

Technology Solutions

Infrastructure Optimization Solutions (iOS)

Green Practices

Measurable ROI

Point Solutions

NER's holistic end-to-end solutions incorporate a unique set of design, manufacturing, distribution, and implementation capabilities. We deliver substantial returns on investments and infrastructure improvements critical to today's data center.



Turnkey Infrastructure Optimization Solutions (iOS) from NER provide significant savings and efficiency gains for most data centers of varying size and density. Our proven process identifies and remediates constraints through a wide range of solutions designed to solve today's nagging infrastructure issues.

1

Consultative Site Assessments

2

Capacity Benchmarking

3

Identification of Constraints and Concerns

4

Recommendations for Energy Efficiency, Best Practices, Infrastructure Optimization

5

ROI and Metrics to Support Recommendations

6

Solution Creation Including Project Management, Deployment, Commissioning and Training

7

On-going Monitoring, Reporting, and Support



Green Computing is common to almost every IT, Facilities, and Data Center Manager. Even with simple best practices and server virtualization, IT energy consumption continues to grow at a staggering pace.

Energy forecasts based on studies released by the EPA, Uptime Institute, ASHRAE, and Afcom:

- Data center energy use doubled between 2000 and 2006; by 2012, energy use is expected to double again.
- For many industries, data centers are one of the largest sources of greenhouse gas emissions.
- Between now and 2010, U.S. demand for data center energy will require the equivalent of 10 new power plants.
- Government legislation could lead to companies being required to report energy usage and carbon emissions

We enable you to achieve greening goals through:

- Energy efficiency assessments
- Cooling system optimization
- Capacity planning and modeling for optimization
- Utility rebate coordination
- Monitoring and reporting of key metrics

ROI in as little as 12 months, and potential savings in the millions.



West Coast Healthcare Company

- 80,600 sq. ft.
- 2,655 kW IT Load requiring 421,000 cfm
- 74 CRAC units delivering 645,000 cfm
- Cost per kWh of \$0.07

\$261,500 per year in energy savings or 426kW additional IT load and 20 CRAC units placed in standby mode for redundancy

Key Areas Of Savings:

Energy Consumption

Build-Out / Construction Cost Avoidance

Capacity Reclamation

Capacity Redundancy and Efficiency





Take the guess-work out of efficiency and capacity challenges through advanced tools and processes that Measure, Model, Monitor, Plan, and Manage for optimization within any data center infrastructure.

Measure

Implementing best practices, energy efficient designs, and power saving technologies requires baseline information of your power and cooling usage. iOS Optimization Assessments captures the “data on your data center”.

Model

Modeling identifies root causes of major constraints, and enables us to offer the best solutions for remediation. Many data centers have constraints stemming from power, cooling, and overall density issues; CFD modeling visually and scientifically identifies and depicts constraints. iOS CFD Services are used for failure analysis, redundancy scenarios, and future layout and capacity planning.

Monitor

Decisions are easier to make if the right data is available when its required! Metrics allow you to effectively managing data center environments by taking the guess-work out of decision making and planning processes. iOS Monitoring Solutions act as your trusted advisor by providing visibility into a single data center site, multi-site environments across the globe, or any discrete element of your infrastructure.

Plan and Manage

iOS Planning Tools and Project Management services simplify management of an ever-changing data center. Detailed visual information allows day-to-day management of operations, while significantly reducing response time. We provide an affordable means of acquiring and configuring the critical data and asset information in your data center.

iOS Premier Partners



iOS Integration and Support Services

NER offers turnkey support for all iOS Solutions. Our field technicians and technical support staff are factory trained and certified by all iOS partners. Services span key elements, including initial concept design, proposal creation, specifications, detailed system designs, CAD drawings, logistics, installation, commissioning, and training. Our support continues after installation through affordable maintenance programs, extended warranty programs, and help-desk support.

