2008 Seminar Series

How to Apply Tier Performance Standards to Improve Data Center Availability

Uptime Institute

HOW TO APPLY TIER PERFORMANCE STANDARDS TO IMPROVE DATA CENTER AVAILABILITY

Presented by ComputerSite Engineering, Inc.

The Tier Performance Standards model, the defacto industry standard for defining uptime performance, has been loosely interpreted or misapplied since its introduction nearly a decade ago. The "How to Apply Tier Performance Standards to Improve Data Center Availability" Seminar is the first opportunity for all members of the data center design, construction, and operations teams to learn the principles and proper applications of the internationally recognized benchmarking system.

Led by the creators of the Tier Performance Standards model and the authors of the *Tier Classifications Define Site Infrastructure Performance* white paper, this Seminar will provide attendees with firsthand knowledge on the relationship of Tiers to reasonable expectation of site availability or uptime.

As data center availability grows more critical to business success , it is essential that the data center industry understand the official Tier system directly from its authors.

This interactive Seminar will give you invaluable information—an accurate understanding of Tier definitions and fundamental concepts, how to align with business case, the challenges and benefits of application across all subsystems, and associated costs.

In addition, Seminar exercises with your industry peers will teach you how to critique different system topologies and predict their likely Tier ratings (attendees can have their own data center designs critiqued by the group).

Attendees Will Take Home:

- An understanding of what Tier expectations will meet their overall business objectives
- Accurate definitions of the different Tier levels from the authors themselves
- Knowledge of how to incorporate Operational Sustainability* with their Tier objective to improve site resiliency
- Improved understanding of industry challenges and how to address them
- Hands on experience predicting Tier levels from one-line drawings
- Industry contacts

*Operational Sustainability is the capability of a facility to deliver its performance objective over an extended period of time. Considerations include ease of operation, maintenance, and expansion. Sustainable sites have the ability to adapt and respond to the business requirements over the long term.

Seminar Agenda

Day One

8:00 a.m. to 5:00 p.m.—including breaks with dinner following

Participant Introductions (approx. 60 min.)

A brief sketch by each participant describing their job responsibilities, size of facility, company uptime goals, consequences of downtime, why Tiers are important to your business, and seminar expectations. This is the first opportunity to begin to network with other participants.

Tier History and Definitions (approx. 75 min.)

Faculty presentation on the history behind the development of the Tiers concept and subsequent white paper. Detailed definitions of the requirements and attributes of each Tier level.

Business Requirements and Appropriate Uses for Each Tier (approx. 75 min.)

The infrastructure investment to achieve a certain Tier should be driven by specific business needs. The faculty presents examples of the types of business that would be appropriate for the different Tier levels based on the company's availability needs.

Lunch is provided to enable participants to interact with each other and the faculty.

Consequences of Downtime (approx. 30 min.)

An evaluative look at the time required to restore availability, the unrealistic outage predictions of percentage-based availability definitions, and other factors to look at when assessing the impact of an outage at your site.

Conceptual One-Line Diagrams (approx. 60 min.)

A presentation of example one-line diagrams of the different data center systems that affect Tier. Faculty will explain how to recognize Tier level attributes in diagrams and coach attendees to learn by practice. This applied learning method reinforces the Tier definitions presented earlier in the day and helps attendees learn to predict Tier attributes of their own sites more accurately.

Case Studies (approx. 60 min.)

The faculty shares data and diagrams from actual client facilities to further demonstrate how to predict Tier level by practical application of the requirements and attributes developed by the authors of the official Tier Classification System.

Cost Model (approx. 30 min.)

Factors to consider when estimating costs, with illustrative exercises.

Group Dinner

The seminar continues with a dinner, allowing participants, and seminar faculty to interact informally. Participants and faculty are free to pursue topics presented during the seminar, explore outside related topics, or even address specific issues at a participant's data center. All Institute programs assume every participant brings something unique to the learning of the group. Previous participants consistently report that the informal discussions at meals or in the hallway about "back home" problems provided invaluable benefits.

Day Two

8:00 a.m. to 1:00 p.m.—including breaks

Critical Power Distribution Architectures (approx. 30 min.)

Describes the more common ways to accommodate single-corded IT devices in dual-power paths data centers. Discussions include how solutions avoid failure exposures, as well as the benefits and the relative costs of the solutions.

Continuous Cooling (approx. 30 min.)

Describes the need for high-density data centers to match UPS battery ride-through with Continuous Cooling measures to avoid thermal excursions. Case studies will be shared demonstrating the risks of just having cooling systems on the engine generator.

Operational Sustainability (approx. 105 min.)

Operational Sustainability is the lifecycle ability of a site to deliver predictable results under all expected operational conditions. Site selection, building characteristics, fitness-for-use, investment effectiveness, and management & operations, are all design and operating factors that affect a site's resiliency through infrastructure performance, effectiveness, and long-term value.

