



## 2006 Fall Conference

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# End-to-End Reliability: **MISSION CRITICAL METRICS**

November 12-15, 2006 • Hyatt Regency Scottsdale at Gainey Ranch • Scottsdale, AZ

# 2006 FALL CONFERENCE

## What is 7x24 Exchange?

The leading knowledge exchange for those who design, build, use and maintain mission-critical enterprise information infrastructures, *7x24 Exchange* is a not-for-profit organization seeking to improve end-to-end reliability by promoting dialogue among these groups.

Founded on the assumption that often professionals involved with data center uptime issues work in isolation when dealing with technical, budget, political, and career issues. As a result of expensive, time-consuming, and, sometimes, painful trial and error processes, innovative practitioners evolved unique and creative ways of solving problems and building the organizational support needed for their implementation. However, many have been stymied because they did not have access or know how to communicate potential risks to senior management to avoid a downtime disaster occurrence.

*7x24 Exchange* members work together to advance the state-of-the-art in infrastructure reliability. By collecting and disseminating data on safeguarding information systems and alerting top management to the importance of proactive measures, members can protect their companies' information lifelines.

## The Goal of 7x24 Exchange Conferences

The field of uninterrupted uptime has no textbooks. Before its founding in 1989 as the Uninterruptible Uptime Users Group, learning how to deal with uptime issues largely resulted from individual trial and error. Continuing this random rate of reliability improvement would increasingly restrict the potential productivity of the large, growing investment in computer and communication hardware and systems. It also would interfere with the increasingly critical dependence on information accessible through computers.

With 7x24 operations now common, how much higher will availability requirements be in five years? How can cost-effective, reliable responses be assured? When is a centralized application site requiring ultra-high availability viable? Addressing, and, hopefully, answering these and related strategic questions, *7x24 Exchange* conferences provide stimulating discussion forums. Collectively, we know much about the future options and alternatives available. With *7x24 Exchange*, that knowledge can be shared.

All program elements aim to increase the reliability and availability of an enterprise's information infrastructure by presenting case studies, new ideas, techniques and tools. Open dialogue between attendees and presenters is encouraged throughout. Further, by involving the many specialists from user and supplier/service organizations with formal and informal sessions, the experience is rewarding and enjoyable for all.

## Who Should Attend and Why?

This conference is designed for anyone involved with 7x24 infrastructures – IS, data center, disaster recovery and network/telecommunication managers; computer technologists; facility or building managers, supervisors and engineers. Vendors, consultants, or anyone concerned with uninterrupted access to critical information also will find the conference of value.

Attendees and their organizations benefit from the conference because proactive plans and cooperation from diverse functions are needed to improve reliability. By promoting a dialogue and clarifying the synergies among functions, past conferences have enabled teams of attendees from a given organization to better communicate the critical importance of a proactive approach to continuous uptime. Team members also were able to cover breakout sessions and network with other professionals in similar companies/industries with like problems.

Conference attendees benefit in three ways: professional development and advancement; increased recognition of their function's importance; and exposure to new ideas, contacts and resources. First-time attendees often discover that many companies face similar, if not identical, technical and organizational problems in their quest for higher availability levels. Those still unaware of this often view their situations as unique. However, they learn there are many common downtime risks and failure modes with solutions clustering around universal ideas and attitudes. *7x24 Exchange* conferences provide insights into what is being planned and done by others to mitigate or eliminate downtime risks. Recommended changes can then be justified, both on their practical merits and in the context of business arguments that have been successful elsewhere.

## WHAT MEMBERS ARE SAYING

*"We will be a National member before month's end"*

*"The best conference I've been to in a while"*

*"Great, will attend the next one"*

*"A nice mix of IT and facilities"*

*"Well organized – Keep it up!"*

**What is a Tutorial Session?**

7x24 Exchange has been offering tutorials for several years now. The purpose of these tutorials is to provide material refreshers for those attendees familiar with the concepts or to provide a foundation to other attendees who want to become more familiar with the subject matter. All conference attendees are encouraged to attend tutorial sessions. Almost all of the 7x24 Exchange presentations are geared towards those with an advanced understanding of the concepts that will be presented. The tutorials are intended to complement the Monday to Wednesday presentations and help each attendee deepen their level of comprehension.