iOS Assessment Services

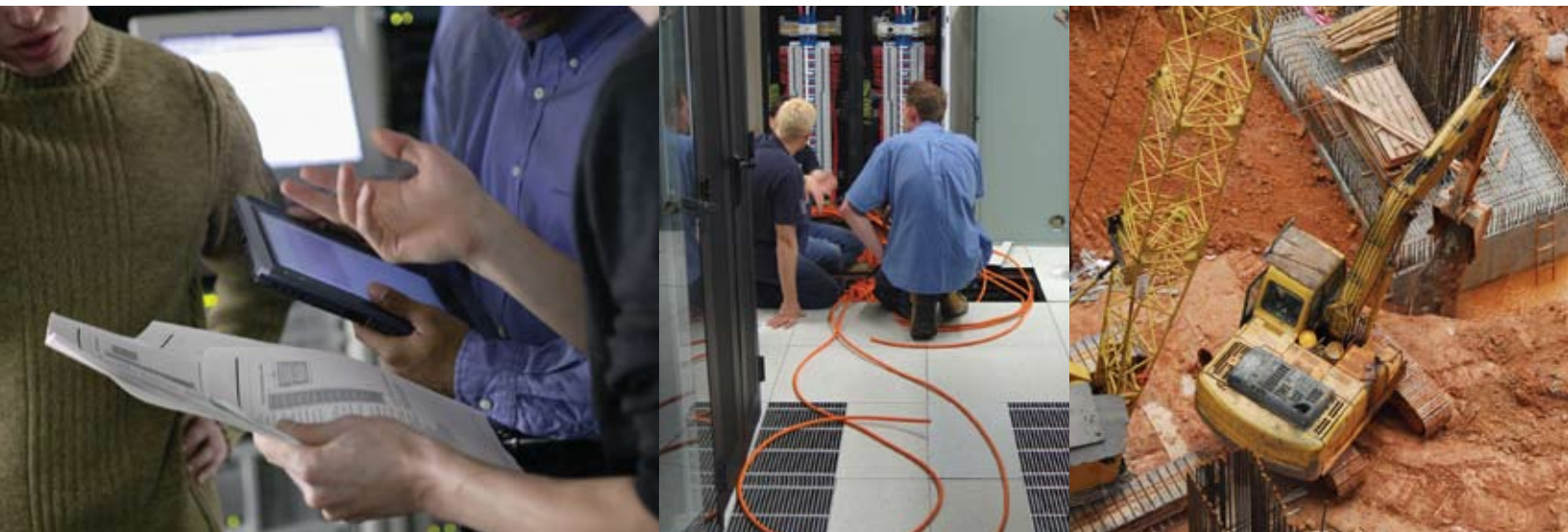
Our vendor neutral, holistic approach to infrastructure assessments enables us to identify and quantify issues affecting your data center. Recommendations are categorized for ease of implementation and ROI. iOS Assessments are used as a “road map for remediation” and are the building blocks for achieving sustainable improvements and efficiency gains.

- **Optimization Assessments**
 - Capacity benchmarking
 - Power and cooling efficiency analysis
 - Solution identification, implementation, and project management
 - CFD modeling
 - ROI calculations
 - Metrics analysis
- **Virtualization Readiness Assessments**

iOS Readiness Assessment is an inexpensive way to verify that your infrastructure can support the dynamic density aspects resulting from any virtualization project.
- **Design – Build Consulting**

Our expertly designed and constructed data centers suit your needs and keep you within budget. We detail the benefits of retrofitting, new build, or outsourcing based on your specific requirements.
- **Project Management Services**

We offer qualified Project Management Services for all iOS. These services compliment your current resources, or we can work on behalf of your organization to manage the entire process.



iOS Cooling Efficiency

Next to Virtualization, improving infrastructure cooling efficiency is the second greatest opportunity to reduce energy costs in the data center. Data centers can be over-cooled by as much as 2.5 times. Since no two data centers are alike, we offer multiple solutions to accommodate cooling efficiency. ROI on cooling solutions can be as little as 12 months.

