspended, (self-supporting) cable tray;
2. Directly on ceiling (If 500mm distance is not exceeded);

1.13.27 Outlets shall be mounted in a position above the cabinet such that the sockets are approximately mounted above the (2) rear corners of the cabinets.

1.13.28 PDU cables shall exit at the top rear of the cabinet where the dedicated removable exit plate containing cable slots is located. The PDU cables shall not traverse at any point, the space between the two rear mounting struts, but shall only situated in the two side areas behind the VCMB's.

1.13.29 All "Essential UPS" flat-pin GPO wall circuits, includes B side circuits if B is essential, shall be coloured Blue with an orange Trafolyte label (10mm text) with the circuit ID:

1. Provide Essential UPS GPOs for all wall mounted controllers/PSU (e.g., iSTAR PSU) plus one additional for future use.
2. In addition, provide one Essential UPS GPO on the wall facing the front of the cabinet row opposite cabinet A/B at 1200mm high for DDTS use.
3. All outlet labels shall be minimum 10mm height Trafolyte style labels with text > 5mm.

1.13.30 All "Non-Essential UPS" flat-pin GPO wall circuits shall be coloured Blue with a light grey Trafolyte label with the circuit ID.

1. Provide Non-Essential UPS GPOs for all wall mounted controllers/PSU (e.g. iSTAR PSU) as per formulae.
2. In addition, provide one Non-Essential UPS GPOs on the wall facing the front of the cabinet row opposite cabinet A/B at 1200mm high for DDTS use.
3. All outlet labels shall be min 10mm height Trafolyte style labels with text > 5mm.

1.13.31 All standard “Non-Essential – non-UPS” wall mounted GPO circuits shall be White in colour and mounted at 1200mm high excepting cleaners GPOs which shall be tan and 300mm high.

1. Provide one **Non-Essential** – **non-**UPS, standard circuit GPO on wall nearest front of cabinets located at skirting height and midway along wall facing back of cabinets. This for ancillary use such as cleaners or devices that would otherwise cause power spikes etc if connected to the conditioned UPS circuits.
2. Wall circuits GPO shall use a White 10A GPO and be labelled with the circuit ID.
3. All outlet labels shall be min 10mm height Trafolyte style labels with text > 5mm.

1.14 UPS and Batteries

Each UPS and the associated batteries shall be sized depending on the site-specific requirements to support all required ICT and critical-clinical equipment power requirements.

1.14.1 Each UPS shall be rated with enough kVA rating, to service all anticipated devices at full capacity and load, across all Comms rooms.

1.14.2 Each UPS shall be capable of servicing this entire workload for a minimum period of 30 minutes.

1.14.3 UPS battery capacity shall allow for battery degradation due to age. As battery service life is four years. i.e., the batteries shall retain enough capacity at the 4-year mark to allow the UPS to support its full workload for the minimum period of 30 minutes.

1.14.4 UPS battery capacity shall allow for running the UPS at full load/period without risk of overloading the batteries causing them to overheat.

1.14.5 Floor ratings and battery cabinets shall be sized appropriately to allow for changes in battery size/capacity with future UPS capacity increases.

1.14.6 All battery cabinet doors shall be capable of being fully opened or removable.

1.14.7 The minimum clearance between the cabinet front and the wall or any wall mounted fixtures or other obstruction is 1100mm. This is to ensure batteries or heavy modules can be added/removed without OH&S issues.

1.14.8 The minimum clearance between the cabinet rear and the wall or any wall mounted fixtures or other obstruction is 900mm. This is to ensure compliance with Australian Standards for OH&S clearances.

1.14.9 Where the UPS is modular, the initial power sizing configuration of supply cabling copper cross sections and DB fuse ratings shall be scaled on day 1 of its commissioning to allow for enough power draw to run the communications room shall the UPS be upgraded to full capacity with extra modules and batteries.

1.14.10 Any room containing batteries shall be fully fire rated with the following:

4. The minimum acceptable fire rating period is 2 hours.
5. The room shall be ventilated with automatic fire trip shutters.
6. The room shall be temperature controlled to the operational setting of 22C with an acceptable temperature variance or tolerance of +/- 2C.
7. Batteries shall never be hosted in the communications room unless mounted within the ICT cabinets as per an approved design supplied by DSD CSI Solutions Architects.
8. The communications rooms shall comply with all stated battery requirements.

1.14.11 UPS Units shall be clearly and correctly labelled with Trafolyte style labels stating its defined role, (i.e. Essential UPS A, Non-Essential UPS B).

1.14.12 The UPS unit is to be covered & sealed in plastic until the room is cleaned and the unit is commissioned.

1.14.13 Note: Commissioning shall not proceed until post room handover, due to excess dusty conditions that shall void manufacturer's warranty.

1.14.14 All UPS status indicator lights are to be checked for correct operation and state.

1.14.15 Castel interlock keys and a bypass circuit are to be provided to allow safe servicing of the UPSs.

1.14.16 Locks are to be clearly and correctly labelled with Trafolyte style labels.

1.14.17 Keys and functionality shall be tested for correction operation.

1.14.18 Keys shall be unique and not interchangeable between UPSs.

1.14.19 An Emergency Power Off button (EPO) shall be fitted to isolate **all** power circuits within and traversing that same room. The EPO buttons enable rapid power shutdown for all the equipment in that room.

1.14.20 This button shall have a 'press' to activate and 'twist' to release style movement.

1.14.21 To avoid accidental activation, it shall have an extended shroud surround (longer than button end) and be clearly labelled as "UPS Emergency Power Off".

1.14.22 The EPO shall be located near the entrance and accessible from the doorway (no greater than 1.5m from door) but not in a position where it may be inadvertently mistaken for a light switch.

1.14.23 Once activated it shall bypass and disconnect all mains power contained within and traversing through the room in which it was actvated.

1.14.24 If the UPS is internal to the room and services other areas/rooms, then by default, activation of the EPO shall power down the UPS which shall affect these other areas/rooms.

1.14.25 If the Batteries/UPS are hosted in a separate room to the communications room, then activation of the EPO shall only isolate power in the communications room and shall not power down any other UPS or circuits located external to that room.

1.14.26 The UPS outputs shall be synchronised through the use of a teaming cable to maintain a consistent voltage frequency and wave pattern.

1.14.27 The two UPSs servicing the communications rooms shall have a Heartbeat cable installed between them and the functionality of Heartbeat connection tested for correct operation. This shall be cabled as structured Cat 6A cabling directly between the two UPS and finished on a standard wall data outlet 100mm above and to the rear of the UPS location.

1.14.28 UPSs shall be also be connected to the network to allow SNMP monitoring.

Note: SNMP alerts shall be sent to the Shared Services ICT facilities team and Health Directorate Critical Systems and Infrastructure Networks team.

1.14.29 The data outlet for SNMP monitoring shall be located 100mm above and toward the front of the UPS. It shall be easily reachable so that laptop or other devices can be connected or disconnected above the top of the UPS.

1.14.30 SNMP connectivity shall be tested and confirmed at handover.

1.14.31 An additional data outlet shall be conveniently provided on the side wall in front of UPS for use of maintenance personnel for laptop connection. It shall be above or clear of the UPS door opening.

1.14.32 For UPS units installed in N+N dual bus configuration, the A & B circuits shall be on different buses.

1.14.33 UPS units shall not be paralleled.

1.15 Entrance

1.15.1 All communications room doors shall be fully sealed to prevent ingress of dust.

1.15.2 A seal shall be provided on the bottom of the door to prevent water ingress. This is in addition to the floor height references in section 1.5.4.

1.15.3 All doors shall have door stops fitted to prevent door handles damaging walls.

1.15.4 Door shall be fitted with a self-closing arm and shall take into account room pressuring factors and be adjustable accordingly to allow consistent closing and automatically relocking within 10 seconds.

1.15.5 Door swing paths shall not interfere with or obstruct open cabinets, other hardware or pathways with a minimum clearance between the door swing path and other objects of 800mm between open doors.