**SUNDAY, NOVEMBER 12TH****8:30 A.M. – 10:00 P.M.****Registration****9:00 A.M. – 5:00 P.M.****Pre-Conference Workshop – Real Availability**

The design, construction, operation, and maintenance of mission-critical facilities is a demanding art. 7x24 Exchange members know from first-hand experience that end-to-end reliability requires attention to all the details while never losing sight of the big picture. Most of the specialized knowledge and training is learned on the job – until now.

Steve Fairfax and MIT Professor Mike Golay have distilled decades of applied reliability theory and practice into a one-day seminar – Real Availability. Developed especially for 7x24 Exchange International, Real Availability will both challenge and change the way you think about reliability and availability.

**TOPICS INCLUDE:**

- Evaluating the reliability of data center power systems
- Why you can't contract for availability
- Understanding and reducing human error in data center operations
- Determining optimal test and maintenance strategies
- Real-world examples and case studies

The course has proven extremely popular in past years. 96% of 7x24 Exchange members who evaluated the 2004 and 2005 Real Availability seminars said they would use Real Availability concepts on the job. 100% said that they would recommend the course to others.

Includes course materials, continental breakfast and lunch. All participants are eligible for CEU credits.

**Steve A. Fairfax**  
President  
MTechnology, Inc.

**Michael Golay, Ph.D.**  
Professor  
MIT Nuclear Engineering Department

*There is an additional fee for this full-day, pre-conference workshop. Please register for this session and the conference using the Conference Registration Form on page 11. If you are interested in providing a pre-conference workshop for 7x24Exchange please e-mail a proposal to tara@dolcimanagement.com.*

**9:00 A.M. – 12:30 P.M.****Tutorial Session A: Fundamentals of Data Center Commissioning**

This session will explore the key elements and issues that a project team needs to address in order to deliver an effective data center commissioning program. It will cover language, objectives, methods, team member roles, and success criteria that characterize an outstanding program. The session will include real-life examples of findings and corrective action. Participants are invited to submit examples of facility issues they have experienced so that the session can address how a commissioning program might prevent similar occurrences in future projects.

**Dave DiQuinzio**  
Principal  
Strategic Facilities, Inc.

**12:30 P.M. – 2:30 P.M.****CONCURRENT TUTORIAL SESSIONS****Tutorial Session B: Mission Critical Fire Protection Systems, Common Problems and Solutions**

This presentation will look at common problems with fire protection systems experienced by the owners and users of mission critical facilities. False alarms, accidental clean agent releases and sprinkler system corrosion issues are included. This session will help managers take steps to determine if they are at risk and make adjustments before problems begin.

**Brian K. Fabel, P.E.**  
Director, National Accounts  
Orr Protection Systems, Inc.

**Tutorial Session C: American Express – Leveraging Dual Power for Availability SLA**

This session will share how American Express' Data Center Facilities have established variable availability SLAs for dual power complying and non-complying equipment installations and ownership. This discussion will include a 2005 outage case study demonstrating the major payoff of variable availability SLAs. John will discuss in detail the range of process, procedures and quality control measures that American Express' Data Center Facilities have created to fully leverage dual power. Key points will also focus on benefits from American Express' Global Standards and Approved Exception Process, CIO and Senior Leadership support principals, and investment trade-offs in single vs. dual powered technology buying decisions. Prime takeaways will include first steps for securing Senior Leadership support, dual power standards, plus how and where to start implementing variable SLAs within your data center services.

**John Jackson**  
Director of Raised Floor Infrastructure Services  
American Express

# 2006 FALL CONFERENCE

3:00 P.M. – 5:00 P.M.

## CONCURRENT TUTORIAL SESSIONS

### Tutorial Session D: Fundamentals of UPS Batteries in Data Centers

This tutorial will outline the evolution of the UPS battery choices available today and their main selection considerations. The linkage of maintenance requirements and failure modes will be explored, and a simple statistical assessment of battery reliability will be discussed. The session will conclude with a discussion of the possible impact of emerging battery technologies on the UPS market.

