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1   Introduction

At BIT, we have over 25 years of experience in designing and operating data centres, and we are happy to share that experience with you. By doing so, we can work together to ensure that the data centre is set up in the best possible way. We therefore recommend taking the time to read this document carefully, as a properly configured rack can prevent a great deal of inconvenience.

Following these Best Practices is not mandatory, but it is strongly recommended. If we notice that the equipment in your rack is causing disruption, we will contact you to discuss how this can be resolved.

2   Power Supply

At BIT, the power supply is fully redundant. This means that we have two separate connections to the mains grid, each with its own UPS system and switchgear. This allows us to perform maintenance on one connection without causing any downtime. In all racks within BIT data centres, this redundancy is reflected by two or more power distribution units at the rear of the rack or by the connections underneath the rack.

2.1   Power Feed A+B

In BIT-1 and BIT-2A, you will always receive an A+B feed and a B feed. In BIT-2BCD, the 'A+B' feed is optional. This is managed via an ATS (Automatic Transfer Switch) or STS (Static Transfer Switch) installed at the bottom of your rack, or centrally in the case of BIT-1. As long as power is available on the A and/or B feed, the ATS ensures that the A+B feed power distribution unit is supplied with power.

- If your equipment has only a single power input, we recommend connecting it to the A+B feed power distribution unit (if available) to prevent outages should one of the two feeds fail.

- If your equipment has dual power inputs, connect them to the A+B and B feed, or to the A and B feed. This prevents the creation of a Single Point of Failure (SPOF).

2.2   Use of Eco Mode

If you have equipment installed in the data centre, BIT recommends enabling eco mode or power-saving mode wherever possible. This reduces power consumption when equipment is not under full load, saving both costs and energy, and improving the overall energy efficiency of your IT infrastructure.

3   Cooling

To maintain a constant temperature in the server rooms, the cooling systems are configured to keep the temperature at the front of the racks stable. It is therefore essential that your rack is set up correctly.

For efficient cooling, we use hot and cold aisles in the server rooms, also known as cold corridors. The cold side is the front of the racks, so it is important that the air intake of your equipment is positioned at the front, allowing it to draw in cooled air rather than warm exhaust air.

The cold corridor works most effectively when the space is properly enclosed, so ensure there are no gaps in your rack layout. If necessary, blanking panels are available from the crash carts in the relevant server room to seal any unused spaces between devices.

4 Rack Layout

Correctly configuring your rack in the data centre is extremely important to ensure that your equipment operates as efficiently and safely as possible. A well-organised rack helps maintain a stable temperature and ensures optimal cooling, reducing the likelihood of failures and extending the lifespan of your equipment. It also provides a safe and orderly working environment for technicians and administrators.

4.1 Rack Units (U)

A rack consists of Rack Units, also known as U. One U represents a fixed vertical height within the rack, as shown in the illustration. It is important to note that the holes within a single U are spaced further apart than those between adjacent rack units. The hole marked with an arrow indicates the centre of a U.

It is essential to adhere to the correct number of rack units when mounting equipment. Failure to do so may result in damaged hardware or misalignment between devices and blanking panels, which negatively affects cooling performance.

4.2 Power Expansion

In BIT-2BCD, it is possible to have additional power capacity installed in a rack. Please note that additional power installations occupy rack space. For this reason, it is advisable to begin mounting equipment at the top of the rack, as power expansions are installed at the bottom.

