

Distributed Antenna Systems (DAS) Solutions

Infrastructure Solutions for Wireless Service and Neutral Host Providers

The Challenge *indoors and outdoors*

Wireless service and neutral host providers are faced with deploying and operating indoor and outdoor DAS networks to enhance their end-user's experience by providing better coverage and higher bandwidth – all while maintaining the reliability and up time expected from a conventional macro cell site.

The Path to a Reliable Network, Rapidly Deployed *with minimized implementation and maintenance expenditure*

By leveraging AC and DC power systems, enclosures and services currently utilized in networks throughout the world, DAS operators are able to deploy high quality networks that meet stringent telecommunications industry standards. From a service provider perspective, this means they are able to limit customer churn by providing a high-quality end-user experience. From a neutral host provider perspective, this means they are able to win and support clients by offering reliable infrastructures with superior performance.

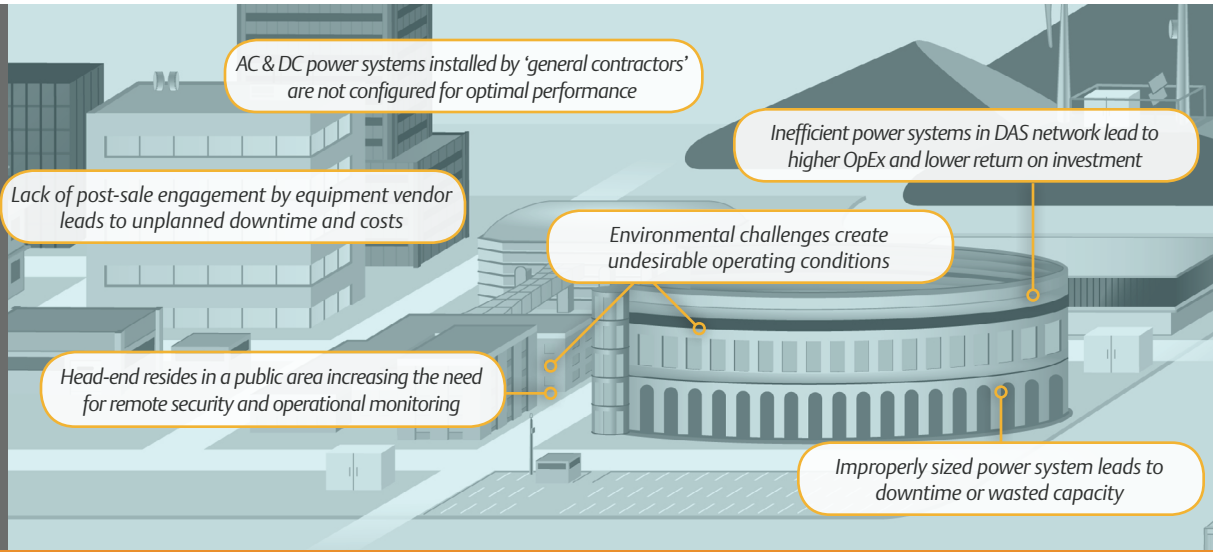
Challenges	Consequences	Opportunities
Deployment speed slowed by: <ul style="list-style-type: none"> ■ Critical infrastructure not in place ■ Availability of design and installation experts 	<ul style="list-style-type: none"> ■ Scheduling setbacks ■ Lost revenue 	Standardizing on a single-source provider capable of providing AC and DC power systems, rugged enclosures, as well as design and installation services will speed up deployment and provide an easy migration path for future sites
Operation and maintenance costs impacted by: <ul style="list-style-type: none"> ■ Improper solution dimensioning ■ Lack of site visibility post-installation ■ Calendar-based maintenance dispatch 	<ul style="list-style-type: none"> ■ Reduced profitability ■ Increased downtime 	Leverage cost-effective AC and DC power systems with growth capacity to achieve maximum ROI, even as operating conditions change Implement smart technology with remote monitoring capabilities Keep vendor engaged in site performance post-deployment through preventive maintenance and advanced optimization techniques
Equipment integrity impacted by: <ul style="list-style-type: none"> ■ Harsh environment ■ Vandalism 	<ul style="list-style-type: none"> ■ Environmental ingress ■ Loss of equipment ■ Refurbishment expenditure 	Ensure electronics are protected by selecting a quality line of enclosures with proven thermal systems that withstand the environment and keep out vandals

As society grows to expect smarter functions, more interactive features and ever-present coverage from their mobile devices, networks are becoming more complex.



