

The Importance Of Space Planning

In life, proper planning ahead of time almost always results in a better execution. The same holds true in a mission critical facility. Whether racks are being added, a higher level of redundancy is being implemented, or a new fire suppression system is being installed, mission critical facility managers must have an understanding of the objectives and a plan in place before the process begins. This way, the manager can evaluate the team's progress along the way and ensure that the project is completed properly and in a manner that adheres to the original objectives.

Planning is vital to the success of any project. Yet, when it comes to constructing a new mission critical facility or changing an existing one, planning the space ahead of time is often not sufficiently emphasized.

Space planning includes numerous aspects, from assigning how much space will be needed to laying out each piece of equipment. Best practices should also be considered throughout the space planning process.

When planning the space for your mission critical facility, ask yourself the following questions:

- » What type of equipment will be housed in the facility? Will it be primarily racks? Storage? Silos? Print?
- » Is there sufficient space allocated for future growth? Is there space allocated for additional consolidation of other facilities? Are there corporate strategic initiatives that will impact space requirements?
- » Will you need to segregate certain functions such as print, NOC, etc? With blade servers becoming more prevalent, some mission critical facility managers are looking into separate extreme-density areas.
- » How many square feet do you need for the mission critical facility itself?
- » How much space within the mission critical facility do you need for support equipment? Support equipment may include computer room air conditioning (CRAC) units, power distribution units (PDUs), uninterruptible power supply (UPS) units, and clean agent fire suppression systems.
- » How much space do you need outside of the mission critical facility, but inside the building, to support it? Support equipment may include electrical switchgear, UPS units and batteries, and transient voltage surge suppression (TVSS).
- » How much space throughout the building do you need for personnel?

- » How much space outside of the building do you need to support the mission critical facility? Support equipment that is usually included outside of the building includes CRAC condensers or chillers and generators.
- » How much space do you need for traffic aisles?
- » How much space do you need for equipment to be brought in and taken out of the facility?
- » How much space do you need in between each row of racks? To answer this, it is important to know what your heat density level is and how you will be cooling the racks. If you are implementing the hot aisle/cold aisle layout, the standard size for aisles is 4 feet in the cold aisle and 3 feet in the hot aisle. If you have a high density facility, you may have 6 feet wide cold aisles to achieve more airflow.

Space planning doesn't stop there. The answers to the previous questions are a great start. They give you a specific idea of how much space is needed for your mission critical facility. Once that is determined, it is equally important to plan the layout of each piece of equipment that makes up the mission critical facility. When tackling this task, it is helpful to consider the following:

- » The density of your power requirements will drive space planning. Higher density applications require more CRAC units and PDUs.
- » Implementing the hot aisle/cold aisle layout is now an industry best practice.
- » Studies have shown that racks should be at least 6 feet from the CRAC unit due to the relationship between velocity and static pressure.
- » Due to heat densities within racks, some facilities are limiting the quantity (based on type) of servers per rack. It is sometimes less expensive to allocate more space than investing in more infrastructure equipment to cool it.
- » Consider service clearances for support equipment such as CRAC units, PDUs, UPS, fire suppression systems, etc. Talk with the company that maintains the support equipment. They will have input as to how much space to allocate. It may be greater than the manufacturer's recommendation.
- » It is important to remember that as the watts per square foot increases, the useable space can decrease by as much as 30-50 percent for extreme density applications.

The importance of space planning before the actual construction or changing of a mission critical facility cannot be stressed enough. Too often we see complications arise due to insufficient planning. The risks of not properly planning are too great. In fact, any future expansions or

challenges that your facility may face will be more costly if you don't plan now. Is that a risk that you are willing to take?

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