4.3 Cabling

Although it may seem like a minor detail, cabling within your rack is critically important. Proper cabling ensures that cables are easy to trace and that heat can be dissipated more effectively. This improves airflow within the rack and allows your equipment to draw in cooled air more efficiently from the front.
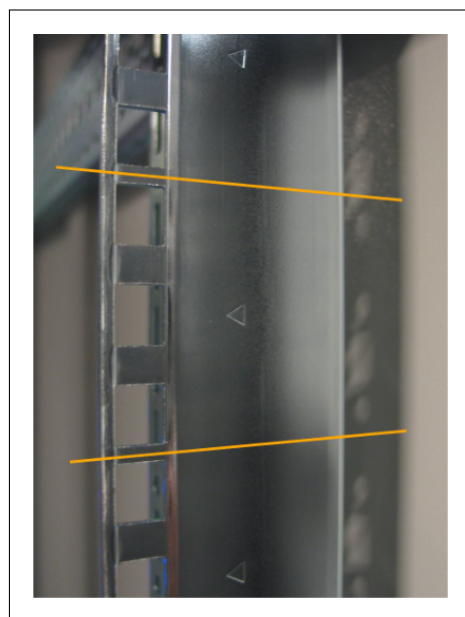
To keep cabling organised, we recommend routing all power cables along the left-hand side of the rack and all network cables along the right-hand side (viewed from the rear of the rack). This creates a clear separation between power and network cabling and improves overall clarity. The A+B feed power distribution unit is best mounted on the left-hand side, concentrating power cables in one area.

It is also important to avoid excess cable length. For short distances within a rack, it generally makes little difference whether a network cable is UTP or S(F)TP. Choose a cable that is easy to route and not unnecessarily thick. At BIT, you can borrow UTP cables in various lengths; please contact a data centre manager or email datacenter@bit.nl.

Where possible, bundle cables to improve airflow and maintain a tidy rack. Do not use cable ties, as these can damage cables and are inconvenient when adding new ones. Instead, use Velcro straps, which are safer for cables and easier to adjust. BIT provides Velcro straps for cable bundling.

4.4   Switches

It is often practical to place switches at the rear of the rack, as most devices have their network ports located there. However, if you wish to minimise the amount of cabling, it is advisable to position the switch centrally within the rack. Ensure that you do not obstruct the switch's airflow, as it is not permitted to blow warm air into cold aisles. Choose the switch location carefully to ensure optimal performance and efficiency of all equipment.

5   Labelling

To make optimal use of BIT's 'Remote Hands and Brains' service, we recommend clearly labelling all equipment with names and/or IP addresses. This ensures that our engineers can confidently perform actions on the correct machine without affecting other hardware. Proper labelling saves valuable time and reduces the risk of errors during remote operations.

6   Crash Carts

BIT provides several crash carts in the server rooms for your convenience. These carts contain everything you need for quick troubleshooting:

- Monitor
- Keyboard and mouse
- PS/2 to USB converter
- Rack nuts and bolts
- Screwdrivers
- Wire cutters
- A roll of Velcro
- Disposable earplugs

Please return the crash carts neatly to their designated locations after use. In BIT-1 and BIT-2A, they are located immediately to the left upon entry; in BIT-2BCD, they are positioned on the far right. If anything is not functioning or if items are missing, please report this to one of our data centre managers via datacenter@bit.nl or by telephone on +31 318 648 688 (during office hours).

7   Summary

Below is a concise overview of all data centre best practices:

1. If your equipment has a single power supply, always connect it to the A+B feed power distribution unit.
2. If your equipment has dual power supplies, connect them to both power distribution units/feeds.
3. Position the air intake side of your equipment at the front of the rack.
4. Avoid gaps in your rack layout by using blanking panels where necessary.
5. Pay close attention to rack units (U) when installing equipment.
6. Use eco mode on your equipment to save energy.
7. Begin mounting equipment at the top of the rack to allow sufficient space for power configurations.
8. Route all power cabling along the left-hand side of the rack.
9. Route all network cabling along the right-hand side of the rack.
10. Use cables of the correct length (avoid excessive length).
11. Bundle cables wherever possible.
12. Ensure proper airflow when installing switches; warm air must not be blown into cold aisles.
13. Place switches centrally in the rack to minimise cabling and optimise performance.
14. Clearly label all equipment with names and/or IP addresses.
15. Remember to return crash carts after use.