

Survivability Yes, Examining Power

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The network infrastructure transporting traffic needs a constant flow of juice and without it, there is no network. At what point do you stop and ask - how much more power do we need, where do we apply emergency power and which gear requires power to keep those packets moving?



The simple answer is to add more of everything.

That's not very sporting but it's a common reality. In the SMB/E space, the cost of power is often prorated through the charge backs to the tenants which means incentives are little to non-existent and then there are those in condo-plex that already have their own separate metering. For large enterprise footing large utility bills and not knowing how much power is needed and what it costs to power your network is a sure sign of trouble ahead. According to **APC** 60% of businesses are not actively engaged in investigating data center power consumption and cooling as a way of lowering costs. My theory of observation is most businesses that have a closet housing any IT/telecom gear aren't either.

So in getting back to "attitude" from the last blog on Survivability, you are also the stewards of power. For those with the big networks, I suggest a strong look at **flywheel technology** such as **Pentadyne's** second generation gear. Their **flywheel technology** can be utilized with existing batteries and emergency generators and benefits shouldn't be elusive from looking at the **case studies online**. This isn't cheap or by any means low cost technology but if your operations are judged by your uptime and utility bills, then you should know the true cost of providing a "powered" network service to your users. Flywheel technology in the right place can provide emergency power for periods of seconds, lower your TCO of your emergency power plant and extend the life cycle of batteries.

Trimming the fat from the utility bills means knowing your inventory and what loads each piece of gear requires. Then, going through the exercise of finding efficient gear while maintaining and hopefully improving effectiveness will prove worthy of the cause since whatever you trim now means a reciprocal benefit in the immediate future to reducing associated costs to ensuring reliable and continuous power. So, reduce the consumption of power first then improve the method of backup power. How do I define efficient? Doing the same job as before with less energy consumed. Knock down consumption and you will lower the heat discharged and your cooling requirements will drop too.

After deciding what to back up with emergency power a decision as to where to place what equipment on the generator emergency circuits is wise. Just don't forget the batteries and related devices to ensure delivery of "clean" power when the generators kick in. Can the emergency generator deliver power to all remote closets? I don't think so, at least not effectively in large installations where isolation transformers may be more common and then there are concerns with distance, costs, fuel, and power efficiency. There's another more fundamental question that needs addressing- when the power fails, what are we backing up, how long and why? More specifically, if you can't provide emergency power to all the user PCs or terminals then do you need to provide emergency power for the entire LAN infrastructure? At what point if any do you back off? For converged networks this isn't just about **chasing five nines reliability/availability** and for any network it begs more consideration than what appears on the surface. The exercise if anything will teach a strong sense of balance. An additional step of making physical surveys of all the gear and examining connectivity to the backup power source will likely reveal even more information and signs of trouble. In your inspections watch out for numerous UPS systems because you will need to determine if the run times and loads on each are equal and sufficient in that order, else you may end up with a downed network because the firewall and gateway are on the UPS that runs 60 minutes while all the other UPS systems are stepping up with two hours of runtime.

Aging equipment for example, LAN switches older than 4 years may need a closer look. What is the power efficiency of the gear? Not to lose sight on effectiveness but all the gear in the network generates heat and the vicious cycle of consumption then creates heat which in turn drives a demand for more cooling. So inventory is important and where these goods are installed will ultimately make a difference in how you provide backup power for your network and what technology you use to backup the power. Reducing power demands in closets or the data center doesn't mean less ports, capacity or ability to serve users. Reducing watts consumed now has a ripple effect later. I picked the closets as the example since they are often out-of-site thus out-of-mind.

Reducing power use will also extend your existing UPS runtimes (uptime) and generate less demand for cooling. In doing so, the placement of the emergency generator circuits should have an easier burden and deciding where to place UPS/batteries vs. emergency outlets with UPS/batteries can become a significant cost factor. Leverage the UPSes and save the generator for where and when you need it. Then consider flywheel technology and the ability to provide the load in various time increments and in parallel configurations. Energy savings is bigger bucks today than last year and that's a trend worth using to improve the survivability of your network this year.

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