

Solution Guide

Increased Reliability for Network Distribution Switches

Zonit® Structured Solutions is redefining how power is delivered to single power supply network distribution switches in data centers, network distribution closets and remote sites. The Zonit Micro Automatic Transfer Switch (μ ATST™) is the world's smallest and most efficient zero-U automatic transfer switch based on unique patent(s) pending technology. It enables more reliable and easier to maintain networks, based on its unique technologies, features and cost point.

Zonit μ ATST™ Usage with Network Switches

The μ ATST™ allows single power supply devices in the network, (for example Cisco 2xxx and 3xxx switches or routers as shown in Figure 1) to be cost effectively connected to redundant A-B power paths. This eliminates several of the primary causes of downtime for the network and makes it possible to testing of Uninterruptible Power Supply (UPS) units in network closets or remote sites without downtime during normal business hours.

Much downtime is caused by people plugging in one too many devices to a branch circuit, causing its circuit breaker to trip. This is a common scenario at remote sites or network closets



Figure 1 – Zonit μ ATST™

where the branch circuit may have other receptacles that are not in the closet and controlled by the network manager. The μ ATST™ provides current monitoring and warning indicators to help prevent branch circuit overloading. A yellow LED indicator will illuminate when the unit reaches a 12A load. This is the recommended maximum continuous load so that headroom is available for inrush currents that occur when IT equipment is powered up from cold and maximum current is draw as fans, disk drives, etc. all spin up when plugged into a 15A branch circuit.

Downtime can also happen in remote sites or network distribution closets due to UPS problems. The remote closet is a challenging environment for a UPS unit.

Often the space in the closet is small and the ventilation limited and often not controlled by a thermostat in the closet itself. This means that the closet may become very warm. UPS units use batteries that will lose most or all of their storage capacity if they are overheated. Batteries are chemically fairly delicate devices. UPS units come with fans to control their internal temperature, but if that UPS unit is in a hot network closet, there is no place for the heat to go and the battery can be “cooked”. Overheating a battery can reduce its service life by more than half in a very short time. A weak battery can cause some UPS units to go into a fault condition. This occurs when the utility line power fails, even if the outage is brief, and the UPS unit switches to battery. If the battery is very weak, the UPS unit may not return to utility line power when it comes back, but instead will have shutdown, which is typically caused by low voltage output from the weak battery. This causes the network distribution switch connected to the UPS unit to quit getting electricity and the network goes down. The reliability of the network at this point can be reduced to the probability of the utility power being lost and the actual condition of the UPS battery. This can be a short time duration, weeks or months, depending on if the UPS battery is ever overheated during that period.

The μ ATTM can be used to eliminate these causes of network downtime. It allows single-power supply network distribution switches to be fed by both filtered utility line power, and a UPS with either as the primary or backup power source. If possible, the UPS can be plugged into a different branch circuit than the second input to the μ ATTM. This allows the UPS to be taken out of service for maintenance or testing, 9-5, M-F without network downtime. With this configuration both the utility line power and the UPS must fail at the same time to result in network downtime. Figure 2 compares the traditional distribution method to those possible with the μ ATTM.