1.15.6 Communications room doors shall be labelled as per the following:

1. Above the door according to the building numbering scheme.
2. On the door according to the DSD BD/FD communications room labelling convention. For example, BD/FD 1.2. see approved labels in the section D.1.1. Building Distributor Communications Room – Broad Sign & D.1.2. Floor Distributor Communications Room – Broad Sign.

1.15.7 At room handover after initial clean, a tacky door mat shall be provided at the entry to every communications room. Between room handover and end of system commissioning the builder shall be responsible for removal of sheets regularly as they become non-sticky, to maintain an adequate dirt capturing capability whilst subcontractors are still using the communications room.

1.15.8 All communications and UPS room doors shall have Electronic Access Control System (EACS) card readers fitted to outside and inside as well to prevent unauthorised access.

1.15.9 All communications and UPS room doors shall also have EACS card readers and break glass hardware fitted on the inside of the door.

1.15.10 All communications and UPS room doors shall not be free-handle exit.

1.15.11 In addition, all FD room doors shall also have extra cabling installed in preparation for EACS card reader and break glass hardware installation to the inside of the door at a later date.

1.16 Security

Communications room door shall be secure with the following requirements (details as per the comms room security installation document).

1.16.1 Doors shall be solid, and two-hour fireproof construction.

1.16.2 The EACS proximity card reader shall be provisioned which leverages the existing head-end servers for access control.

1.16.3 The physical door key lock shall be operational and keyed to the ICT master key system.

1.16.4 Swipe access is required for in and out with break-glass.

1.16.5 Maglock with keyed emergency release

1.16.6 Two single data outlets (DO) shall be provisioned for Shared Services ICT CCTV IP cameras for monitoring communications room.

1. The mount points shall be near the ceiling but clear of any view obstructions, at the two corners opposite to the wall on which the cabinets are positioned against. The cameras shall allow view of the complete room, and the front and rear of the data cabinets.
2. The data outlets/CCTV cameras shall be connected to the Shared Services ICT monitoring system (not the building security monitoring).
3. GPOs shall not be required for the CCTV IP cameras as they shall be powered over POE+ or Universal Cisco Power over Ethernet® directly from the network switches.
4. Bi-locks shall be provisioned for the data cabinet doors. Detail shall be provided by DSD and shall comply with latest Health- BiLock Hierarchy (400 Series) v0.5.1 standard.

1.17 Room Provisioning

1.17.1 All Data outlets shall be installed, labelled, and tested before room handover.

1.17.2 Manufacturer shall approve cable test results prior to room handover.

1.17.3 "As built" documentation and manufacturer certification for Channel, Link and Application warranties, shall be included in the final handover of documentation.

1.17.4 Data outlets shall be provisioned on the communications room walls to service wall mounted accessories with fittings properly and securely finished with plastic screw covers fitted and labelled as per DSD Standard.

1.17.5 Single data outlets shall be provided at ceiling height in the two corners opposite cabinet row for security cameras. GPO is not required for these cameras, as referenced in section 1.16.

1.17.6 A dual data outlet, cabled to alternate switch stacks in the same communications room or in separate FDs in high security environment, shall be provisioned per C-Cure I-Star unit. Two data outlets are required for the primary I-STAR and one data outlet for each the secondary I-STAR.

1.17.7 An additional pair of dual data outlets, connected to alternate switch stacks, shall be provisioned for growth in the number of C-Cure I-Star units.

1.17.8 One single-data outlet shall be provisioned for the C-Cure management laptop.

1.17.9 One single-data wall outlet shall be provisioned for a VOIP wall phone.

1.17.10 Double GPOs installed to service I-Stars shall be connected to the non-UPS/mechanical boards housed within the communications rooms.

1.17.11 All other Power points provisioned on the communications room walls shall be connected to the disparate UPS distribution boards housed within the communications rooms. These are to service wall mounted accessories with all power GPO's fittings properly and securely finished with plastic screw covers fitted and labelled.

1.17.12 A dual GPO (one A and one B circuit) shall be placed near the centre and then at 1.8m intervals on each perimeter wall at a height of 300mm above the floor.

1.18 Physical Access

Unobstructed physical access pathways allow carriage of bulky equipment into and out of the communications rooms without interference.

1.18.1 Floor paths to/from the communications room shall be unobstructed and provisioned with ramps rather than steps to allow for trolleys and transportation of heavy equipment.

1.18.2 Clearances above and next to pathways shall be enough to avoid impedance to carriage of bulky equipment.

1.18.3 A service elevator shall be made available prior to the room fit out for any rooms not on the same floor as the loading dock and shall be weight rated and available for use for the transport of communications room fixtures, electronic equipment, and batteries.

1.19 Fire and Emergency

All CD, BD, FD and server rooms shall comply with Fire requirements as discussed in ICT Public Health Standard St-11.

1.20 Deep Clean

1.20.1 Post-construction, the communications room shall be 'deep cleaned' by 'technical cleaning' company that specialises in cleaning communications rooms to remove all dust and industrial swarf from floors and walls, and dust covering any cabinet areas. This shall be completed at room handover and prior to the installation of the UPS or ICT communications equipment.

1.20.2 Prior to switches, UPS and other server style equipment being activated, a 'deep clean' shall be performed by the head contractor.

Note: Tacky mats, as referenced in section 1.15, shall be provided from 'deep cleaned' date. It is responsibility of the head contractor's representative to remove the used "sheets" from the tacky mats as they become ineffective until room handover.

1.20.3 The head contractor shall review and comply with the DSD's latest "ICT Communications Room Deep Clean Specifications" document which informs the reader about communications room cleaning requirements.

2 Communication room Post ICT fit-out checks

This section describes the Communications room specification for the room itself and ancillaries fitted post ICT fit-out.

2.1 General

2.1.1 The equipment that is housed in building and floor communications rooms shall only be provisioned for supporting the ICT requirements in the relevant building or floor. The exception to this rule is for biomedical equipment that has a requirement for proximity to its location; and

2.1.2 The servers and equipment housed in a building's communications cabinets shall only support that specific building's ICT requirements. Any equipment that needs to support multiple buildings shall be housed in the Data Centre.

2.1.3 Any servers and equipment which does not have a network infrastructure driven required to be housed within a communications room shall not be permitted and shall be installed within a server room.

2.2 Rationale & Implication

This standard intends to achieve the following:

- Provides a pattern for the location of equipment in the data cabinets based on the access requirements for the equipment, high availability requirements and best practices to manage the cabling in the data cabinet;
- Provides a repeatable and consistent layout that is efficient, supportable and is expandable;
- Allows for physical security separation to comply with various teams requirements;
- The allocation and securing of separations allow for:
  - Different authorities to maintain physical isolation and security, restricted to the jurisdiction of that authority only, by imposing physical governance procedures, i.e. separate data cabinet keying;
  - Prompt identification of the responsible entities and type of services provided in each data cabinet;
  - The Shared Services-ICT separation to contain all terminated horizontal cabling and switching equipment and therefore shall be the largest of the three areas; and
  - Three unique keying patterns, (one for each separation) shall be used across ACT Health.

Cabinet space is reserved for particular functions and although more space is allocated, than is actually required initially, it shall allow for consistent expansion of services in future.

Restricted BD/FD communications room access, CCTV video surveillance and robust governance of cabinet keys is required. In order to manage access to the data cabinets, a restricted group of people shall be permitted to access cabinets from each group.

The key benefits are:

- Having a standard equipment layout shall allow for consistent grouping of associated equipment, providing minimum redesign for new installs whilst providing shortest cabling distances and cabling costs, and the ability for increased cabinet airflow;
- Separate cabinet allocation to various groups shall identify the appropriate separation of critical services and provide secure housing of each authority's equipment for access only by each authority nominated representatives;
- The likelihood of mistakenly accessing the incorrect equipment shall be reduced particularly when accompanied with the DSD cabling colour code standard; and
- Provide a structure for future growth in requirement to house additional equipment.

2.3 General

2.3.1 Reconfirm the communications room is still compliant with the Pre-ICT fit-out components and all the faults have been rectified.