**Jim McDowall**  
*Business Development Manager*  
*Safit America, Inc.*

### Tutorial Session E: Fluid Mechanics 101: Understanding Cooling Airflow via Computational Fluid Dynamics

This tutorial session will begin with basic concepts of air velocity, airflow rate, pressure, and temperature distribution as applied to raised-floor data centers. You will be shown why the flow distribution through the perforated tiles is usually not uniform. It is governed by the air velocity and pressure variation under the raised floor. Computational Fluid Dynamics (CFD) can be used to calculate the complete velocity and pressure field and thus we can predict the airflow coming out of each perforated tile. CFD is a powerful technique to analyze a flow problem of any complexity. The CFD simulation will allow us to study the effect of variables such as: layout of the CRAC units and the perforated tiles, the height of the raised floor, and the presence of obstructions under the raised floor. Once the flow rates through the perforated tiles are determined, the next step is to apply CFD to the above-floor space to obtain the distribution of air velocity and temperature as the air moves through the server racks and back to the CRAC units. Many examples will be presented to develop an understanding of the physical processes and to draw practical conclusions. The tutorial will show how to create a computational model of a data center layout and calculate the corresponding airflow and temperature distribution.

**Suhas V. Patankar, Ph.D.**  
*Professor of Mechanical Engineering*  
*University of Minnesota and*  
*President, Innovative Research, Inc.*

6:00 P.M. – 10:00 P.M.

### Welcome Reception

SPONSORED IN PART BY: **CATERPILLAR®**

Join us for a buffet reception with open bar accompanied by soft music. This is an excellent opportunity to dialogue with conference presenters, meet new people, network, welcome first time attendees, renew old acquaintances, and meet the board members.

## MONDAY, NOVEMBER 13TH

7:00 A.M.

### Registration and Breakfast

Check in, pick up your name badge, conference materials and enjoy a hot buffet breakfast.

8:00 A.M.

### Welcome and Opening Remarks

Bob Cassiliano, *7x24 Exchange* chairman will open the conference, provide an overview, review meeting logistics and address general housekeeping items.

8:30 A.M.

### Keynote Address: American Express – Is there a difference between “7 x 24” and “always on”?

In this case study, John Ryan will review how translating system diagnostics into business metrics created real value. John is responsible for running a worldwide, always-on network for payments, travel and banking businesses. By understanding how to translate technical diagnostic information about the network into business relevant metrics, a richer understanding of priorities led to breakthroughs in investment strategies. John will share ideas on how to apply similar reviews to other “always on” infrastructure platforms.

**John Ryan**  
*Vice President*  
*American Express Technologies*

9:30 A.M.

### Refreshment Break

CONFERENCE BREAKS

HAVE BEEN SPONSORED IN PART BY:



**SYSKA HENNESSY**  
GROUP

10:00 A.M.

### MIT – Defining and Base Lining Metrics Accurately for IT/Facilities

The high reliability electric power supply/IT world is greatly concerned with rules of thumb and metrics to monitor in seeking high performance. Looking to future outcomes we cannot know what will occur, but we can attempt to make the probability of mission success – the reliability – as high as possible, given available resources. Many factors contribute to high reliability, including low component failure frequency, avoidance of common cause failures, health monitoring and rapid intervention



# MISSION CRITICAL METRICS

or repair, system architecture, and human and organizational performance. Each such factor has metrics indicating its condition (e.g., surveillance testing interval, degree of redundancy) that can be used to improve that factor's contribution to good overall performance. However, no single metric is sufficient to indicate that an IT facility is being operated as well as possible, rather it is the integrated contribution of all such factors that determines overall performance outcomes. The important use of individual metrics is in a systems-based understanding of their combined contributions, where these can be balanced against the resources demanded to obtain them. It is such systems thinking that is essential for obtaining good performance, rather than a focus upon a small number of key performance metrics. Examples provided in previous 7x24 conferences (e.g., Fairfax and Golay, 2006) illustrate how such systems thinking can be implemented.

Ref. S Fairfax and M Golay, "Optimal Test Strategies for Standby Diesel Engine-Generators" presented at the Spring 2006 7x24 Exchange National Conference.

