



Working Group 10: CPE Powering

Use Case and Best Practice (WG10B)

Final Report

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WG10 Objectives

Working Group Charter :

With the rapid proliferation of VoIP technologies as substitutes for legacy telecommunications services, end-users are now utilizing a service that lacks the lifeline they were once accustomed to. Instead of being powered from the resilient backup power infrastructure in the serving central office, the user's home device is powered by a local battery when line power is lost, as often happens during emergencies. Different communications providers have different policies as it relates to powering these devices. This Working Group will recommend best practices for providing backup power to VoIP customer premises equipment, including best practices for consumer notification

Deliverables:

- Objective split into two Deliverables:
- Recommend consumer outreach and communications strategies for making users aware of back-up power features in their home adapter (Working Group 10A)
- Recommend best practices for powering consumer devices during commercial power failure (Working Group 10B)



WG10 Members

- Tim Walden, *Chair* – Century Link
- Brian Allen, *Co-Chair* – Time Warner Cable
- John Healy – FCC Liaison
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- Barry Umansky - Ball State University
- Steve Pociask – American Consumer Institute



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- Voice is migrating from a network to an application
- VoIP has introduced an interworking of various Technical Solutions, mixing Consumer Electronics, Network and Application Providers
- Evolution from Network Based Power to Localized Power
- Battery backup is increasingly being offered as an option to the consumer
- Lifecycle and Maintenance of the UPS and Batteries are complicated
- Battery Technology and UPS standardization lacking
- Desire/Need for solution for extended backup periods
- Working Group approached Use Cases from the perspective of what was needed to provide battery backup and addressed the challenges associated with each use case.



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Use Cases:

- **Use Case #1: ATA Function in Network Device Inside the Home**
- **Use Case #2 ATA in Network Device Inside the Home-RF-Over-Glass (RFoG)**
- **Use Case #3 ATA Function in Network Device Outside the Home**
- **Use Case #4 ATA Function in Residential Gateway**
- **Use Case #5 Standalone ATA Device**
- **Use Case #6 ATA in Telephone**
- **Use Case #7 ATA in DECT Handset**
- **Use Case #8 Cellular Handset via Femtocell Base Station**
- **Use Case #9 Wireless Home Phone Devices**

- **29 Recommendations and Best Practice Considerations**



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New Best Practice Number	Use Cases	Description
New 01	1,2,3,4,5,6,7,8,9	Service providers should provide consumers an affordable option for battery backup of the CPE device that contains the ATA function. Service providers need to inform consumers of the implications for their voice service during power interruptions, if they choose not to have battery backup.
New 02	1,2,3,4,5,6,7,8, 9	Service providers should educate consumers of the need to be informed about the specific impact on their chosen VoIP use case, if not backed up with batteries during a power outage.
New 03	1,3	Service providers should embed the ATA function in network devices that are easily backed up with batteries. Use cases that require multiple devices to be backed up with batteries should be discouraged by service providers as less reliable.
New 04	2,4,5,6,7,8,9	Service providers should work with their network device and CPE vendors to develop approaches for battery backup for use cases where little or no backup is offered today.
New 05	4,5,6,7,8,9	Service providers should work with their network device vendors to develop alternative powering technologies, such as Power-Over-Ethernet, so that network devices can act as sources to power cordless base stations and phones with embedded ATAs.
New 06	1,2,3,4,5,6,7,8,9	Service providers should work with their vendors to provide consumers a mechanism for extending the time period of available battery power by including an on/off switch on the battery unit for use by consumers. This allows battery power to be saved for when calls need to be made

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New Best Practice Number	Use Cases	Description
New 07	1,2,3,4,5,6,7, 8,9	Local public safety officials should create disaster response plans that include plans for backup battery supplies in the same way they have a plans for food, water, and fuel during power outages.
New 08	1,2,3,4,5,6,7,8,9	Service providers should work with their vendors to standardize on DC power supplies and connector interfaces for network devices and CPE so that a common battery backup unit can be used in the home, with multiple devices.
New 09	1,2,3,4	Battery backup power is a finite resource, CPE equipment should by default turnoff all communication services, except voice when on battery. Voice line will be in standby mode. The difference between talk time and standby time as it relates to the depletion of backup battery is significant. Talk time (using the phone) will deplete the battery faster than when the phone is in standby mode (not being used).
New 10	4,5,6,7,8	In those cases where VoIP service utilizes an Ethernet port on the network device, the Service Provider should ensure that the Ethernet port is powered during the commercial power outage.
New 11	1,2,3,4,5,6,7,8,9	Service providers should have mechanisms in place to ensure adequate network capacity for emergency calls during commercial power outages.
New 12	1,2,3,4,5,6,7,8,9	Service providers should offer consumers who choose battery backup spare batteries, at reasonable cost, for use during times of extended duration power outages or to replace batteries.