2.4 Data Cabinets

Data cabinets shall be in good condition and not damaged or scratched on delivery and at Communications room handover the following shall be completed.

2.4.1 Damage or scratches shall be rectified;

2.4.2 The following internal fittings (pre-supplied) are present and correctly fitted;

1. Earthing bars;
2. Mounting kits;
3. Adjustable feet;
4. Recessed (30cm deep) vertical cable management brackets installed and fitted with fingers and hinged lids;
5. 1 RU horizontal cable management brackets at RU1, 45 and on either side of switches;
6. 2 RU cable management brackets located on RU22-23;
7. Cable trays down both sides (in patch panel cabinets); and
8. 2 x PDUs (as designated) per cabinet, Grey plug black board for non-essential and orange plug and board for essential power supply.

2.4.3 All data outlets in cabinets shall be fitted and fully tested.

2.4.4 The ACT Public Health System has standardised data cabinet models, purpose built by Server Racks Australia (SRA). DSD CSI's Solutions Architecture team shall determine the appropriate model of cabinets for each bespoke installation.

2.5 Physical Cabinet Layout

2.5.1 Floor Distribution (FD) rooms shall comply with the data cabinet layouts as illustrated the project specific design documentation supplied by DSD CSI Solutions Architects.

2.5.2 All building distribution fibre and access switching equipment shall be racked in separation 1- cabinet A and shall be reserved for ACT Health CSI use only.

2.5.3 All structured floor distribution cabling and switching equipment is also to be racked in separation 1-(in/from) cabinet B and shall be reserved for ACT Health CSI use only. Additional distribution cabinets may be required for highly populated data cabinets.

2.5.4 All Facilities Management (FM) and third-party equipment is to be racked in the 2nd separation (usually cabinet C) immediately following last distribution cabinet (usually cabinet B). Spare space shall be reserved for third party equipment.

2.5.5 All Biomedical equipment shall be racked in the 3rd separation (usually cabinet D) immediately following the FM and third-party cabinet (usually cabinet C). If a spare half cabinet space is available in the FM and third-party equipment cabinet, the bottom half can be reserved for biomedical devices.

2.6 Structured Cabling Cabinet Separation

2.6.1 In all Floor Distributer (FD) communications room there shall be provision for three (3) secure (lockable) physical separations for infrastructure with the minimum size allocation for any separation, being half a cabinet. The requirement for separations shall be based on a room-by-room assessment of the following authority requirements:

1. Biomedical & Critical Health;
2. FM (Security, BMCS) and Service Partners; and
3. Shared Services-ICT network infrastructure.

2.6.2 All data cabinets that contain third party equipment with an ATS fitted shall be tested to ensure the single corded devices continue to run when either A or B power supply is disconnected.

2.7 Bi-Lock Design

The Government standard for BiLock installation shall be followed for all data cabinet installs as described below.

2.7.1 All data cabinets shall have locks ordered by the Shared Services-ICT PM and installed by the government Locksmith, according to the following Health Bilock Standard.

Top level:	Key 400 series (ACT Gov);
Group level:	Group 1 (ACT Health);
Sub-Group:	400-1.NN (NN=Group number in sequence);
Sub-Group Key#:	400-1.NN.3 (3rd key distributed to group NN).

2.7.2 All cabinets shall have the above approved Shared Services cabinet locks fitted.

1. To be organised via the ACT Health project manager.
2. Spare site cabinet keys are to be locked in the local key cabinet when installed.

2.8 Infrastructure

2.8.1 Confirm all fibre links for WAN, BD to BD, BD to FD and BD to outdoor cabinets are correctly implemented, secured, and appropriately protected and services patched according to solution and detailed designs.

2.8.2 Confirm all inter Communications room copper links are correctly implemented, secured, and appropriately protected. Ensure the services are patched according to solution and detailed designs.

2.8.3 Confirm all outdoor WAP and CCTV installations are correctly implemented, secured, and appropriately protected. Ensure the services are patched according to solution and detailed designs.

2.8.4 Confirm all servers and Third-Party appliances are installed and correctly attached to KVMs and ATS (if applicable) and patching is according to detailed designs.

2.9 Wall fittings

2.9.1 All power GPOs are to be properly and securely fitted with outlets all correctly labelled with Trafolyte style labels.

2.9.2 Building data outlets labelled as per ACT Public Health standard ST-02.

Note: Patch panels are not to be numbered the same as RU number of the cabinet.

2.9.3 Equipment shall be securely fitted to the walls with Trafolyte (10mm black letters on white background) identification labels fitted.

2.10 Air Conditioning

2.10.1 Air conditioners shall be set to the correct operational temperature.

1. Confirm after an initial 24 hours settling in period.
2. The operational temperature shall be 22C.
3. The acceptable variance or tolerance is +/- 2C.

2.10.2 Remote controls for the air conditioners shall be present within the room and functional at room handover (whether DX remote style or permanently mounted type) and if a remote stored in wall mounted holders at approximately 1200mm height.

2.10.3 Cycling of the units shall be tested and confirmed based on DSD Standards and depending on the type and number prior to 100% FSP. These units shall be tested before final handover.

2.11 Building Management and Control System

2.11.1 The Air conditioners shall be connected to the BMCS for failure warning.

2.11.2 The BMCS shall be programmed to alert on room temperature outside the acceptable tolerance as mentioned in section 2.10.

2.11.3 The network switches also have built in temperature sensors. They shall be programmed to alert DDTS network team on sensing an overheat condition (temp internal to switch).

2.12 Fire and Emergency

2.12.1 Fire and emergency shall comply with Public Health ICT Standard ST-11.

3 Post fit-out

3.1.1 Final Communications Room cleaning is to have a scheduled date.

1. To be arranged by IHSS;
2. Ongoing 6 monthly cleaning to be scheduled by IHSS;
3. May be coordinated via the DSD project manager.

3.1.2 The communications room, proximity card access is to be provided to Shared Services-ICT and DSD by building handover.

3.1.3 Cabinet smart PDU's shall be programmed and added to the system, Along with:

3.1.4 Any cabinet smart locks shall be programmed and added to the system.

3.1.5 The physical door key shall be given to DSD (May be done via the project manager).

3.1.6 A Lighting maintenance schedule to be arranged with IHSS (May be done via the project manager).

3.1.7 HVAC maintenance schedule to be arranged with IHSS (May be done via the project manager).

3.1.8 Confirm that test results for all cabling works have been provided to the manufacturer and manufacturer's certification has been supplied to DSD.

3.1.9 An A4 copy of cable colour standards chart is to be clearly posted at the end of each FD cabinet row.

4 UPS Specific Standards

4.1 Requirements

4.1.1 *For each building, provision shall be made for FD(s), BD/FD(s) and potentially separate Battery or UPS/Battery rooms. Note: A BD room therefore can be just be a BD/FD with UPS and batteries in a separate room.*

4.1.2 *The rooms are to be of the minimum dimensions and layouts shown in the various figures presented in this document.*

4.1.3 The rooms shall be provisioned as described in the main document ***St-05 Communications Rooms Building Infrastructure and ICT requirements*** *latest revision.*

4.1.4 *Any diversion from these standards shall be approved by* DSD Infrastructure Hub *Solutions Architects through submission of a departures request document.*

4.2 BD Communications Room

4.2.1 BD communications room shall be provided in the basement or on lower levels particularly if the UPS and Batteries are installed in the BD rooms. This is largely based around the weight of battery cabinets and floor loadings.

4.2.2 A minimum of two BDs shall be provisioned, inclusive of FD facilities

4.2.3 Building-based UPS and Batteries shall be collocated within the BD room if housed within the first communications rack.

4.2.4 Otherwise, building-based UPS and Batteries shall be suitably located nearby in a correctly sized and provisioned separate room.

4.3 FD Communications Room

4.3.1 FD communications rooms shall be provided on every floor of buildings. Note an FD can also be present within a BD room.

4.3.2 The communications rooms shall be located to comply with the structured cable length limitations. On a plan view this equates to approximately no more than 80m using right angle paths, to allow for vertical rise and fall of cables for walls and obstacles.