**Michael Golay, Ph.D.**

*Professor  
MIT Nuclear Engineering Department*

## 11:00 A.M.

### **Avaya – Squeezing the Last Nine in Reaching Five Nines Availability**

Communications Manager is the 'brain' that controls the network of Avaya IP telephony gear which is deployed globally in more than 90% of Fortune 500 companies. To provide highly reliable service to end users there are systematic analysis and development done over many years to the Communications Manager system. These go beyond traditional end-to-end reliability measures and provide for call preserving upgrades, business continuity features and recovery from large numbers of failures. This presentation will describe the various initiatives underway over the years and the current challenges to reach the Five Nine availability for end users.

**Dr. T.K. Srinivas**

*Director  
Avaya Labs*

## 12:00 P.M.

### **Lunch and Networking**

## 1:15 P.M.

### **SUN Microsystems – Analysis of Field Data for Repairable Systems**

The analysis of field data on repairable systems often involves estimating the mean time between failures (MTBF). There are

significant assumptions and potentially serious shortfalls surrounding common MTBF practices. Alternative, parametric modeling approaches are typically too complex to gain wide acceptance into the day-to-day reliability monitoring operations of a company. The purpose of the talk is to present simple graphical methods for analyzing and monitoring the reliability of repairable systems. This presentation will illustrate techniques based on non-parametric methods which have been successfully used within Sun Microsystems to transform the way the reliability of repairable systems is analyzed and communicated to management and customers.

**David C. Trindade, Ph.D.**

*Distinguished Engineer  
Sun Microsystems, Inc.*

## 2:15 P.M.

### **Make Your Own Sundae Break**

**Talk about cooling down your system...**

Don't miss this 7x24 Exchange conference tradition complete with all the trimmings.

## 2:45 P.M.

### **Eaton Electrical – Harmonic Solutions for Mission Critical Applications**

Problems associated with harmonic distortion are well understood for many power system applications. However, finding the right solution is challenging. There are many different technologies to choose from, each with specific technical and economic advantages. Data Centers and other Mission Critical applications require further considerations most of which pertain to the reliability of the solution and its effect on the overall power system reliability. This presentation will provide recommendations for reducing harmonic distortion, improving system capacity and improving system reliability while evaluating economic considerations using case study examples. Special considerations regarding the effects of harmonic loads on generators will be discussed. Finally, while reliability is of utmost importance at Mission Critical locations, optimizing power flow, saving energy and reducing the loading on HVAC systems can all result in savings (and potentially improved reliability). Some harmonic solution providers claim that their product will save energy as well as reduce harmonics. This paper will discuss these claims and the actual expected savings from these solutions.

**Daniel J. Carnovale, P.E.**

*Power Quality Solution Manager  
Eaton*

**David G. Loucks, P.E.**

*Power Solutions Manager  
Eaton*

# 2006 FALL CONFERENCE

3:45 P.M.

## CONCURRENT SESSIONS

### Case Study: The Proof's in the Power Bill: Verified 10-20% Energy Cost Reduction Using DC @ Data Centers

Data center UPSs convert utility AC to DC, then back to AC again for power supplies that convert it back to DC yet again. If you were to eliminate all those energy wasting, heat generating steps, your power bills would instantly drop 10-20% ... and that's not even counting the cooling savings. With the active participation of Sun, Intel, IBM, Cisco and other industry giants, the Department of Energy's Lawrence Berkeley Lab put together a side-by-side pair of blade test-beds at Sun Microsystems to prove the energy conservation and reliability enhancement of the DC distribution approach. Findings will be presented by:

**Mike Bushue**  
*Senior Staff Engineer*  
*Sun Microsystems*

**William Tschudi**  
*Environment Energy Technologies Project Manager*  
*Lawrence Berkeley Laboratory*

**Brian Fortenbery**  
*Engineering Manager*  
*EPRI Solutions*

**Johnny Gonzales**  
*Regional Sales Director*  
*Pentadyne Power Systems*

### Tutorial Session A: American Express – Leveraging Dual Power for Availability SLA

This session will share how American Express' Data Center Facilities have established variable availability SLAs for dual power complying and non-complying equipment installations and ownership. This discussion will include a 2005 outage case study demonstrating the major payoff of variable availability SLAs. John will discuss in detail the range of process, procedures and quality control measures that American Express' Data Center Facilities have created to fully leverage dual power. Key points will also focus on benefits from American Express' Global Standards and Approved Exception Process, CIO and Senior Leadership support principals, and investment trade-offs in single vs. dual powered technology buying decisions. Prime takeaways will include first steps for securing Senior Leadership support, dual power standards, plus how and where to start implementing variable SLAs within your data center services.