We understand your operating challenges

Emerson Network Power has the technology and expertise to meet and overcome operating challenges like these.



Head-End Infrastructure Solutions

The head-end is the 'heart' of the Distributed Antenna System. At this point, the radio interfaces with the host unit and is distributed throughout the entire antenna system. In order to assure the entire network is functioning properly with zero down time, the head-end must operate with the highest integrity.

NetSure™ DC Power Systems

Increase Reliability, Minimize Operating Cost and Reduce Energy Consumption

NetSure™ DC power systems deliver the highest reliability and efficiencies on the market, reducing energy usage, carbon emissions and ultimately total cost of ownership.

NetSure™ 721 DC Power System



The modular NetSure™ 721 power system with 3500 watt rectifiers and 20 amp DC to DC converters provides up to 4000 amps of current for -48 volt systems with up to 480 amps at +24 volts. The basic components of the power system include ACU+ control unit, module mounting shelf assemblies which house rectifiers and converters, and a modular distribution cabinet.

NetSure™ 710 DC Power Systems



The NetSure™ 710 power system with 3000 watt rectifiers and 1500 watt DC to DC converters provides up to 2000 amps of current for +24 volt systems with up to 500 amps at -48 volts. The NetSure™ 710 power system can accommodate up to 32 rectifiers. 16 positions can accept either rectifiers or converters for configuration flexibility.

NetSure™ 502 DC Power Systems

NetSure™ 502 small DC power systems are designed for 40 to 600 amp loads and provide power through the use of 2000W eSure™ rectifiers. These high-efficiency rectifiers offer a variety of output distribution options and are monitored remotely with an advanced ACU+ controller. The modular design of these units facilitates power plant sizing to application needs. Rated for continuous operation from -40°C to +80°C, this system delivers the most reliability and highest efficiency in the industry, reducing power consumption and lowering operation cost.



High-efficiency eSure™ Rectifiers

Reduce OpEx and CO₂ Emissions

Designed to offer superior performance and uncompromised reliability. An industry-leading 97% efficiency with a wide temperature operating range ensures that your solution will offer the best energy efficiency available in diverse operating environments.



Enclosures & Shelters

Shelters

Rapid Deployment

Emerson shelter solutions provide an optimal environment for your head-end equipment that keeps you on schedule and on budget. Choose from a variety of sizes and finishes to meet any deployment scenario.



Indoor Racks and Enclosures

Enhance Security

Emerson Network Power makes world-class indoor racks/cabinets and accessories ideal for housing DAS infrastructure equipment securely in an un-secured environment. Optional thermal systems are also available for poorly ventilated locations.



NetXtend™ Flex Enclosures

Withstand Harsh Environments

The NetXtend™ Flex Series utilizes a proven structural system, integrated mechanical components, and a sealing system that withstands rain, dust, snow and hurricane winds. When combined with a NetSure™ power system, they are a perfect power hub solution for multiple remote DAS units.



NetXtend™ Compact Enclosures

Economical Solution

The NetXtend™ Compact Series economically houses a wide variety of access electronics. These enclosures offer numerous options and are ideal for inconspicuous deployment of DAS remote units and power solutions.



With Emerson, you can achieve greater operational efficiency and rapid deployment while increasing your network's reliability.

Remote Units

Remote units in the DAS network can be deployed in extremely different conditions, from an environmentally controlled office building with limited security concerns, to a light or telephone pole in a dense urban setting where environmental control and security are paramount. Regardless of the situation, reliable infrastructure solutions are required to assure worry-free operation.

Small Systems Designed to Power the Remote Units of Your Critical DAS Infrastructure

NetSure™ 211 DC Power Systems

Speed Deployment



The NetSure™ 211 offers an efficient solution for powering remote units. This compact -48V system combines reliable rectifiers with an advanced Ethernet-accessible controller. Centralized control, flexible distribution and high power density are all available in this small package.

