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Storm Preparation for Data Centers and IT Space

- *Right Sizing UPS*
- *UPS Battery Health*
- *Data Center Cooling Considerations*
- *Stand-by Generator Maintenance*
- *Storm Season Checklist*
- *Imminent Storm Check list*

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EXECUTIVE SUMMARY:
In our increasingly digital world, reliable back-up power for critical infrastructure is essential for day-to-day operations and even more critical during a storm. Review Storm Preparation tips and Best Practices to protect your facility, and maintain uptime, when storms hit.

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As hurricanes, blizzards, and severe storms become more numerous and powerful, storm preparation for data centers and IT space has never been more important. In our increasingly digital world, reliable back-up power for critical infrastructure is essential to keep your business operational. With just about every facet of our lives driven by technology, losing even just a few minutes of power can have a significant negative impact and cost thousands or more in lost revenue. Widespread and long-duration power outages can threaten an organization's business continuity, or for more critical applications, such as hospitals, it can be life-threatening.

Power outages are the leading cause of downtime, and when the utility does go down, the UPS is the most common point of failure in the power distribution system. Proper emergency back-up power configuration, UPS selection, and system maintenance are the first steps to protect your facility from unplanned downtime and prepare for a long-duration power outage.

Configuring the Right UPS

Storm Preparation for data centers and IT space begins with properly specifying a UPS configuration to meet the current demands of your data center, with consideration for future requirements. For highly critical loads, redundant configurations such as N+1 or even 2N may be appropriate. For sites that have generator back-up, only minimal runtime is needed – just enough to support the start-up and synchronization of the generator. Often, data center managers add extra runtime to generator-supported UPS systems to allow for the contingency of a problem with the generator start-up.

Management software can be a valuable tool in storm preparation, to initiate and manage a gentle shutdown.

For data centers and IT space that don't have generator emergency back-up power, runtime requirements may be longer to allow time for the gentle shut-down of the supported equipment. This is particularly important for power outages that result from natural disasters since any outage will likely be a long-duration event. Management software is also important to consider so data center managers can initiate and manage the gentle shut-

down of the protected load remotely. Power outages caused by natural disasters tend to be in areas where the physical infrastructure may also have sustained damage, or where weather conditions make it unsafe for personnel to physically get to the data center.

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UPS Battery Back-up

There is tremendous pressure on IT and facilities personnel to save money where possible. We often see corners being cut as a result. Sometimes that means that the battery back-up for the UPS is reduced to the absolute minimum. Consider the sequence of events when there is an outage. It only takes a couple of minutes for the generator to come fully online when there is an outage. But is there any room for error? An industry standard for UPS run time is around 5 minutes. That is generally enough time to allow for the generator to start up and start producing clean power (by generator standards) or for the site personnel to recognize that the generator isn't going to start as expected and initiate Plan B. Speaking of, what is your Plan B? A gentle shut-down? Another power source?

> *UPS Battery Replacement is your first line of defense in a storm. With longer lead times it is wise to place orders for replacement batteries before you need them.*

Sometimes procrastinating on a UPS battery replacement seems like a good way to save some money. Keep in mind that run time is gradually reduced as your batteries age. If your batteries are more than 5 years old or installed in less than ideal environments, you probably don't have as much run time as you think.

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Data Center Cooling

Often overlooked in storm preparation for data centers and IT space is the data center cooling. If the power configuration includes keeping the UPS and data center equipment powered and online with emergency generator back-up power, then the data center cooling equipment needs the same power back-up to maintain the correct data center environment. Batteries

start to fail quickly as the temperature rises and runtime will be quickly reduced if the batteries are called on to support the IT load in a high-temperature environment.

Stand-by Generator Maintenance: Benefits of Schedule Maintenance

It's easy to forget about a stand-by generator, until you need it. But if a generator is left unattended for extended periods of time, it may become inefficient and lose overall energy capacity. Routine maintenance will ensure that a generator will remain functional and safely provide power during a power failure.

Importance of Stand-by Generator Maintenance

- Ensures power during utility power outages
- Allows vital systems to stay online
- Increases the lifespan of the generator
- Optimizes the efficiency of the generator
- Identifies potential issues early, before something goes wrong
- Manages costs by avoiding emergency service costs and the cost of losing power
- Lower the risks of unsafe conditions for employees

Stand-by Generator Maintenance: Avoid Dangerous Conditions

Without regular stand-by generator maintenance, the generator itself can pose potential safety risks, such as carbon monoxide leaks, electric shock risk, or fire.