- **Curtain Solutions**

- Available in above-rack, hardwall, and softwall designs
- Meet the most stringent fire safety codes
- Quickly minimizes mixing of hot and cold air
- ROI in 12-18 months and ZERO downtime to implement



- **Active Overhead High-Density Heat Containment**

- "Unity Cooling" design allows reclamation of wasted cooling capacity
- Highly scalable cabinet-based solution; 10kW, 20kW, and 30kW options
- Works with wide range of equipment cabinets
- Real-time alerting and monitoring of current and historical data



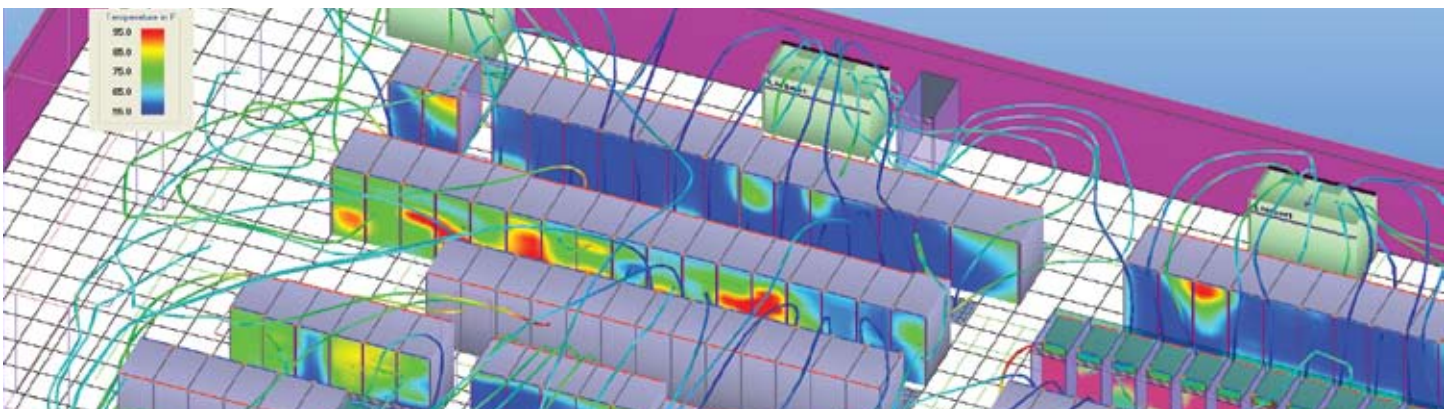
- **Cabinet-Based Rear-Door Heat Exchanger**

- Removes heat from cabinet densities in excess of 30kW
- Chilled water is used in heat exchanger
- Compatible with multiple vendors' cabinet designs
- ROI in as little as 12 months



- **Room Scale Intelligent Cooling and Airflow Management**

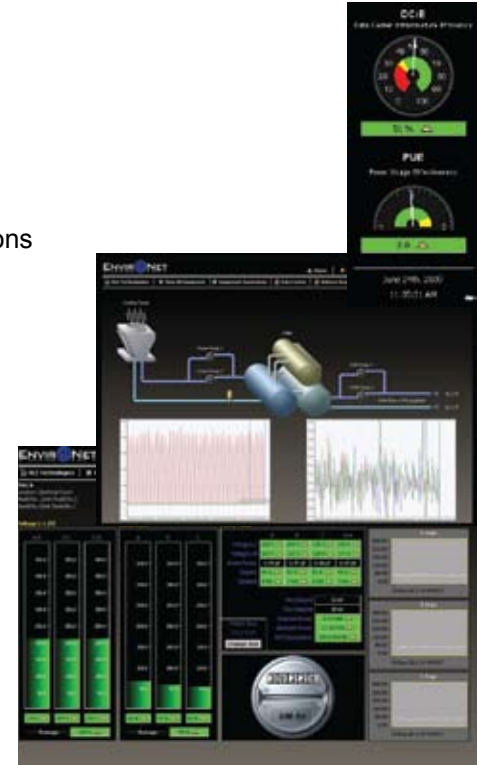
- Dynamic and highly scalable managed airflow distribution
- Optimizes existing infrastructure through synchronized cooling delivery and heat evacuation
- Saves energy while reclaiming capacity and eliminating hotspots
- ROI in as little as 12 months and ZERO downtime to implement



iOS Monitoring Systems

Decisions are easier to make with the proper data. iOS Monitoring Solutions act as your trusted advisor for your critical environments and take the guess-work out of decision making and planning processes. Our highly scalable, flexible solutions can act as stand-alone systems or integrated into existing monitoring systems. Detailed alarming and alerting features enable visibility by key personnel and support staff, while trending reports and other useful data can be printed for management use. Most Monitoring Solutions are in real-time and provide up-to-the-minute data.