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New Best Practice Number	Use Cases	Description
New 13	1,2,3,4,5,6,7,8,9	To prolong battery and device reliability, the network or CPE device with the ATA function should be placed in a location that provides adequate ventilation (e.g. ensuring proper airflow exists around the device and vents are not blocked or restricted). Also ensure the ATA device is not placed in an unusually hot, cold or damp location.
New 14	1,2,3,4,5,6,7,8,9	Service providers should work with their vendors to provide a mechanism to monitor battery status and determine whether the battery is degraded. This can be through remote monitoring of batteries as part of the service offered to consumers or through LEDS visible to consumers.
New 15	1,2,3, 4,5, 6,7,8,9	The UPS or network device with ATA and embedded batteries can have LEDs for visual battery status monitoring. The LEDs for status of embedded batteries should include battery missing, battery charging, replace battery, and battery full.
New 16	1,2,3,4,5,6,7,8,9	Indoor network devices must be grounded in compliance with applicable National Electric code standards and other applicable state and local ordinances
New 17	3	Network devices with an embedded ATA function mounted outside must be properly grounded. A typical outdoor installation will include a ground plate on the enclosure that must be directly bonded to the building's AC utilities earth ground electrode using a #6 AWG copper conductor (stranded or solid).Service providers should follow Article 250 of the NEC for appropriate grounding procedures.
New 18	1,2,3,4,5,6,7,8,9	Service providers, as part of consumer education efforts, should provide a full explanation of emergency use capabilities, battery backup units and how to access detailed information about battery backup as part of the service providers' explanation of the service at the customer premise.

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New Best Practice Number	Use Cases	Description
New 19	1,2,3,5,6,7, 8,9	Service providers should proactively notify consumers prior to an anticipated extreme weather event. The service provider should include detailed information about emergency use capabilities, battery backup units, or how to access detailed information about battery backup units. This consumer outreach can be achieved through specifically designated storm preparation information, through routinely listed information on the provider's website, or other means to ensure reaching all consumers.
New 20	1,2,3,5,6,7,9	If service providers rely on any hardware to be placed at customer premise by the customer, they should provide a full explanation of operations during power outage, including detailed information about battery backup units, in their installation manual and on their website.
New 21	1,2,3	Service providers that offer remote battery monitoring through status reporting telemetry should offer a battery replacement service for an additional fee to the consumer.
New 22	2,4,5,6,7,8	Service providers should educate consumers that DC power supplies and batteries for network devices and other customer premises equipment are not interchangeable.
New 23	1,2,3,4,5,6,7,8,9	Service providers with no battery monitoring capability should offer a voluntary program to notify consumers, who choose to be reminded, to check battery status based on the installation date, or the battery's manufacturing date, and the theoretical average life expectancy of the battery.
New 24	1,2,3,4,5,6,7,8,9	Service providers should provide information about where consumers can purchase replacement batteries, model numbers, and price on their website.

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New Best Practice Number	Use Cases	Description
New 25	1,2,3,4,5,6,7,8,9	Service providers should provide clear instructions to consumers as to the proper disposal/recycling options for their used batteries. The battery purchase or replacement process in the service provider agreement must instruct the subscriber on proper battery recycling or disposal. Batteries for recycling are accepted at no charge at various locations identified at www.call2recycle.org or 800-8BATTERY. It should be noted that that many localities and states have regulations regarding battery recycling.
New 26	1,2,4,5,6,7,8	Service providers should offer consumers a battery recycling kit part of the battery backup service. The recycling kit is then sent to the customer along with the replacement battery. Upon receipt, the customer is to install the replacement battery, put the used battery in the recycling bag, affix the pre-paid shipping label to the bag, and ship the used battery to a pre-designated recycling center.
New 27	1,2,3,4,5,6,7,8,9	Service providers should offer, as an option to consumers, the additional purchase of whole home power protection device placed at the main electrical panel to prevent damage to CPE devices, including the device with the ATA function during extreme weather conditions
New 28	8	Service providers should ensure that users understand that both the network device and the Femtocell base station must work together to provide connectivity to the cellular phone. Assuming the in-home cellular coverage is poor, in order for a cellular phone to continue to work during a power outage through a Femtocell, both the network device and the Femtocell base station need to have battery backup.
New 29	1,2,3,4,5,6,7,8,9	Service providers should offer detailed instructions along with step by step photos or drawings of the battery replacement procedure.

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Conclusion and Further Consideration

- The Team identified incremental areas where we recommend consideration for future evaluation:
- Further evaluation of battery and alternative power technology to better address the challenges for reliable service across the various VoIP/CPE use cases
 - Use of community power source (i.e. D Cell, Dynamic Power Utilization, Solar etc)
 - Battery Technology and Economics
 - Dynamic Power Utilization
 - Power over Ethernet
- Further evaluation into standardization
 - UPS
 - CPE power consumption
 - DC Power supplies and interfaces
- Request Council Approval of WG 10B Report

