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Modular thinking:

the only design criteria for today's Data Centre

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WHAT IS MODULARITY?

modularity

*[moj-uh-**lar**-i-tee, mod-yuh-]*

: of, relating to, or based on a module or a modulus

: constructed with standardized units or dimensions for flexibility and variety in use

WHY CONSIDER MODULARITY?

- Cost
  - Initial
  - Life time
- Expandability
- Flexibility
- Efficiency

MODULAR DOES NOT JUST MEAN ‘CONTAINERS’

WHERE CAN WE APPLY MODULAR THINKING?

We can apply Modular thinking in just about every aspect of data centre design, including:

- DC service requirements
- Tier/Classification levels
- Construction techniques
- Power provision
- Cooling technologies
- IT systems
- Racking
- Cable Infrastructure
- Fire protection
- Support teams
- Training

DC SERVICE REQUIREMENTS

How do we manage the data centre requirements for the business, there are several options:

- Enterprise facility
  - single site
  - multiple sites
- Colocation
- Managed services
- Cloud

With the modular approach, we review each of the business needs and determine which solution best meets our requirement, and in most cases it will be a combination of the options.

TIER/CLASSIFICATION LEVEL

Similarly, we have choices with the Tier levels or the availability classifications from 0 – 4

(BICSI has a Classification ‘0’ which represents the ultimate in efficiency but zero resilience)

When selecting the availability classification for the service we require we must remember that not all applications are 100% business critical.

(I may not need to put my email server in a tier 4 DC)

Choosing a modular approach and having different classifications within the same facility could save a lot of money in the long run.

CONSTRUCTION TECHNIQUES

Traditional Monolithical data centres very rarely make sense.

Building one large space with the hope that one day it will be full is expensive and very inefficient.

One large open space usually means that we are controlling the environment to suit the worst case scenario, perhaps just for a few devices.

Compartmentalisation is the key, and adding new space as and when required is a much better business solution.

This can be achieved by containerisation.

But also in a traditional building by simply building multiple smaller data halls.

POWER PROVISION

Power provision can be designed to be modular also.

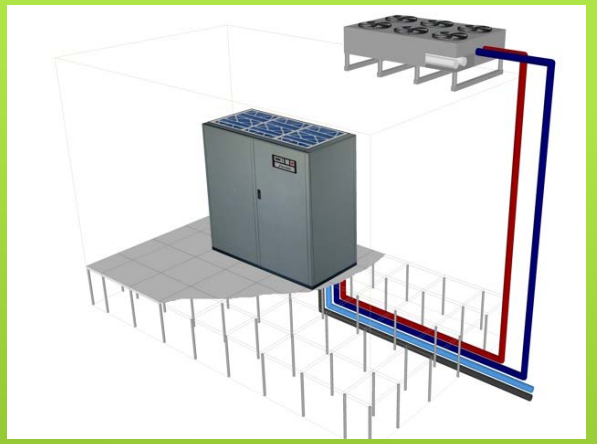
Multiple transformers

Multiple generators

Modular UPS systems

Bus Bar distribution

COOLING TECHNOLOGIES



DX cooling systems were the original modular cooling system, you just add a new indoor/outdoor unit when you need to, flexible but *inefficient*

Today we can add modularity into chilled water systems, provided we think about it at the design stage.

By designing chiller and pipe sizes for maximum capacity and installing sufficient isolating valves or manifolds, it is possible to create a modular and flexible cooling system.

IT TECHNOLOGY

The Blade chassis is the obvious modular unit, when we can add additional servers as we need them, and we can have modularity in networking and storage.

But we also look at modularity by creating individual IT zones for Servers, Networking and Storage.

This is particularly significant if we are using legacy storage systems which utilize Magnetic media.

For these systems we have to tightly control the environment by ensuring temperature and humidity settings are closely controlled.

RACKING

We can even look at modular within the rack itself.

From deploying multiple door racks for individual users or applications.

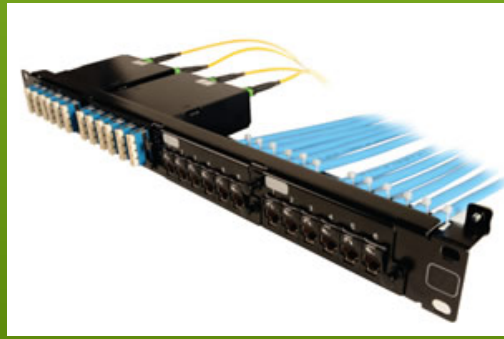
To creating a mini data centre in a rack, containing it's on cooling system, fire suppression system and ups

CABLING INFRASTRUCTURE

With 10G common place, 40/100G currently being deployed and 400G under development, infrastructure cabling for Data Centres is becoming a major issue.

In order to maintain flexibility within the interconnecting media, we have to be ready to move from copper to multimode to single mode, with minimal service interruption.

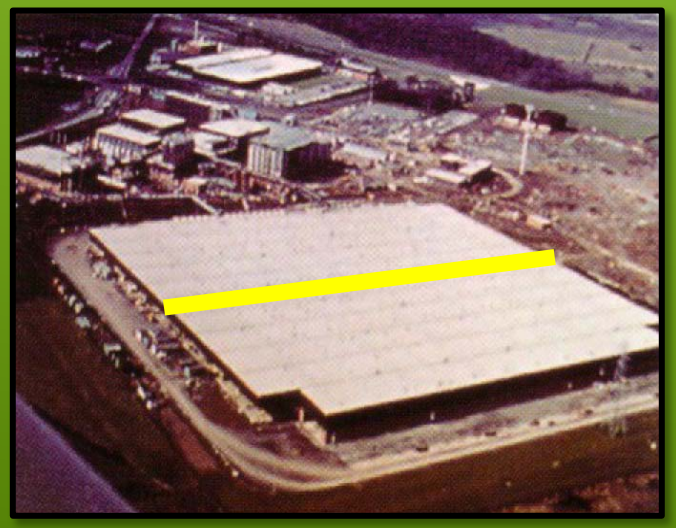
To achieve this we need to think about modular cable system design which will allow us to mix and match different media on the same panels so we can upgrade the infrastructure as the technology dictates.



FIRE PROTECTION

Zoning, or modular thinking, for fire systems is a serious consideration from three aspects

- It allows for different types of system for different fire risks
- It reduces cost in the event of an incident or accidental discharge
- It provides compartmentalisation to reduce fire spread



SUPPORT SERVICES

The concept of providing support services as a modular solution is not a new idea.

Out-sourcing of system maintenance has always been how support has been done in the past.

Today we are seeing a variation of this, where the whole on site team is an out sourced solution, where only senior management are full time staff.

Different levels of support can be purchased for different systems depending on the in house capabilities.

Even building in house ‘modular teams’, rather than having a facilities department and IT department, support is provided by teams which consist of IT, Electrical and Cooling engineers working together!

Teamwork, what a radical concept!!!!

TRAINING

Training is the component that is very often left out of the design process.

Many facilities are created without any consideration for who will manage and run the facility.

When thought about at the design stage, it allows the people who will operate the facility get involved, have their say, and feel ownership of the project.

The training therefore becomes a multi faceted process, which can include class room based, on line and hands on, which then reinforces the learning experience.

By getting involved in a structured training framework, allows people to develop their skills in line with the job requirements.

THANK YOU FOR LISTENING

ANY QUESTIONS

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