**John Jackson**  
*Director of Raised Floor Infrastructure Services*  
*American Express*

### Tutorial Session B: Understanding Cooling Airflow via Computational Fluid Dynamics

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**Suhas V. Patankar, Ph.D.**  
*Professor of Mechanical Engineering*  
*University of Minnesota and*  
*President, Innovative Research, Inc.*

6:30 P.M. – 10:30 P.M.

### Hospitality Suites

You and your guest are invited to visit the hosting companies that support *7x24 Exchange*. Food, fun and games in a vibrant high-energy environment will be the emphasis.



**TUESDAY, NOVEMBER 14TH****7:00 A.M.****Breakfast****8:30 A.M.****Opening Remarks**

Bob Cassiliano will review day one highlights, recognize the conference Corporate Leadership Program sponsors and give a 7x24 Exchange update.

**9:00 A.M.**

**Keynote Address: Breaking Cycles  
A Rags-to-Riches Story: From Homelessness to Wall Street**

Chris Gardner is the head of his own brokerage firm and owner of three homes, a collection of tailored suits, designer shoes, and Miles Davis albums – but just 20 years ago, Gardner was homeless, carried all his possessions on his back, and lived – on occasion – in a bathroom at a Bay Area Rapid Transit station in Oakland, California. A true testament to the perseverance it takes to make it from “rags-to-riches”, Gardner tells his story of overcoming obstacles, “breaking cycles”, and the motivation it takes to make your own success. Listen as he recounts his fears of failure, exhaustion of pursuit, and great appreciation to those that helped him. Gardner’s storytelling captures his audience completely, and his humor lights up the room.



Chris Gardner

**10:00 A.M.****Refreshment Break****10:30 A.M.****Cognio – Why Best Effort is Not Good Enough**

Wireless technology is everywhere and it’s changing the way content and network providers create, package and distribute services, as well as the way consumers use those services. For businesses, wireless technology has created a fundamentally un-tethered world with Wi-Fi work zones that enable workers to better collaborate, interact and receive information. This

wireless revolution has the potential to leapfrog the struggling wired world and take full advantage of innovative new technologies and applications that will lay the foundation for a clean and clear Wi-Fi infrastructure capable of delivering premium services. These services will not only radiate throughout the enterprise, but also the wireless Internet service provider markets, creating new opportunity for revenue creation and customer traction unavailable in the wired world, especially as the industry moves to embrace fixed/mobile converge as a means to keep customers connected. Currently most of these services must be delivered over the unlicensed “junk” bond making it difficult to deliver the requisite guarantees needed to support advanced services. As a result this revolution can only be realized when the performance, security and reliability of the Wi-Fi network is better than best-effort.

Neil Diener will discuss the technical and business challenges of WiFi-based service delivery as well as discuss how Wi-Fi services play an integral role as the wired and wireless worlds begin to merge. Neil will also highlight the security concerns to be aware of in any wireless networks, such as back doors, and denial of service attacks. He will outline how enterprises can address critical WLAN problems dynamically and can also set policies that eliminate or control interfering devices that might be clogging the WLAN spectrum.

**Neil Diener**

*Chief Technology Officer and Co-founder  
Cognio*

**11:30 A.M.****CONCURRENT SESSIONS**

**Breakout A: Watt Cost for High Density Cooling? A Cost Study of the Traditional Hot Aisle/Cold Aisle Heat Dissipation Methods Versus Active and Water Cooled Enclosure Solutions**

Today’s standard method for managing heat loads in today’s MCDC’s (Mission Critical Data Centers) may no longer lend itself to the extreme heat loads produced in today’s high density compute environment. Enclosure cooling technology has come under intense scrutiny due to the extreme operating conditions of today’s data centers. This study will compare the build costs (CAPEX) and operating costs (OPEX) for enclosures populated from 3kW to 30kW utilizing (3) methods common to the data center.