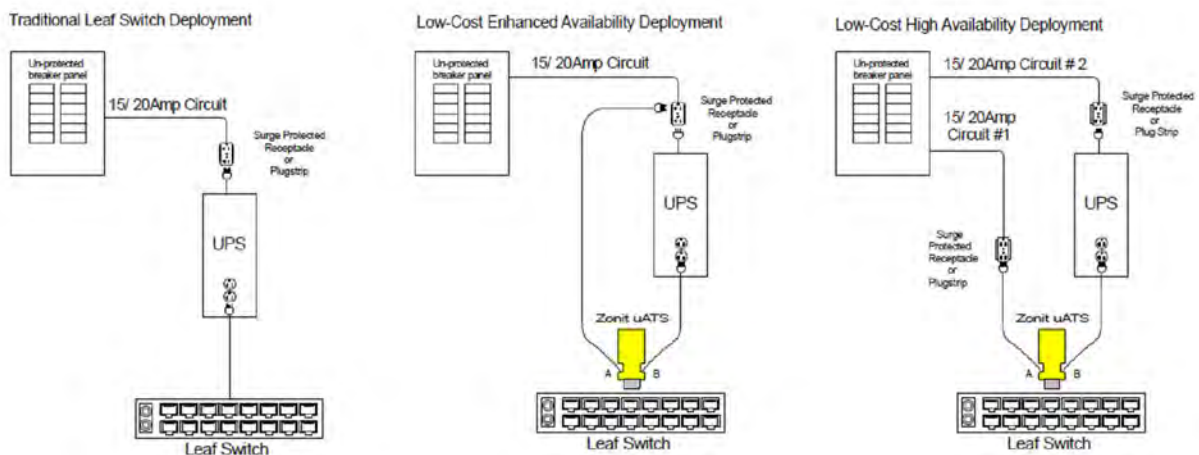


Figure 2 – Network Switch Deployment Options

The Zonit μ ATST[™] comes equipped with a Zonit patent-pending *Virtual Circuit Breaker*. The unit will sound an audible alarm if current levels are exceeding the rated current limit of the internal non-user serviceable fuses and if the over-current draw continues, the μ ATST[™] will disconnect from the power source and illuminate a red LED. It can then be reset via a reset button on the unit. The internal interrupter fuses are only blown in the event of a catastrophic failure, such as a direct short-circuit of the device(s) plugged into the output of the μ ATST[™]. Otherwise they are protected by the Virtual Circuit Breaker which increases service availability and almost completely eliminates the potential downtime and service requirements that blown fuses can cause.

The Zonit μ ATST[™] was designed to work properly with modern switched computer power supplies and it detects power loss and switches between the A-B power sources within the timing guidelines in the CBEMA Voltage vs. Time curve graph, shown in Figure 3. The μ ATST[™] was also designed to detect critical power quality problems, (over-voltage, under-voltage sag, and AC frequency shifts) that can affect computer power supplies and transfer to the B source before these problems can affect the operation of the power supply. This makes it practical to use filtered utility line + UPS power designs without risking downtime.

The Zonit μ ATST[™] is compatible with all standard network device power supplies and reduces the need to buy network switches with two power supplies when they are not required, providing significant cost savings. It can easily be retrofitted to already deployed network devices and increases the uptime and maintainability of the network. It can be reused with many generations of routers and switches, which makes it a very long-lived, cost-effective, and green solution.

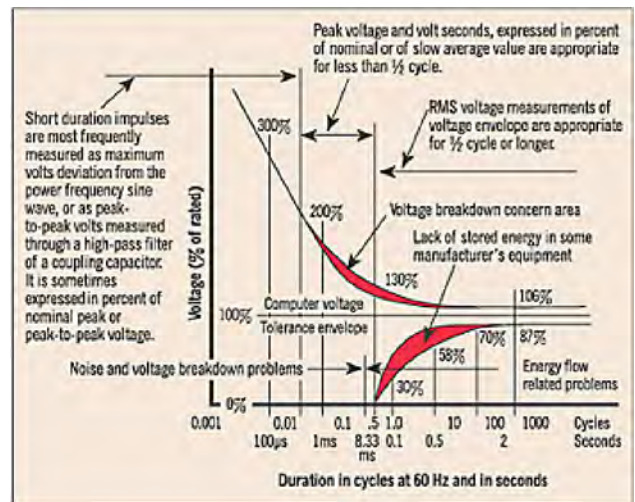


Figure 3 – CBEMA Curve

More Information

Please contact Zonit at info@zonit.com for more information on implementing these more reliable and maintainable power distribution methods in your network and realizing the economic and technical advantages they deliver.