



# Worldwide Environmental Services

## Services Summary: Assessment & Inspection

**Comprehensive site evaluations of environmental conditions determine their potential impact on hardware uptime.**

### Energy & Cooling Overview - ECO

The Energy & Cooling Overview (ECO) is designed to evaluate existing data center conditions, identify design or implementation areas in need of improvement and provide a plan for optimizing energy usage, cooling and general environmental conditions at the facility.

This service examines: General Site Data & Future Planning, Cooling & Air Distribution, Energy Distribution, Usage & Quality, Space & Rack Utilization and other factors that can affect energy usage and hardware availability.

### Environmental Site Assessment – ESA

The ESA is a comprehensive environmental evaluation designed specifically for computer facilities, concentrating on factors that affect infrastructure efficiency and system availability. This service focuses both on actual room conditions at the time of the assessment as well as the ability of the facility to provide stable and appropriate conditions that consistently meet the specific requirements of the hardware. It provides both a useful baseline of conditions, as well as identification of actual problems and potential susceptibilities that could impact hardware.

This service examines: temperature & relative humidity, conditioned air distribution, infrastructure design, hardware requirements and contaminant concerns. It includes a detailed site inspection, comprehensive report and presentation of findings.

### Environmental & Power Site Assessment – EPSA

The EPSA is based on the *Environmental Site Assessment (ESA)* with the addition of a Power Quality Assessment (PQA) service enhancement that provides a more in-depth investigation of the electrical infrastructure and historic conditions as well as power quality measurements. Additional specialized resources are applied to accomplish this.

### Hardware Contaminant Identification – HCI

The HCI is designed as a baseline inspection of conditions at a site where there is knowledge or suspicion of contaminant deposits within hardware cabinets. This inspection will provide useful information regarding the nature and degree of the contamination, as well as its migration to critical points where it can affect availability. It will help highlight areas in need of further investigation or remediation and will identify specific actions that may be necessary.

In cases of positive identification, remediation can be provided through a **Room Decontamination (DCON)** or **Hardware Decontamination (HDCON)** project, as appropriate.

### Zinc Whisker identification – ZWI

Metallic contaminants pose a serious and direct threat to hardware operations. This service examines strategically chosen points within the subject environment to determine the presence of metallic whisker contamination. It focuses on both the identification of the source (such as access floor tile surfaces), as well as its migration to critical points. The contaminant identification focuses not only on elemental composition, but also on characteristic morphology. This service will also help determine what remediation activities may be necessary.

In cases of positive identification, remediation can be provided through a **Zinc Whisker Abatement (ZWA)** project.

**Other Assessment Services:** WES offers other standard and customized services including; Laboratory Analysis, Long-term Temperature & Relative Humidity or Power Quality Monitoring, Power Quality Assessments and other electrical infrastructure and power-related analysis and evaluation services.

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# Worldwide Environmental Services

## Services Summary: Monitoring & Support

*Programs of periodic site inspections and remote consultation provide critical ongoing support and updated information while site certification provides benchmarks by which to judge facilities.*

### **ECO Monitoring & Support Program – EMP**

Keeping up with the changes in technology and industry standards is a challenge. The EMP is a program of periodic site assessments and remote technical support designed to provide practical assistance with issues that arise in a complex and dynamic facility. It provides direct assistance for implementation of corrective actions and an ongoing resource to address both existing issues and future planning needs to optimize energy usage in the data center while maintaining needed availability.

Site visits include documented measurement and trending of environmental conditions, evaluation of support infrastructure, sensor calibration checks, air distribution optimization and training of site or contractor personnel. Remote technical support is provided for the duration of the project, and may include assistance with issues such as cabinet selection, future planning and layout, hardware requirements or installation guidelines, contaminant concerns, coordination with vendors, or other factors related to facility improvement or maintenance. Program options varying in contract duration or number of visits per year are available.

### **Computer Facility Certification Program – CERT**

Proper evaluation and certification are important components in the maintenance of mission-critical facilities. By leveraging appropriate industry best practices and standards, and implementing them in an intelligent and practical manner, it can reduce downtime and help a company achieve its goals.

Several factors are necessary for a successful certification program. These include the use of both internal and independent resources to carry the program from concept to implementation, and a structured approach for ongoing monitoring and periodic re-certification. The program is customized to the specific facility or organization, and bases evaluation criteria on both the ability of the facility to meet defined goals as well as actual achievement and ongoing compliance. It relies on cooperation between all parties responsible for the operation and support of the facility. Most of these factors are common to any quality control program, but practical application of this very specialized and dynamic industry is critical to success.

### **Construction Project Monitoring – CPM**

Computer operations must be adequately protected from the inappropriate influences inherent in construction or renovation projects. Contaminant generation, perimeter breaches and increased activity can all affect hardware reliability. WES offers a wide range of programs to monitor, support and protect the computer facility during the construction activities that are inevitable in a dynamic and evolving facility.

These range from remote monitoring of environmental conditions to periodic inspection, on-site project management, training and procedural development.

### **Cooling Efficiency Program**

Whether the goal is addressing new high-density heat loads, evaluating current air conditioning needs or achieving energy savings, optimization of existing air conditioning infrastructure and air distribution is a critical, and often overlooked, first step. A properly implemented Cooling Efficiency Program will recover misused capacity and direct it to the areas where it is needed to improve hardware cooling and increase redundancy. This is achieved through a program of intelligent monitoring, measuring, calibration of sensors, adjustment to the infrastructure and re-evaluation. The result is often capital savings and decreased operating costs.

This program can be implemented in conjunction with the installation of floor grommets, brushes or other products designed to limit undesigned airflow.