4.3.3 For example, when FD is situated centrally, the maximum distance from each communications room wall to any TO position located at 45 degrees from the comms room shall be a maximum linear distance of 56.6m on a plan view i.e. each comms room when situated centrally, covers a maximum of 80m^2 of floor space.

4.4 Uninterruptible Power Supply

UPS shall be installed such that they provide the following requirements:

4.4.1 All installations shall have highly resilient power availability for the ICT equipment.

4.4.2 shall have distributed, redundant*, "building wide"* UPSs installed in a dual bus configuration in the building.

4.4.3 A UPS unit and its associated battery cabinet(s) shall be installed in a dedicated UPS/Battery room.

4.4.4 Room-based UPS units shall not share a room but be isolated from one-another.

4.4.5 The only exception shall be if the dual-UPS installation is small enough such that they shall fit, rack-mounted within the first communications cabinet without impeding the required communications infratsructure.

4.4.6 The Main Switchboard which supplies power to the UPS shall provide Surge Protection or surge protection fitted in between.

4.4.7 The "A" side UPS unit shall be on the Essential power supply i.e. on generator supplied power.

4.4.8 The "B" side UPS unit shall be on the Non-Essential power supply i.e. standard supplied power. In critical buildings a manual transfer switch shall be provided on the non-essential DB to allow manual transition to Essential.

4.4.9 Diverse UPS bus pathways shall provide High Availability (HA) power for FD communications room infrastructure connected to each of the UPSs hosted in the battery or BD rooms.

4.4.10 On larger 3 phase units, the Phases in each successive FD DB, shall be provisioned in a rotating basis to the cabinet power outlets such that phase 1 does not always appear at cabinet A. See chart for configuration pattern in Figure 2: Phase distribution to FD DB circuits

4.5 Vertical Riser Stack

4.5.1 Each communications room shall be provisioned for primary and secondary UPS feeds provisioned over disparate paths based on Vertical Riser Stack (VRS) distribution as illustrated in Figure 3: Dual Bus Reticulation in HA Buildings.

4.6 UPS and Battery Labelling

Compliance with the following UPS labelling standards is mandatory.

4.6.1 The label shall be affixed to the top centre of the UPS.

4.6.2 The UPS label shall be a 40mm Trafolytelabel.

4.6.3 The label shall have 30mm black text on a white background.

4.6.4 The labelling shall be in the following format:

Site abbreviation - 3 letters;

Building number - 'B' followed by 2 numbers e.g. B19;

Level ID - 'L' followed by 2 Alpha/numeric e.g. floor & wing;

UPS number - 'U' followed by UPS#

For example, a UPS label for TCH Building 11 on Level 0 UPS1 shall be:

TCH-B11-L0D-U1 Note: Each label component shall be separated by a hyphen.

4.7 UPS DB and GPO Labelling

4.7.1 Each GPO and screw mount outlet shall be clearly and permanently labelled with the circuit id and UPS source.

4.7.2 Each flat-pin GPO style power outlets within the room from UPS power shall be Blue and labelled with a permanent label with labels no smaller than 10mm height and text no less than 6mm in size- Orange for UPS A and Grey for UPS B.

4.7.3 Each Distribution Board (DB) associated with a UPS shall have a 40mm Trafolytelabel attached that clearly indicates which UPS the DB is fed from. The label shall be 30mm black text on a white background and be affixed to the front of the DB cabinet and clearly visible.

4.8 Emergency Power Off

4.8.1 Provide an Emergency Power Off (EPO) button in each UPS room.

4.8.2 The EPO shall have the following functionality in the event of the EPO button being pressed/activated; in UPS room A:

1. All UPS-A circuits in and out of the room are shut-off;
2. All UPS-B circuits in the UPS-A room only are also shut-off;
3. UPS-A EPO interface/terminal is triggered shutting down UPS;
4. Wrap around bypass supply is shut-off;
5. Bypass input supply to UPS-A is shut-off;
6. Input supply to UPS-A is shut-off.
7. All electrical circuits within and traversing through the room shall be shut-off.
8. UPS-B and UPS-B circuits not related to the affected room shall remain operational.

4.8.3 The EPO shall have the following functionality in the event of the EPO button being pressed/activated; in communications room A which hosts UPS-A:

1. All UPS-B circuits in and out of the room are shut-off;
2. All UPS-A circuits in the UPS-B room only are also shut-off;
3. UPS-B EPO interface/terminal is triggered shutting down UPS;
4. Wrap around bypass supply is shut-off;
5. Bypass input supply to UPS-B is shut-off;
6. Input supply to UPS-B is shut-off;
7. All electrical circuits within and traversing through the room shall be shut-off;
8. UPS-A and UPS-A circuits not related to the affected room shall remain operational.

4.8.4 The button shall be a red, mushroom style button that can be easily pressed but be within a shrouded surround to stop accidental activation.

4.8.5 The button shall be located within the UPS room, but accessible from the doorway to allow activation in emergency situations such as room flooding.

4.9 Power Supply Isolation - Interlock Switch

4.9.1 A key lockable interlock switch shall be provided to enable safe change over from UPS power to mains power. An example installation is shown in Figure 4: Castell Key configuration

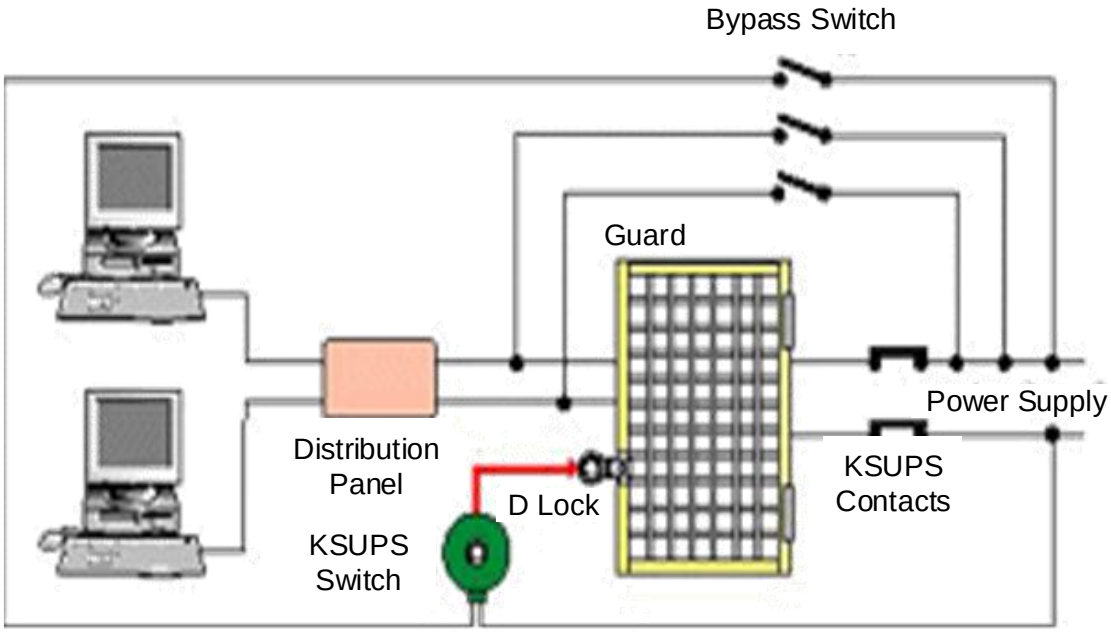
4.9.2 Obtain correct design requirement to suit UPS and specific installation from Emerson.

4.9.3 Before purchase, obtain signoff from DDTS on design and use of Castell or Fortress style protection keys.

4.9.4 Design shall follow the below description:

In normal operating condition, the switch contacts are closed, the key is trapped and the solenoid de-energised. The key can only be turned and released after the solenoid has been energised via remote electrical signal. Turning the Key, changes the condition of the switch and releases the key, which can then be transferred to an access interlock. This allows access or entry into the hazardous area.

e.g. The KSUPS-20 is a heavy-duty solenoid controlled trapped key interlock switch designed to control access to hazardous machines with rundown times or for use where machinery shall complete an operating cycle before the power supply is disconnected. The unit is also suitable for use with UPS to control the changeover of two or more power sources.