Liebert® GXT-3 UPS

High Reliability



If your DAS remotes require uninterruptible AC power, the Liebert® GXT3 true on-line uninterruptible power system (UPS) is a reliable solution, combining low cost of ownership with rich functionality, small size and high capacity. The UPS offers internal batteries, optional external batteries, and internal bypass capability, resulting in continuous uptime for the connected equipment.

NetSure™ 502 DC Power Systems

Enable Centralized Control



If powering many remote units from a central location is desired, the NetSure™ 502 functions well as a power hub for multiple DAS remote units.

GMT Fuse Panels



3 amp fuses are ideal for line powering remote units and other low wattage devices. This fuse panel mounts in 19" or 23" racks and accepts GMT fuses from 1A to 15A.

Design, Deployment and Optimization Services

Emerson Network Power offers customers unmatched visibility and control of their infrastructure from afar and at the site – increasing reliability and decreasing operational costs.

Design and Deployment

Coordinated On-Time Delivery

Our extensive staff of design engineers work closely with you to provide detailed specifications and ensure that your project is completed according to best practices and stringent telecom standards. Backed by industry-leading experience and resources, we respond quickly to your project requirements to ensure successful installation of your DAS infrastructure equipment.

NetPerform™ Optimization Services

Maximum Operational Efficiency

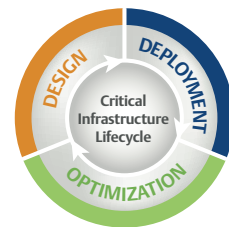
Emerson Network Power takes a holistic approach to the health of your network to ensure that every facet of your infrastructure is rapidly deployed and operating at maximum efficiency.

Monitoring

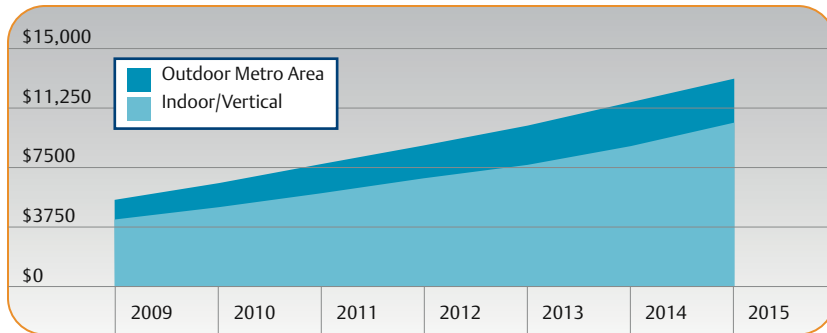
- Remote supervision with technician dispatch
- Remote monitoring (diagnostics & optimization)
- Power usage metering
- 24 hour alarm and power management

Maintenance

- Preventative maintenance
- Field repair
- Advance replacement and parts



Industry experts estimate that total global revenue from DAS was US\$ 6.55 billion in 2010. This is likely to more than double to US\$ 13.26 billion in 2015.¹



Source: "Distributed Antenna Systems Worldwide – DAS to Fill in the Gaps." In-Stat, part of the NPD Group, Inc. (May 2011).

References

- [1] "Distributed Antenna Systems Worldwide – DAS to Fill in the Gaps." In-Stat, part of the NPD Group, Inc. (May 2011).

Emerson Network Power DAS Capabilities

- High quality AC and DC power systems with proven low failure rates
- High-efficiency rectifiers to minimize operational costs
- Variety of power systems to support all head-end/host unit and remote unit
- Flexible, secure, environmentally controlled enclosures protect your investment
- Speeds network deployment through single point of contact coordination of head-end infrastructure engineering and installation
- Maintenance solutions to keep your infrastructure operating at peak efficiency
- Emerson is a proven infrastructure solutions provider with vast experience in a wide variety of telecommunications environments

As expectations for constant wireless network availability regardless of location continues to grow, the demand for DAS will follow accordingly. Both coverage and capacity requirements need to be addressed; both rely heavily on the dependability of their AC and DC power and enclosure infrastructure. Rest assured, Emerson Network Power has your needs covered. We deliver proven AC and DC power and enclosure expertise and a vast understanding of existing network infrastructure design.

Nationwide, Emerson Network Power has a team of network infrastructure experts standing by to help you rapidly deploy a flexible, yet affordable DAS solution. With Emerson, Consider it Solved.

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