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Critical spaces keep the pace of business humming

It's your company's engine of commerce. The brains of the business. The panic room for data. The safe house for security. Whatever you call it, there is a room or space in every organization that's vital to the business.

It may be a call center, broadcast studio, trading room or a data center that houses the company's servers and main-frames.

Industries with high security requirements, such as government agencies and security contractors, may depend on a "sensitive compartmented information facility" (SCIF) to keep information secure.

Organizations that monitor several locations often rely on a "network operation center" (NOC).

No matter what the industry, these high-tech spaces have one thing in common: Business depends on them. At best, losing power may cause temporary headaches; at worst, an out-of-commission call center could cost millions in lost business.

UNPLUGGED AND UNPROFITABLE

For architects, real estate brokers and developers catering to clients who depend on high-tech spaces, understanding the relative importance of the space is essential.

A thorough business-case analysis will help you understand the impact of an outage, or downtime, in the critical space.

Consider the following: If there is an outage in a critical space, what's the lost-revenue potential? How long will it take to recover? Will customers stay, or will they turn to the competition? Can I afford to go down?

The answers will help guide the budgeting and design of the critical space and its support infrastructure.

High reliability is expensive. The biggest mistake is providing insufficient capital to match the business case and ending up with less reliability than needed.

The business case will vary depending on the



Expert Opinion

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company. Credit card businesses, service providers and e-commerce retailers, who count lost revenue in millions of dollars per hour, can justify spending a significant portion of the budget to obtain a high degree of reliability in their data-processing environments.

Understand how the space will be used by asking a few programming questions: What happens in the high-tech space? Will it be manned or unmanned? What are the hours of operation?

Obviously, determining whether the space will accommodate people and equipment is extremely important, as "people spaces" have very different needs from an infrastructure and space-planning perspective.

Discuss the company's growth plan. There's no sense spending millions on a space that will be quickly outgrown. Find out if the space will house secure data and if there are any security requirements for it.

FORM FOLLOWS FUNCTION

Once you understand the needs for high-tech spaces, build the best site to accommodate them.

Design elements to consider include ceiling height and column placement. For an air-traffic control center with a wall full of monitors and stadium seating, an obstructed view is unacceptable.

Consider exterior elements. Would zoning restrictions prohibit installing an additional generator on the roof, for example? Some generators can be the size of a school bus and make as much noise as an airplane. Noise reduction will be quite a challenge — and a considerable expense.

The power grid arrangement is equally important. Look for lots of duplication, so if a squirrel takes down the nearest substation the power company can quickly reconfigure the network to the surviving substation.

The next issue to consider when designing high-tech spaces is the mechanical systems — heating, ventilation and air conditioning (HVAC). High-tech spaces often have more precise air-conditioning requirements than less critical spaces.

Indoor-air quality has become a big issue as more people begin to share spaces formerly occupied only by machines.

Sound sensitivity also is critical. Who can concentrate when a server is buzzing a few feet away?

Temperature control is important because

equipment tends to fare better in cooler environments than people do.

Under-floor air conditioning, once relegated to data centers, is now a cutting-edge solution.

And as technology compaction drives wattage densities skyward, rack-integrated cooling solutions are being developed to effectively cool information technology equipment.

Next, consider the site's electrical systems. Critical-space power densities can be higher than other spaces, and the power infrastructure must be sized accordingly.

Fluorescent lights and other building equipment can cause "gremlins" that could interfere with computers and printers. High-tech spaces may require isolation transformers or power conditioners to ensure clean power availability.

In the District the first floors of many buildings were designed with robust power requirements suitable for retail spaces and thus have the power infrastructure already in place. However, for high-security businesses, the first floor may not be ideal.

When it comes to lighting, people want individual control, and no one wants to work under the glare of a flickering, fluorescent ceiling light.

Indirect pendant fixtures are replacing recessed fluorescent lighting because the soft, indirect illumination causes less glare.

Finally, determine if a high-tech space requires any special systems, such as telecommunications.

Wireless networks are popular, but there are security issues.

Setting up a wireless fidelity, or wi-fi, network in a room with lots of windows in a highly populated area may expose a company to outsiders who tap into the network.

The technology known as voice-over Internet protocol, or VoIP, is also increasing in popularity. VoIP enables telephone calls to be transmitted over data networks through a single "smart cable." VoIP brings added security concerns.

The need for such mission-critical spaces will continue to grow. Don't be left behind.

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