KSUPS-20 is a heavy-duty solenoid controlled trapped key interlock switch

4.10 UPS Air Conditioning

4.10.1 Where the UPS /Batteries are located in a separate fire rated room, the air conditioning shall:

4.10.2 Be sized large enough to maintain the room temperature at 22°C (+/-2°) for the given UPS and battery heat loading.

4.10.3 Be placed such that the cold air flow is aimed directly at the units for maximum cooling capability.

4.10.4 Shall be configured in N+1 redundancy.

4.10.5 Shall be connected to and monitored by BMS for all state, faults and alarms.

4.11 Power Circuits and Outlets

4.11.1 Each Cabinet shall have provided above the cabinet an “A” and “B” permanently mounted a 32A 250V 3 PIN screw, Clipsal 56C style outlet UPS circuit.

4.11.2 The circuit following next after the allocated 32A cabinet circuits, shall be a 10A circuit to supply UPS power to GPO circuits within the communications room. Designated locations shall provide an “A” and “B” UPS 10A circuit.

4.12 Other Considerations

4.12.1 The following also need to be discussed and resolved during project planning:

1. To be included in contract wording:
    d) Contracted maintenance agreement of the device. Large units require regular maintenance to avoid failure long term even in DLP. Comprehensive or preventative.
    e) Regular cleaning of Comms rooms that house larger UPS units. The units pull a lot of air constantly for cooling. These can become a fire hazard if dust is a constant and not removed. The UPS tech shall blowout regularly, but this is of little purpose if the room remains dusty and it is unclear as to support arrangements.
2. To be noted in OPEX requirements:
    f) Batteries replacement shall to be noted in OPEX- anywhere from 3 to 6 years after initial install based on a ten year life design. Cost could be $3000 to $10000 every replacement cycle.
    g) Physical hardware replacement for capacitors at the 5-6 year mark, $6000 a unit when due dependant on unit size.
3. To be established up front with DDTS Facilities as to whose budget this shall be requested in:
    h) When a refresh is due particularly with large units or a failure replacement who pays. These units can cost 15k to 50k without batteries dependant on size.

4.13 Other Considerations

The following diagrams illustrate diagrammatically, requirements mentioned within the standard.

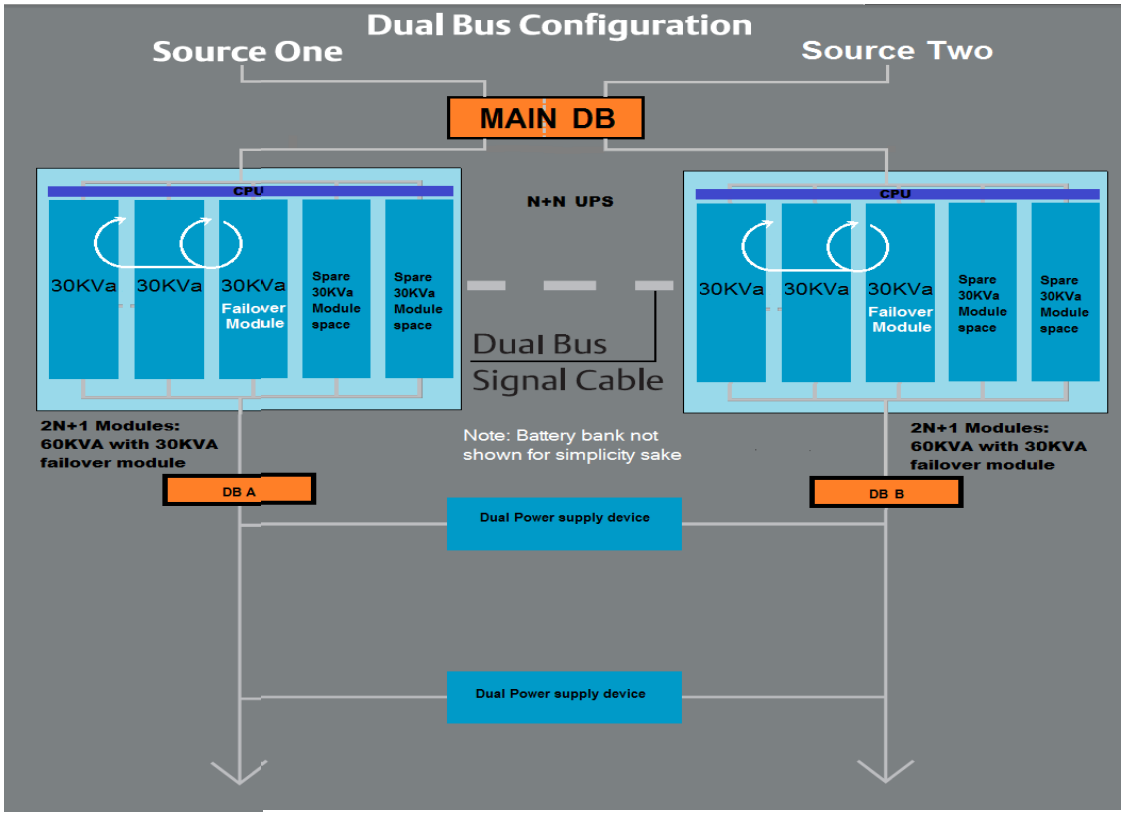


Figure 1 Enhancement of a 90KVA HA UPS configuration by addition of a spare 30 kVA module, providing (2N+1)

Health Directorate Installation of 'Comms Room' Wiring for UPS Three Phase Colours

Phase 1 - Red	L1
Phase 2 - White	L2
Phase 3 - Dk Blue	L3
Neutral - Black	N
Earth - Green/Yellow	PE

		Essential							Non-Essential						
		UPS A - FD Power Circuit Phase distribution schedule							UPS B - FD Power Circuit Phase distribution schedule						
		Cabinet A Cct. A	Cabinet B Cct. A	Cabinet C Cct. A	Cabinet D Cct. A	Cabinet E Cct. A	Cabinet F Cct. A		Cabinet A Cct. B	Cabinet B Cct. B	Cabinet C Cct. B	Cabinet D Cct. B	Cabinet E Cct. B	Cabinet F Cct. B
BD/FD	1	Phase A	Phase B	Phase C	Phase A	Phase B	Phase C	Neutral	Phase A	Phase B	Phase C	Phase A	Phase B	Phase C
BD/FD	2	Phase B	Phase C	Phase A	Phase B	Phase C	Phase A		Phase B	Phase C	Phase A	Phase B	Phase C	Phase A
FD	3	Phase C	Phase A	Phase B	Phase C				Phase C	Phase A	Phase B	Phase C		
FD	4	Phase A	Phase B	Phase C	Phase A				Phase A	Phase B	Phase C	Phase A		
FD	5	Phase B	Phase C	Phase A	Phase B				Phase B	Phase C	Phase A	Phase B		
FD	6	Phase C	Phase A	Phase B	Phase C				Phase C	Phase A	Phase B	Phase C		
FD	7	Phase A	Phase B	Phase C	Phase A				Phase A	Phase B	Phase C	Phase A		
FD	8	Phase B	Phase C	Phase A	Phase B				Phase B	Phase C	Phase A	Phase B		
FD	9	Phase C	Phase A	Phase B	Phase C				Phase C	Phase A	Phase B	Phase C		
FD	10	Phase A	Phase B	Phase C	Phase A				Phase A	Phase B	Phase C	Phase A		
FD	11	Phase B	Phase C	Phase A	Phase B				Phase B	Phase C	Phase A	Phase B		
FD	12	Phase C	Phase A	Phase B	Phase C				Phase C	Phase A	Phase B	Phase C		
FD	13	Phase A	Phase B	Phase C	Phase A				Phase A	Phase B	Phase C	Phase A		
FD	14	Phase B	Phase C	Phase A	Phase B				Phase B	Phase C	Phase A	Phase B		
FD	15	Phase C	Phase A	Phase B	Phase C				Phase C	Phase A	Phase B	Phase C		
FD	16	Phase A	Phase B	Phase C	Phase A				Phase A	Phase B	Phase C	Phase A		
FD	17	Phase B	Phase C	Phase A	Phase B				Phase B	Phase C	Phase A	Phase B		
FD	18	Phase C	Phase A	Phase B	Phase C				Phase C	Phase A	Phase B	Phase C		
FD	19	Phase A	Phase B	Phase C	Phase A				Phase A	Phase B	Phase C	Phase A		
FD	20	Phase B	Phase C	Phase A	Phase B				Phase B	Phase C	Phase A	Phase B		

