AEGIS DATA CENTER SERVICES POWER AND COOLING ANALYSIS SERVICE SUMMARY

The Aegis Data Center Services Power and Cooling Assessment Service provides an assessment and analysis of your data center facility and critical physical infrastructure components – including the power systems, cooling systems and rack configurations. AEGIS will supply you with the information necessary to manage your facilities for optimum performance, extend the life of your hardware and strive for the highest level of network availability.

The Aegis Data Center Power and Cooling Assessment Service offer a detailed review of your data center. AEGIS professional services consultants will visit the site and collect data pertaining to:

- Environmental conditions
- Critical infrastructure capacity and utilization
- Cooling distribution and effectiveness
- Condition of power and cooling equipment

With this data, AEGIS will develop a comprehensive report that will include recommendations to:

- Address your specific concerns
- Correct deficiencies
- Optimize existing conditions
- Increase infrastructure capabilities
- Extend data center service life

Features	Benefits
Comprehensive Data Center Power and Cooling Assessment Report	Data center power and cooling utilization analysis identifies key infrastructure constraints that inhibit full space utilization.
Measurement of existing environmental conditions	Indicates areas where temperature and humidity levels are not within tolerances established by industry standards and equipment manufacturers.
Measurement of the data center electrical infrastructure loads	Provides an accurate assessment of the actual data center power and heat loads; identifies excessive load conditions that can compromise existing reliability.
Measurement of present temperature conditions using thermal imaging	Provides visual representation of excessive rack inlet temperatures and other potential hot spots within the data center.
Recommendations to optimize infrastructure utilization	Identifies methods to maximize availability and the efficient use of power, cooling and space.

Power	
Activities	**Description**
Data Center Electrical Infrastructure Review	Document nameplate data, manufacturer and configuration of the data center bulk power distribution equipment to include: main switchgear, switchboards, generator(s), automatic transfer switch (ATS) and other equipment as applicable. Identify redundancy of power distribution system.
	Perform a visual inspection of data center electrical equipment including: switchboard, generator(s), ATS, uninterruptible power supply (UPS) and UPS power distribution infrastructure, checking for improper installation practices, damaged equipment, and labeling of circuits.
	Review available maintenance records for the data center electrical equipment including: switchboard, generator(s) and ATS, and provide recommendations, where applicable, to improve practices.
	Document the generator fuel supply system and storage capacity.
Document Existing UPS and Configuration	Document configuration, existing condition and nameplate data of the UPS and UPS power distribution infrastructure.
	Document configuration, existing condition and nameplate data of the battery system.
Document UPS Capacity and Utilization	Record input and output load measurements taken at the UPS.
Document Static Transfer Switch Configuration	Identify and record preferred and alternate sources, document load readings, identify load balance and load transfer capabilities.
Data Center Load Analysis	Record, interpret and analyze displayed load values from metered power distribution units (PDU).
	Interpret and analyze measured load data collected from the data center, load panel boards taken during the assessment.

Cooling

Activities	Description
Data Center Cooling Distribution Review	Visually assess the Computer Room Air Conditioning (CRAC) units. Check for general conditions, improper installation practices, damaged equipment and improper use.
	Identify the system type (i.e. direct expansion, water based or dry cooler, up flow or down flow) and document equipment manufacturer and model number.
	Document the rated capacity (based upon nameplate data and manufacturer nominal ratings) of the CRAC unit(s).
	Record and analyze supply and return temperatures, humidity, set points and operational modes to determine environmental conditions and where demand fighting may occur.
Record Data Center Temperature and Humidity Levels	Record and document room temperature levels to ensure that they are within ranges established by equipment manufacturers and recognized industry standards.
	Record average hot aisle and cold aisle temperatures. Identify conditions outside of recognized industry standards.
Rack Analysis	Identify where air mixing is likely to occur and where blanking panels should be installed.
	Examine rack enclosures for airflow suitability.
	Identify airflow obstructions within, above, and below the rack environment.
Infrared Thermography	Detect and document areas where rack inlet temperatures exceed industry standards and guidelines using infrared thermography.
Air Distribution Effectiveness	Analyze rack arrangements for air distribution effectiveness.
	Identify the air distribution topology within the computer room.
	Evaluate the air distribution topology effectiveness relative to the computer room heat load.
	Measure airflow and temperature of the raised-floor air distribution system and overhead supply grills (if accessible). Identify possible obstructions and restrictions. Compare to nominal equipment nameplate data.

Data Center Analysis and Report

Activities	Description
Customer	Provide analysis and recommendations to address and correct customer specific issues

Identified Site Specific Issues	within the data center using industry best practices.
Infrastructure Summary and Recommendations	Provide a data center summary and recommendations to optimize the existing data center according to industry best practices.
Data Center Electrical Infrastructure Analysis	Provide a simplified one-line diagram from the main data center switchboard or separately derived source to critical load distribution panels, including transfer switches, UPSs, and generators.
	Tabulate and analyze the bulk power system within the data center. Provide recommendations where applicable.
	Determine bulk power utilization and identify limiting factors for increased power density within the data center.
	Project future growth load potential and analysis based on actual load measurements.
	Provide recommendations, where applicable, to optimize the operation and utilization of the generator infrastructure.
Data Center Electrical Distribution Analysis	Tabulate and analyze power distribution within the data center. Provide recommendations where applicable.
	Determine power distribution utilization and identify limiting factors for increased power density within the data center.
Data Center Cooling Infrastructure Analysis	Tabulate and analyze the bulk cooling distribution within the data center.
	Determine the bulk cooling utilization and identify limiting factors for increased power density within the data center.
	Report conditions that compromise bulk cooling effectiveness, where applicable, and provide recommendations to correct problems.
Data Center Cooling Distribution Analysis	Document and analyze the cooling distribution within the data center.
	Provide a cooling distribution floor plan of the data center identifying rack inlet air temperatures and tile airflow and temperature data, if applicable.
	Report conditions that compromise cooling distribution effectiveness, where applicable and provide recommendations to correct problems.
	Provide a floor plan of the existing data center depicting average hot and cold aisle temperatures, and raised floor supply tile airflow rates and temperature readings.
Data Center Load Constraint Analysis	Provide analysis of the infrastructure constraints and how the constraints limit increased data center loads.
Facilities Analysis	Document general facilities information.
	Provide a floor plan of the existing data center. If a floor plan is provided by the customer, it will be validated and updated as necessary to reflect the current operations.
Recommendations For Data Center	Provide analysis, scenarios and recommendations to optimize infrastructure utilization and availability.
	Provide power, cooling and infrastructure recommendations for each scenario.
	Provide conceptual floor plan depicting equipment layout for each recommended scenario.
General Recommendations	Provide general observations and recommendations for the data center infrastructure not covered in other sections of the report.

For more information on this service and other services Aegis Data Center Services offer, contact us at 706-636-2721 or www.aegisdatacenterservices.com