- As generators run, they emit carbon monoxide, a colorless and odorless gas that poses serious safety risks. In addition to maintaining your generator, you should also check that your carbon monoxide detectors are working properly to ensure you are notified of any potential carbon monoxide emissions.

- A poorly maintained generator can increase the risk of shock or electrocution accidents, especially if the generator is wet or surrounded by excess moisture or water which can happen in stormy

conditions. When operating a generator in wet conditions check that the generator is protected from direct contact with moisture to minimize risks.

- Another potential hazard with generators fire due to improper storage of fuel or gasoline that has spilled onto engine parts.

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Storm Planning

For sites that already have their emergency back-up power configured and installed, there are several tips to make sure the performance of the UPS and generator are optimized and ready when needed. Below are a few examples of small steps data center managers can take.

Schneider Electric Symmetra PX offers a redundant architecture in an efficient and scalable system that can grow with your facility.

- Review your facility's back-up power and disaster recovery plan. People's lives may not depend on whether your business can sustain operations in a power outage but protecting your IT infrastructure and maintaining access to information is still critical during a disaster. Run the scenarios of the most likely natural disasters for your area to make sure every contingency has been addressed.

- Critical facilities that cannot have any downtime should include redundancy in their power system. N+1 can be achieved with modular UPS equipment, such as the [Schneider Electric Symmetra PX](#). More critical applications should be configured for 2N.

- Confirm that UPS and cooling equipment is covered under a service plan and that the service term is still current. If the service plan coverage has expired, renew as soon as possible to avoid being caught with costly unplanned maintenance and repairs.

- Generators should be on a maintenance plan with regular testing and fuel cycling. Like UPS batteries, generator batteries have a finite life and should be regularly tested and replaced as needed.

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- UPS batteries should be regularly tested and maintained with semi-annual battery preventive maintenance visits.

- Perform a visual inspection of your switchgear, ATS and electrical room equipment. If you see signs of wear such as excessive dust or any corrosion, schedule preventive switchgear maintenance. All critical equipment should be tested and replaced when it reaches end of life.

- Check the back-up power for switches modems and routers that are in IDFs outside the main data center or IT space. Each network closet or remote office should include UPS back-up to keep the network operational during an outage. Ideally, these IDF's are connected to the building generator.

A Storm is Heading Your Way

The forecast is in, and your site is in the crosshairs. Time is short and data center managers need to take some last-minute steps to maximize the effectiveness of the back-up power infrastructure. Here are some recommended steps to complete storm preparation for data center and IT space.

Are you and your staff ready for the storm? Create a hierarchy of responsibility to make sure there is a backup person available if the staff member primarily responsible for remote management loses access to the internet.

- Check that your building UPS is online and not in bypass mode or in alarm status. If it is, call Tech Support immediately.

- Make sure there is a reliable fuel supply for the building's back-up generator and that the generator intake is clear of plant growth or other debris.

- Check the status of the UPS equipment in remote closets or branch offices. Typically, these are supporting critical networking gear.

- Review the equipment shut down procedure to make sure the gentle shut-down process follows your organization's plan.

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- Shut down non-critical equipment to reduce the overall power draw on your back-up power infrastructure.

- Encourage users to completely power down their workstations including office equipment such as monitors, printers, scanners, and fax machines.

- Check in with staff to create a hierarchy of responsibility to make sure there is a backup person available if the staff member primarily responsible for remote management loses access to the internet.

Conclusion

Even when well forecasted, storms can be devastating to large geographical areas. The enormous scale of destruction by hurricanes and other natural disasters can cripple communication systems and infrastructure, interrupting the delivery of food, fuel, and other basic essentials. Major disasters in recent years serve as a reminder that reliable power is critical to our daily lives and the operation of our business. With annual preventive maintenance checks, factory service coverage, and a well-considered disaster recovery plan, you can minimize the impact of Mother Nature on your business. Regardless of what area of the country you live in, a proactive approach to natural disaster readiness will help you maintain business continuity during a weather emergency.

For an assessment of your storm readiness, or more details about storm preparation, call Power Solutions. 800-876-9373 or sales@power-solutions.com

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