Figure 2: Phase distribution to FD DB circuits

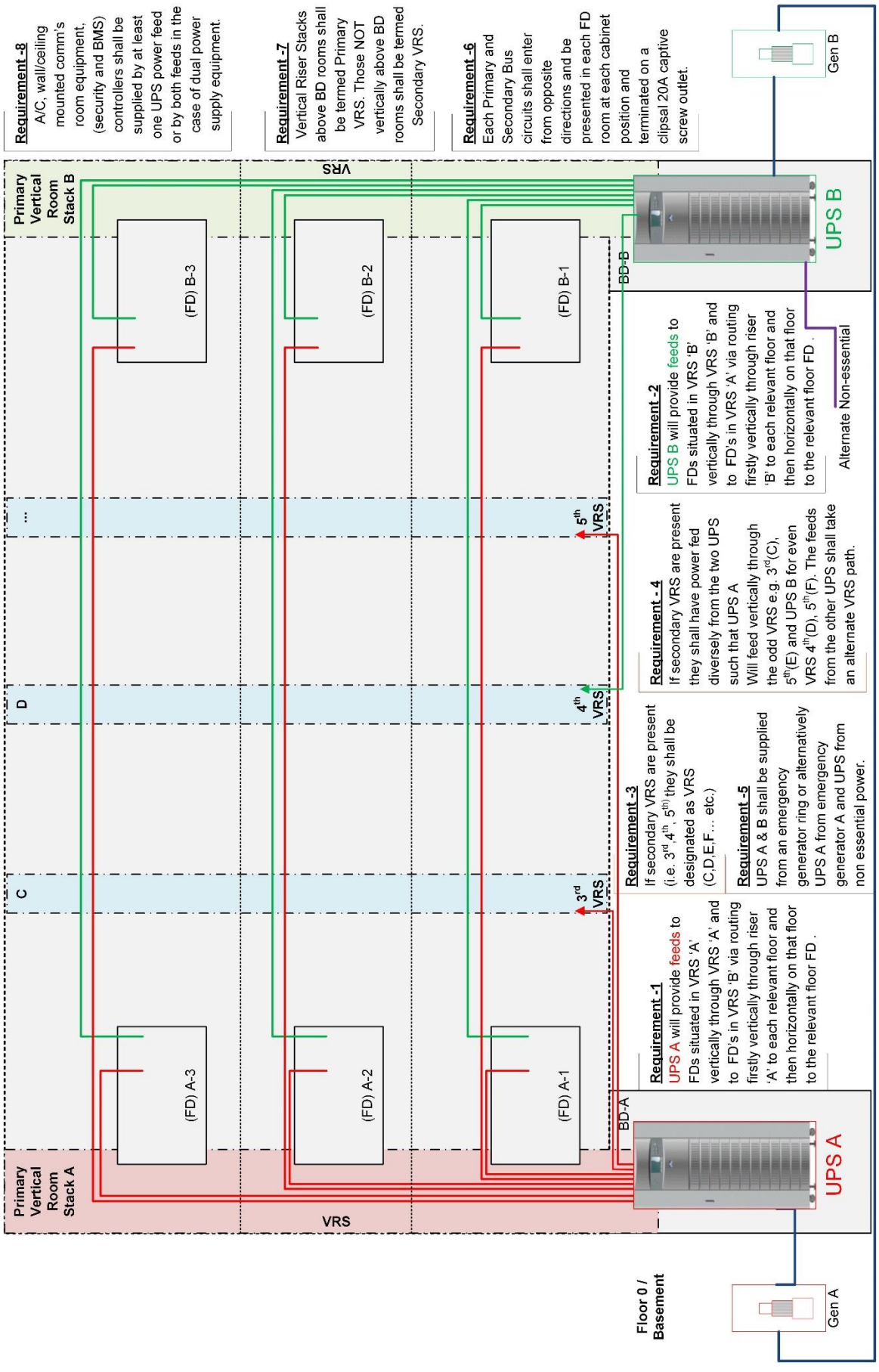


Figure 3: Dual Bus Reticulation in HA Buildings

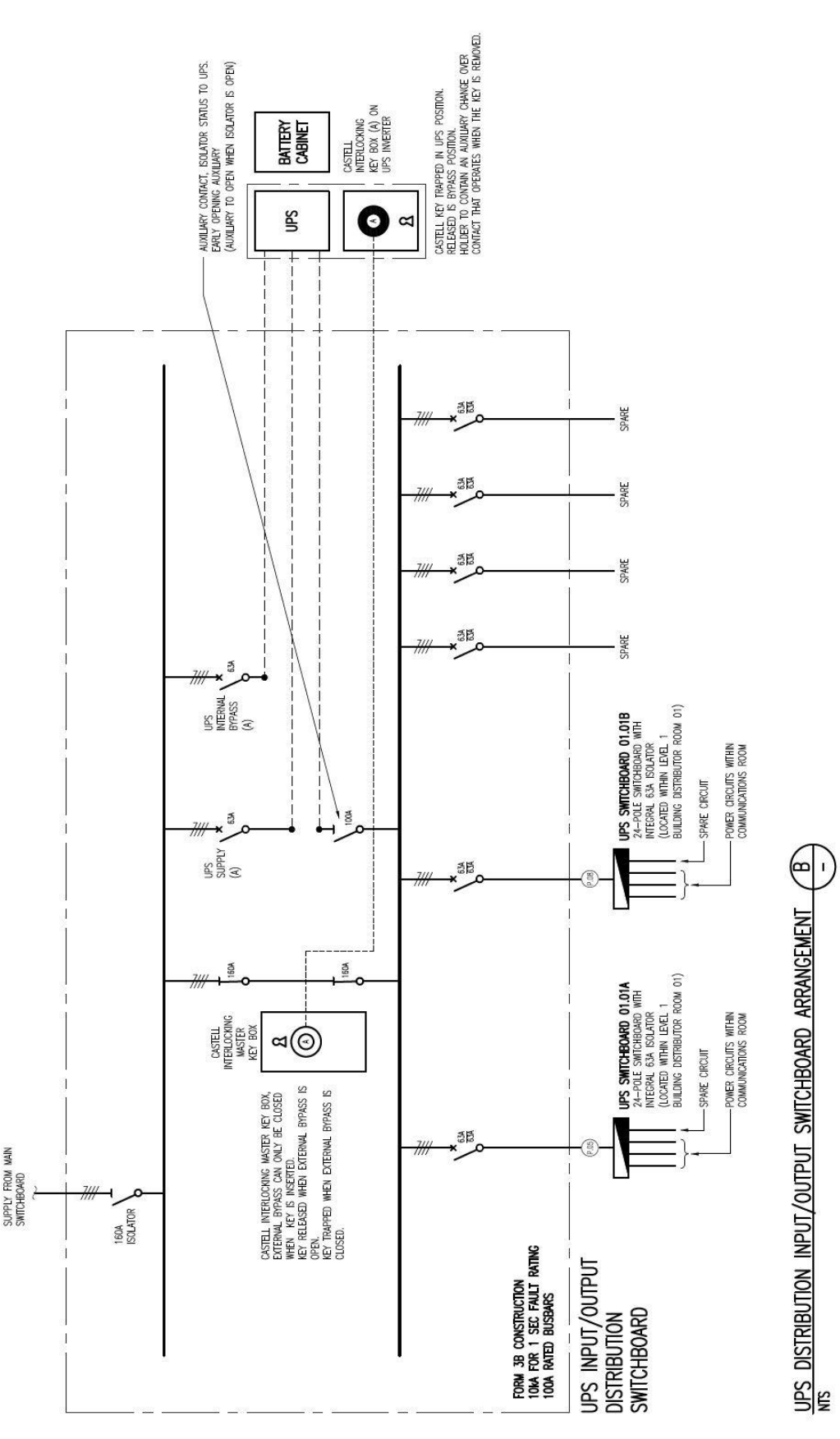


Figure 4: Castell Key configuration

Appendix A. Document Details

An annex and an appendix are both forms of addendums to a main document. An appendix contains data that cannot be placed in the main document and has references in the original copy or file. An annex, on the other hand, is usually a standalone document that offers additional information than contained in the main document i.e. a relevant brochure of a required product e.g. an SRA cabinet datasheet.