- **Alarm Capabilities**
 - Alarm console views
 - Notes and instructions
 - E-mail, SNMP, SMS notifications
 - User-defined thresholds
- **Customized Reports and Graphs**
 - Individual device reports
 - Data trending graphs
 - User-defined sample rates
 - Historical records
 - Side-by-side equipment comparisons
- **Key Metrics Visibility**
 - PUE
 - DCiE
 - Energy consumption modeling
 - Capacity planning modeling
 - Cooling effectiveness monitoring
- **Equipment Monitoring**
 - Chilled water systems
 - CRAC units
 - Utility power meters
 - Switchgear
 - Generators
 - ATS, STS
 - UPSs
 - PDUs
 - RPPs
 - Battery strings
 - Rack-based power strips
 - Fire suppression panels
 - Leak detection



iOS IT Asset Management

- **Data Center Asset Access and Control Systems**
Powerful KVM-Over-IP and Serial Console Management Solutions enable management through a single, powerful user interface. Provides remote out-of-band connections directly to physical KVM, USB, and Serial ports of servers and other networking equipment. Compliment your in-band tools and gain a more complete remote management solution.
- **IT Asset Management Systems**
Innovative data center solution lowers costs, manages change, and leverages existing investments. Use accurate and current data to identify, plan, and manage your assets. Powerful visualization tools enable accurate representations of your IT assets and supporting infrastructure.

Key benefits include:

- Visual modeling
- Impact assessment and analysis
- Forecast planning and design
- Reporting
- Capacity visualization
- Asset identification and location
- Data import capabilities
- Comprehensive HD equipment libraries to build detailed rack views





Our comprehensive line of data center-focused products enable management efficiency and ease of use from an IT and Facilities perspective.

Rack-Based Power Distribution

Form Factors:

- Rack-mount
- Vertical (Zero U)
- High density “front-end” units with flexible outlet modules
- Flexible mounting and attachment methods



Power Density:

- Low voltage economy outlet strips up to 30A / 3600VA
- High voltage, higher density PDUs up to 60A / 12.4kVA
- Single-phase and 3-phase AC units
- Redundant blade server PDUs
- -48V DC units



Outlet and Plug Configurations

- NEMA and IEC outlet configurations up to 84 outlets per unit
- Single and dual input
- NEMA straight-blade and twist lock inputs, IEC C20 inlets, hardwire, and pin-and-sleeve input options
- 3-Phase units with combo low-voltage NEMA and high-voltage IEC outlets
- -48V DC connections

Redundancy Support

- Rack-mount ATS to enable dual input power for single-corded equipment
- Dual-input rack-mount and vertical PDUs

Management Features

- Basic PDUs
- Metered PDUs
- Serial monitored PDUs
- Power management software
- IP monitored PDUs
- Switched PDUs
- Managed PDUs



Power Accessory Items

- Custom-length, “right-size” power cords with NEMA and IEC outlets and plugs
- PDU mounting brackets
- Button-mount brackets
- Temperature and humidity probes

Power Services

- Factory and on-site installation, integration, commissioning, and training
- Specifications consulting
- Proposals and technical support

Power Protection

- Scalable UPS solutions
- Battery support
- Generators
- PDUs and transformers
- Commissioning services



Point Solutions provide standardization and automation necessary for Energy Savings, Higher Densities, and Simplified IT and Facilities management.

Efficient Cooling Solutions

HotSpotr™

- The fastest way to remove isolated heat problems. A family of powered airflow improvement products that move chilled air where and when it is precisely needed. HotSpotr can also direct hot air back to the CRAC/CRAH returns to improve efficiency.