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# Worldwide Environmental Services

## Services Summary: Mission Critical Design

*Mission Critical Design services ranging from review of existing designs to complete turn-key solutions focus on high availability solutions.*

### **Design Advocacy - DA**

The WES Design Advocacy Program fills a critical gap in the traditional design / build process. Computer facilities have unique and complex requirements that span a wide range of disciplines and specialties. With a Design Advocacy Program, WES serves as a liaison with knowledge and understanding of all aspects of the design / build process, the computer facility operations and hardware requirements. This program eliminates delays in the process, saving time, money and resource, and helps avoid problems that are often extremely difficult or expensive to correct after the fact.

### **Concept Design Services**

This service establishes all major design parameters affecting the overall construction project. Major system topologies are developed along with system components. A conceptual physical room layout and infrastructure plan is developed. It summarizes the goals and criteria agreed to by the relevant business groups involved in the project and establishes design criteria that will be applied to the specific site to develop the common point of origin for the team's engineering and architectural teams.

### **Design / Build Services**

WES provides turn-key solutions for Design / Build projects. This includes traditional design activities starting with Concept Design workshops, and extending through approved Construction Documents. WES manages all activities through the construction process to ensure that the design is accurately conveyed to all contractors and that it is implemented properly. WES ensures through commissioning and verification services that all aspects of the facility function as intended.

### **Commissioning & Certification Services**

WES offers a full complement of commissioning and certification services ranging from traditional equipment commissioning to commissioning management and room certification. The commissioning services encompass start-up and testing of the appropriate infrastructure, as well as initial systems' settings and operational goals, and can include a complete scripted failure-mode test of the system. WES Certification Services are designed to complement the Commissioning Services and ensure that the computer room provides appropriate environmental conditions to maximize the computer hardware's availability.

**Other WES Design Services:** WES offers other standard and custom services including; Site Selection Services, Construction Document Review, Construction management Services and Infrastructure Due Diligence Building Surveys.

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# Worldwide Environmental Services

## Services Summary: Decontamination & Remediation

*Room decontamination, subfloor encapsulation and customized services help site personnel maintain controlled environments.*

### Room Decontamination - DCON

Whether long-term accumulation or the result of a specific event, contaminant deposits can cause failures or degrade hardware performance. The WES Room Decontamination addresses all surfaces above and below the raised access floor, and is designed to safely and effectively remove this threat to operations. Through the intelligent application of appropriate products, equipment and procedures this can be achieved without negative impact on the environment being served. The WES approach to this service has been developed and tested in thousands of computer facilities worldwide over the last 25 years. All actions are implemented with appropriate consideration to the hardware environment, and critical environmental factors are monitored throughout all activity.

### Decontamination & Encapsulation – DE

This service is based on the **Room Decontamination – DCON** project, but includes treatment of the subfloor deck surface in the supply air plenum. This is achieved through careful, manual application of a specialized encapsulation product that seals the deck surfaces, helps trap any residual contamination, protects the surfaces against deterioration and prepares them for more effective future maintenance decontamination.

### Hardware Decontamination –HCDON

While computer hardware is designed to be robust, the migration of contaminants to sensitive areas within the equipment can lead to degraded performance or catastrophic failures. Where contaminant levels are extreme and migration is verified, remediation often includes the decontamination of hardware components at a Field Replaceable Unit (FRU) level. In order to protect the subject hardware from electrostatic discharge (ESD) as it is dismantled, and to protect the other hardware in the room from cross contamination or other inappropriate environmental influences, remediation must take place in a very controlled fashion. Typically a temporary clean-room or air hood is constructed, and the techniques employed are similar to those used in clean-rooms or manufacturing facilities.

It is often necessary to first decontaminate the subject room through a **Room Decontamination – DCON** project.

### Zinc Whisker Abatement – ZWA

Where metallic whisker contamination is present on floor tiles in a computer facility, the result is typically catastrophic failures. Once identified, remediation of this problem must be handled with the utmost care so as to minimize further impact on operations and to limit any additional migration. A WES abatement project addresses this type of contamination by removing the source. No other effective treatment options exist. The project must also include a thorough decontamination of all room surfaces and an appropriate encapsulation of the supply air plenum, with monitoring of environmental conditions throughout all activity. Inadequate precautions or inappropriate methodology will dramatically increase the risk of additional failures and further migration.

A **Zinc Whisker Identification (ZWI)** project can aid in the evaluation and planning of the remediation. A **Decontamination & Encapsulation – DE** project is an integral part of this service.

**Other WES Decontamination and Remediation Services:** WES offers other standard and customized products and services including; Facility Decontamination Maintenance Agreements, Construction Project Protection, Access Floor Replacement, Ceiling Tile Replacement and High Efficiency Vacuum Cleaners.

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# Worldwide Environmental Services

## Services Summary: Training Seminars

*Environmental awareness training seminars provide a valuable knowledge-base of current information for IT and facilities personnel.*

### **Data Center Environmental Awareness Training – DCAT**

WES provides training designed to convey a basic understanding of the ways in which data processing, storage and telecommunications equipment availability is affected by environmental influences. The seminar's focus on connecting the environment to reliability makes it a useful tool in helping the various elements of a facility's support team develop a comprehensive approach to maintaining high reliability.

The information is presented in a manner designed to be accessible to non-technical personnel, while still providing value and detail for more technical personnel. It includes real-world examples and solutions that will be useful to Site Engineers, Account Managers, Data Center Managers, Operations Personnel, Facilities Personnel and all manner of personnel responsible for maintaining high-availability computer facilities.

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