A.1. References

The following referenced documents are indispensable for the application of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

Item	Name	Notes
1	ACT Health Standard 5 Checklist – Pre and Post Fit-out	Version 2018.2
2	ICT Scope Specifications	v5.0 or later
3	St-02-Governance-Campus-Structured Cabling	
4	St-05-A Comms Room and UPS-Battery Layout 2019.1	Version 2019 0.1
5	St-05-B Data Cabinet Specifications 2019-1	Version 2019 0.4
6	St-05-C Cabinet Physical Layout Cabinet Separation and Governance 2019-1	Version 2019 0.4

Table 1 – References

A.2. Abbreviated terms and definitions

Acronym	Term	Definition
2N	2 x N (equipment)	Replicated hardware providing two times the optimum sized requirement
AEP	Approved Equivalent Product	A requested and then approved equivalent alternative to a specified piece of equipment
ATS	Automatic Transfer Switch	A switch that transfers load between two electrical sources.
BD	Building Distributor (Room)	Building communications room housing building distribution switches and other Health Directorate system servers/ appliances and connecting to all FD rooms/switches in that building. (two per building for clinical buildings)
	Building Distributor (Switch)	Building distribution switches that provide layer 3 aggregation for all FD switches in that building
BMCS	Building Management & Control System	A centralized system that both allows control and records the outputs of various building systems
Brownfield	Brownfield Buildings	Health Directorate existing buildings that are being fully or partially refurbished
BTU	British Thermal Unit	Standard measure of heat energy

Acronym	Term	Definition
CA	Campus Aggregation (Switch)	Provides layer 3 aggregation for all campus based FD switches that do not have a local Building distribution switch
DALI	Digital Addressable Lighting Interface	International lighting standard for digital lighting
DB	Distribution Board	Electrical Distribution Board which holds fuses for electrical connections.
DLP	Defect Liability Period	The period where the builder/other is responsible to repair defects
DO	Data Outlet	It shall be RJ45 Cat6A
EO	Electric Orange	Essential UPS circuits shall be coloured Electric Orange
EPO	Emergency Power Off	Emergency power off button
EWIS	Emergency Warning Information System	Emergency Warning Information System
FD	Floor Distributor (Room)	Floor communications room hosting floor distribution/access switches and houses all structure cabling patch panels
	Floor Distributor (Switch)	Floor distribution switches that provide layer 2 access for all edge devices within 90m in that building
FDF	Final Distribution Frame (FDF)	Furthest and final termination point
GPO	General Power Outlet	Power sockets
GY	Grey	Non-Essential UPS circuits shall be coloured Grey
Greenfield	Greenfield Building	Health Directorate new buildings
HA	High Availability	High Availability
HCM	Horizontal Cable Manager(s)	Used for cable management in a data cabinet
HPI	Health Planning and Infrastructure	A department within ACT Health
ICT	Information Communication Technology	Information Communication Technology
IDF	Intermediate Distribution Frame	A termination frame after MDF but prior to final distribution frame (FDF)
KVA	Kilovolt-ampere	Unit of electrical power
MDF	Main Distribution Frame	First point of carrier line termination within a building
OH&S	Occupational Health and Safety	
PA	PA system	Public Address system – distributed speakers for building, ward or room-based announcements or piped music
PDU	Power Distribution Unit	Electrical power board in the data cabinets

Acronym	Term	Definition
PM	Project Manager	Project Manager
PP	Patch Panel	Comms room termination of data outlets
PSP	Preliminary Sketch Plan	Preliminary Building Plan
RU	Rack Unit	A unit of measure in the data cabinets which is 44.45mm.
SNMP	Simple Network Management Protocol	Protocol for collecting and organising information about a managed device on IP network.
SRA	Server Racks Australia	Data Cabinet vendor
TCH	The Canberra Hospital	The Canberra Hospital
UPS	Uninterruptible Power Supply	Uninterruptible Power Supply units and batteries
UTP	Unshielded Twisted Pair	A type of a cable
VOIP	Voice over Internet Protocol	Technology that allows phone call to be made over the network
VRS	Vertical Riser Stack	Vertically aligned Communications rooms providing a connecting cable tray path
WAN	Wide Area Network	Provides connectivity from a building to the external network
WAP	Wireless Access Point	A device that allows connectivity to the wireless network

Table 2 – Glossary

A.3. Amendment history

Version	Summary of Changes	Author	Date
2019.0.1	Updated from previous DDTS document.	Nitin Saxena	18/09/2019
2019.0.2	Sent to the Technology Strategy Committee for approval to release	Mark Moerman	30/09/2019
2019.1.0	CIO to endorse after review and approve for release as 1.0	Sandra Cook a/g CIO	09/10/2019
2019.1.1	Clarification of MASD requirements for BD's and FD's (VESDA)	David Richards	10/10/2019
2019.1.2	Essential power Circuit added to lighting and HVAC circuit section.	David Richards	6/11/2019
2019.1.3	Also added to security door hardware requirements	David Richards	11/11/2019
2020.0.1	Update Deep Cleaning section	Nitin Saxena	26/03/2020

Appendix B. Typical building BD and FD layout

The physical layout of all communications rooms needs to provide sufficient cabinets for the required infrastructure, space in the front and rear of cabinets for ease of access, power, UPS batteries and cabinets, and cooling.

The Building Distributor provides the connectivity between the building and the external networks and systems. All public health buildings shall have two separate building distributor communications rooms unless otherwise approved by the DSD solutions architect.

The Floor Distributor provides connectivity between the Building Distributors and the IT infrastructure located on each floor. A building shall have at least one floor distributor communications room per floor which may also be incorporated with the BD communications room. More than one FD may be mandatory to ensure structured cable lengths remain compliant with Australian and International standards. If only one FD is provided per floor, then dual switch stacks shall be provided in the FD communications room.

A vertical riser stack (or pair of stacks) shall provide the channel to allow connectivity between floors for the cabling.

Refer to diagram below, Figure 5 – Typical Building BD and FD Communications Room Locations, for an illustration of communications room and switching components interlink.