Blanking Panels

- Plastic snap-in panels in 1U and 2U sizes
- Metal panels in many different sizes with quick-release hardware
- Accommodates different rail thicknesses
- Styles for both square hole and round hole equipment racks



Brushed Grommets

- Wide variety of sizes and styles that properly seal floor cut-outs while still enabling cable pass-through where needed.



Rack Dividers and Inserts

- Contain airflow and mixing within the cabinet by preventing airflow from moving between adjacent racks. Inserts are easy-to-install and do not add additional width to the cabinet profile.

Cable Management

- Proper use of cable management allows hot air to properly exhaust from the rack, keeping your gear cooler and improving the overall equipment reliability. Styles available for almost any equipment rack and requirement including fiber or copper, rack-mount or vertical, overhead or within the rack.

Door Inserts and Upgrades

- Custom mesh inserts and door upgrades available to help older cabinet styles transition into managing higher densities.

Custom Design Capabilities

- We can assist with unique, special designs for both cabinet and cable management enhancements, to enable better airflow and overall management of densities within the cabinet structure.



Monitoring Products

Power and Environmental Monitoring products help to proactively alert before there is a critical issue and enable remediation without costly down time. Our monitoring products are flexible enough to act as intelligent stand-alone products or can be integrated into more robust management systems.

- Leak detection for spots, zones, or exact locations
- Rack-based environmental monitoring and alerting
- Room-based environmental monitoring and alerting
- Power monitoring at the rack, circuit level, and outlet level
- Branch circuit monitoring at the PDU or RPP
- Wide variety of discrete sensors (temp, humidity, contact closure, airflow, CTs, etc.)



Device Connectivity, Access, and Control

Human error is one of the leading causes of downtime in the data center. Minimizing physical access to servers and other equipment while still enabling admin and user access and control is a Best Practice that is easy to achieve in almost any data center. Improve security, rack integrity, accountability, and multi-site management.

- KVM-over-IP access and control
- Remote site KVM systems
- Serial and console port management
- Local access – KVM drawers with a variety of keyboard, monitor, and mouse configurations
- Service processor management
- Broadcast industry and machine room device management
- Video extension products
- Extended warranties



Server Racks, Equipment Racks, and Enclosure Systems

We enable best practices for standardization through a wide variety of scalable designs for any data center or remote site application. Customized capabilities satisfy unique requirements without compromising quality or cost.

- Low-boy and wall-mount enclosures
- High density server cabinets in varying heights, widths, and depths
- Cable management side cars
- Network switch cabinets
- Zone 4 certified and seismic enclosures
- Custom designs



Media Storage

NER is one of the few North American manufacturers of media storage products. Our comprehensive line includes storage and transportation products for both mainframe tapes and distributed media types. Our products ship fully assembled and ready for use.

- High density mainframe and DLT tape racks and sliders
- Mobile aisle solutions to maximize storage space
- Flex-Pack™ media storage for 4mm, 8mm, DLT, LTO, CDR, and other media types
- Data center production carts
- Rugged off-site transportation carts
- Media cases
- Software for media management and activity



Installation and Integration Services

NER technicians are fully trained and certified to install, integrate, commission, and provide user training for all of our products. We offer unique turnkey services that include all elements of logistical planning and project management that save you valuable time and resources.

Factory Services

- Installation and configuration done at NER's facilities prior to shipping.

On-Site Services

- Part-day and full-day installer rates as well as project-specific client services for functional integration, commissioning, and training.

NER is a unique hybrid of manufacturer, value-added distributor (VAD), and service provider. We offer industry leading, end-to-end solutions that help cure complexity and overcome constraints within data center environments. Our consultative approach effectively bridges the gap between Facilities and IT departments within almost any enterprise. Our holistic strategy focuses on the key drivers that causes complexity and identifies solutions consistent with industry-recognized best practices, resulting in improved levels of standardization and automation for our clients.

Measure

Model

Monitor

Plan

Manage