Group Review of One-Line Drawings (approx. 75 min.)

Attendees will evaluate each other's data center one-line drawings to reach concensus on the likely Tier level represented by each. Historically, this portion of the seminar, which takes place after the definitions have been learned and practiced the previous day, is the most eye-opening to the group.

Seminar Wrap-Up (approx. 30 min.)

Review seminar participants' expectations and address remaining questions.

Adjourn

Seminar Faculty

Each seminar is presented by Principals of ComputerSite Engineering, Inc., who are also members of the Uptime Institute's faculty. They have the expert knowledge to assist participants in achieving their uptime goals. The faculty draws on years of experience in data center project approval efforts, design, construction, and ongoing operations to provide practical, relevant, applicable information. Most importantly, the faculty interacts directly with each individual or team to help define projects and develop a shared perspective of the desired outcome.

In this Seminar, we draw on the expertise of the following faculty members:

W. Pitt Turner IV, P.E. is a Distinguished Fellow and Senior Certification Authority for the Uptime Institute and a faculty member for the Institute's Site Uptime Network. As a Principal of ComputerSite Engineering, Mr. Turner has personally guided billions of dollars in client site infrastructure investments. Prior to joining ComputerSite Engineering in 1993, Mr. Turner was a Senior Project Manager for Pacific Bell's Fairfield Data Center; he was responsible for concept development, design, construction, and start-up for a 200,000-ft^2 facility. His work included the benchmarking of other data centers to help establish business-process improvements.

Vince Renaud, P.E. is a Distinguished Fellow and Certification Authority for the Uptime Institute and a Principal of ComputerSite Engineering. Mr. Renaud has provided leadership and strategic direction to maintain the highest level of infrastructure availability. In varying roles from data center owner and operator to consultant, Mr. Renaud has provided planning, design, construction, operation, and maintenance of mission critical facilities for the Department of Defense and Fortune 100 companies on a world-wide basis.

John H. Seader, P.E. is a Distinguished Fellow and Certification Authority for the Uptime Institute and a Principal of ComputerSite Engineering. Mr. Seader's career in critical facilities spans more than 15 years and includes responsibilities ranging from planning, engineering, design, and construction to start-up and operation for clients such as the Department of Defense, Sabre, and Williams Communication. Prior to joining ComputerSite Engineering, Mr. Seader was a Senior Technology Manager for Deloitte Consulting Outsourcing, LLC.

Rick Schuknecht, a Senior Consultant with ComputerSite Engineering, is a retired senior Naval Officer who has spent the past 12 years in corporate critical facilities management. He specializes in site management and critical environment governance. Prior to joining ComputerSite Engineering, he transitioned three top Tier data centers and three lesser Tiered operations centers from construction-to-operations. He also served with Trammell Crow Company (now CB Richard Ellis) as their management executive for global critical environments.

Kenneth G. Brill is founder and Principal Consultant of ComputerSite Engineering, as well as founder and Executive Director of the Uptime Institute, the Site Uptime Network, and Upsite Technologies. He is co-originator of the industry standard Tier Classification System and holds the underlying patent on dual-power topology.

About the Uptime Institute

The Uptime Institute, Inc. is a pioneer in creating and operating knowledge communities for improving uptime effectiveness in data center Facilities and Information Technology organizations. The 100 members of the Institute's Site Uptime Network are committed to achieving the highest levels of availability with many being Fortune 100 companies. They interactively learn from each other as well as from Institute sponsored meetings, site tours, benchmarking, best practices, uptime effectiveness metrics, and abnormal incident collection and trend analysis. From this interaction and from client consulting work, the Institute prepares white papers documenting Best Practices for use by Network members and for the broader uninterruptible uptime industry. For the industry as a whole, the Institute publishes white papers and offers a Seminar Series, Symposium, and Design Charrette Series on critical uptime-related topics. The Institute also conducts sponsored research and product certifications for industry manufacturers. For users, the Institute certifies data center Tier level and site resiliency.

About ComputerSite Engineering

ComputerSite Engineering, Inc. is a data center engineering and management consulting firm working in close collaboration with the Uptime Institute to address technical aspects of contemporary data center issues. Independent of any Engineer-of-Record or manufacturer affiliation, ComputerSite Engineering's consulting teams help clients develop and execute solutions that are responsive to their unique business needs. Since 1985, ComputerSite Engineering has guided and justified data center investments for major organizations that require high levels of continuous availability to conduct business. ComputerSite Engineering's mission is to work with clients to ensure data centers are managed for uninterruptible uptime over sustained periods. More information is available at computersiteengineering.com or info@computersiteengineering.com.

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