Redundancy: The Key to a Quality Colocation Facility

Colocation facilities allow businesses to outsource their network infrastructure by housing network equipment externally. If those colocation facilities are inadequate, your business suffers from downtime, damaged hardware, and lost business. The hallmarks of a quality colocation facility are capacity and redundancy for every major system.

n+1 and the Difference between Capacity and Redundancy

Despite how common colocation facilities are, there are no industry standards, regulations, or rankings available for colocation facilities. The only way to identify a good data center or to recognize the quality of services is to determine for yourself the capacity and redundancy of its services.

- Capacity means that the data center can handle both the current loads and reasonable load increases as the center expands.
- Redundancy is vital for performance but difficult to detect: it is the ability of any system for one unit to fail and then distribute that load across the remaining units without overloading.

Redundancy is calculated using the formula n+1, meaning a system has all the capacity it needs, plus one unit extra. For example, if there are two UPSs in the power system, they should both be running at maximum 50% capacity. If one fails, the other can take over without overloading. If there are three UPSs, then each can be at 66% capacity, and if one fails, its load can be distributed among the other two, and so forth.

Ideally, all systems will be paralyzing redundant; there are multiple units running in n+1 configuration, but any one unit can handle the entire building load in case of multiple unit failures.

Redundant Power

Redundant power systems are critical. A power outage knocks out cooling systems, fire suppression, and Internet connectivity at the colocation facility, takes down all hosted business networks, and can even damage server hardware. Check every step of transitioning from the power grid to generators:

- UPSs keep the colocation facility running while power is transferred to the generators. UPSs are computer-controlled devices, not just batteries, with hardware and software failures like other computer hardware, so any colocation facility must have more than one UPS.

- Circuit breakers or transfer switches automatically switch the colocation facility to generators. Switches are the most common point of failure during an outage and are usually manual; look for automatically-transferring circuit breakers.

- Generators must handle the total, regular facility load. Multiple generators can indicate a possibility of cascading power failures if one unit goes out because the generators are used for capacity rather than redundancy. One generator should be able to handle 1.5 times the regular building load.

Redundant Cooling

Servers produce a lot of heat, and a colocation facility can overheat within minutes without air conditioning. Colocation facility cooling systems never shut off, unlike regular climate controls such as standard HVAC equipment. Cooling is provided through chillers which pump cooled water through special server room cooling systems called computer room air conditioning (CRAC) units.

Like power systems, CRACs and chillers must be in an n+1 configuration, but capacity for chillers and CRACs is calculated somewhat differently. To determine capacity for each cooling component, take the total tonnage divided by the square footage. If there are four 30-ton chillers in a 3000 square foot facility, the total capacity is .040 tons/foot. The minimum advisable capacity is .025 tons/foot.

Redundant Internet Connectivity

Internet connectivity requires both redundant service and redundant hardware (routers and switches). Redundant service means that there are multiple Internet backbones available, at a minimum three and as many as six with Internet service routed among the different backbones for better reliability. This level of Internet connectivity ensures that the network stays reliable, with low latency and packet loss, even if major Internet backbones go down or equipment fails.

Question Everything

The only way to identify a quality colocation facility is to ask questions about every system. Although the power, cooling, and connectivity systems are different, the questions to ask are basically the same:

- What are the failover procedures? Are they tested regularly?
- What is the total load on the system?

• How many units are there? What is the total capacity?
• How much load is on an individual unit?
• Are the systems redundant?
• Are depletable resources like batteries and fuel maintained regularly?

Source: http://www.articlecircle.com

About the Author

American Internet Services, which is the largest San Diego Colocation company, has over 100,000 sq. ft. of data center space.
http://www.colocation.ccccom.com