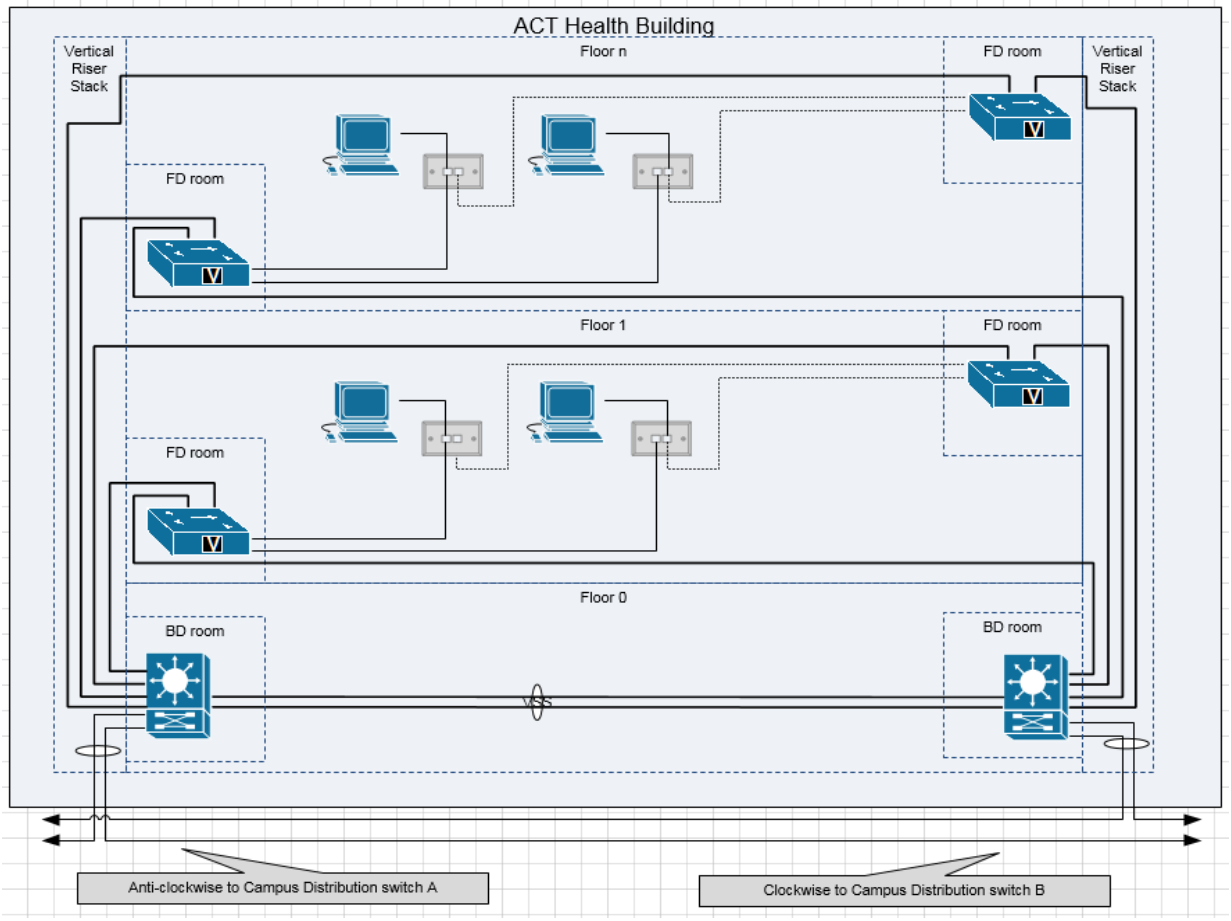


Figure 5 – Typical Building BD and FD Communications Room Locations

Appendix C. Typical ICT Cabinet Layouts Diagram

The following diagram, Figure 6 – A Typical Data Cabinet Layout Example, illustrates a typical data cabinet layout that is provided for reference purposes only. A project specific data cabinet layout shall be provided as part of the Conceptual Solution Design document.

Note: The head contractor shall request a project specific data cabinet layout for each project.

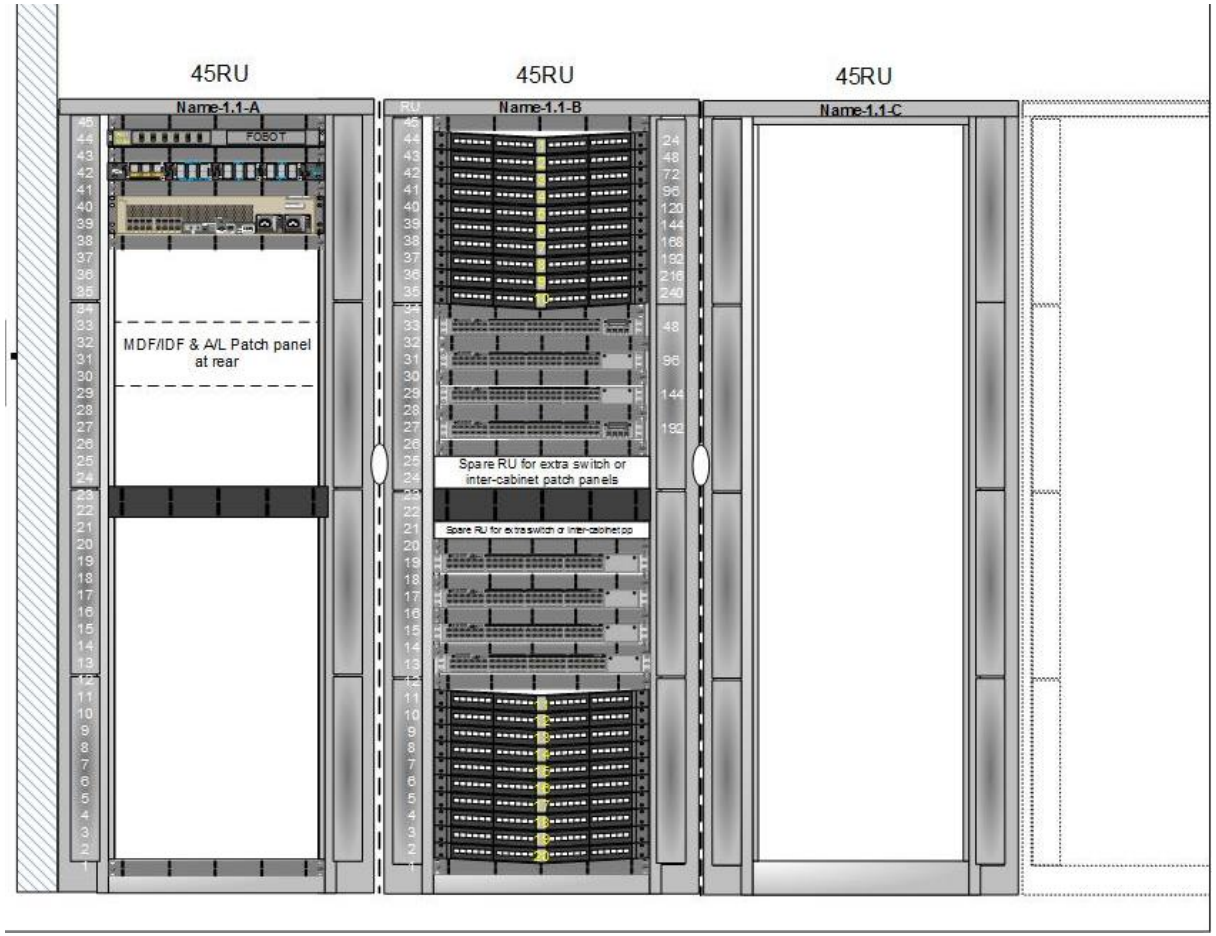


Figure 6 – A Typical Data Cabinet Layout Example

Appendix D. Labelling Examples

D.1. Communications Room Labelling

The communications room labels shall be located either:

- On the door; or
- On the wall immediately beside the door at a level of 1600mm from the floor to the bottom of the sign.

The signs shall be a minimum of 500mm wide.

D.1.1. Building Distributor Communications Room – Broad Sign

Figure 7 – Building Distributor Communications Room Label – Broad

D.1.2. Floor Distributor Communications Room – Broad Sign

Figure 8 – Floor Distributor Communications Room Label – Broad

D.1.3. Floor Distributor Communications Room – Slim Sign

Figure 9 – Floor Distributor Communications Room Label – Slim

D.2. i-STAR Labels

Shall be Trafolytestyle and labelled with ID used within Electronic Access Control System C-Cure programming for easy identification.

Minimum label height of 10mm.

D.3. Wireless Access Point Labels

Shall use Trafolytestyle and labelled on WAP or ceiling with ID used within WAP programming for easy identification.

Minimum label text height of 10mm.

D.4. CCTV Cameras

Trafolytestyle label (white writing on black background) shall be attached to the nearest flat viewable surface adjacent to the CCTV camera and labelled with the ID used within CCTV system, Avigilon, programming for easy identification.

Minimum label text height of 10mm.