Hot Aisle/Cold Aisle (utilizing passive enclosures), Active cooling enclosures (utilizing cold aisle/work aisle) and Water Cooled enclosures. This study will present a clear and concise cost per kW for all (3) methods

**John Consoli**

*VP, Global Sales  
AFCO Systems*

**James Fulton, Ph.D.**

*Faculty Mathematics  
Suffolk County Community College*

# 2006 FALL CONFERENCE

## **Breakout B: Fires in the Mission Critical Facility – A Look Back at Causes, Responses and Lessons Learned**

This presentation will showcase fires experienced in Mission Critical Facilities in the previous 12 months. A number of cases will be looked at and include the nature of the fire, the response to it, and any lessons learned. In addition to recent fires, a number of infamous and/or interesting cases will also be presented.

**Brian K. Fabel, P.E.**  
*Director, National Accounts*  
*Orr Protection Systems, Inc.*

**12:30 P.M.**

**Lunch and Networking**

**1:45 P.M.**

## **CONCURRENT SESSIONS**

### **The Caterpillar 6 Sigma Journey**

This presentation will provide the audience a brief background of our company and explain why we needed to change our culture. The background behind the 6 Sigma methodology that was chosen to move us forward will be reviewed, along with the critical elements and metrics that we used to track our deployment and monitor those areas that needed modification or improvement. We will also cover how we are using 6 Sigma to change the way we work, our culture, and how we're using it to drive execution of our company's Vision 2020.

**Curt L. Wegener**  
*6 Sigma Division Champion*  
*Caterpillar Inc.*

### **Tutorial Session: Fundamentals of UPS Batteries in Data Centers**

This tutorial will outline the evolution of the UPS battery choices available today and their main selection considerations. The linkage of maintenance requirements and failure modes will be explored, and a simple statistical assessment of battery reliability will be discussed. The session will conclude with a discussion of the possible impact of emerging battery technologies on the UPS market.

**Jim McDowall**  
*Business Development Manager*  
*Safir America, Inc.*

**2:45 P.M.**

**Refreshment Break**

**3:15 P.M.**

### **Virtual Tour – 365 Main Data Center**

This video tour takes an extensive look at 365 Main's modern

data center based in downtown San Francisco. The video provides an overview of how the building was constructed, and how the data center operates.

#### **TOPICS INCLUDE:**

- Challenges faced during construction
- Unique seismic infrastructure
- Comprehensive overview of electrical and mechanical systems
- Contingency plans and emergency procedures
- Quality controls including auditing and monitoring of networks, cooling and power systems

**4:15 P.M.**

### **Pass the Mike Session**

This session addresses questions previously submitted on registration forms and those which surfaced during the conference. *7x24 Exchange* encourages all attendees to step up to the microphone and state their case. Attendee participation and open dialogue has made this a valuable session over the years.

**Dennis Cronin**  
*Center of Excellence – Mission Critical*  
*Gilbane*

**6:30 P.M. – 9:30 P.M.**

### **Vendor Sponsored Event**

#### **"An Evening with Christopher Cross"**

*7x24 Exchange* attendees will witness the evolution of the ever popular vendor sponsored event as we present an evening with the Grammy/Golden Globe and Oscar award winning recording artist Christopher Cross. His self-titled debut album appeared in 1980, with the lead single "Ride Like the Wind" rocketing to the number two spot; the massive success of the second single "Sailing" made Cross a superstar, and in the wake of two more Top 20 hits, "Never Be the Same" and "Say You'll Be Mine," he walked off with a record setting five Grammy's in 1981, including Album of the Year and Song of the Year. He soon scored a second number one as well as an Academy Award with "Arthur's Theme (Best That You Can Do)," which he co-wrote with Burt Bacharach, Carole Bayer Sager, and Peter Allen for the smash Dudley Moore film comedy Arthur. Cross' much-anticipated sophomore effort Another Page arrived in 1983, featuring the Billboard Top 20 hits "All Right" and "Think of Laura".

*Special thanks to the following organizations for making this event possible:*

**ABB, American Power Conversion, ComRent, Cummins Power Generation, DanaherPower Solutions, Data Aire, Eaton, EYP Mission Critical Facilities, Kohler Power Systems, MGE UPS, Mitsubishi Electric, Power Distribution, Inc., Russelectric, SIEMENS, Square D & Starline Track Busway.**





# MISSION CRITICAL METRICS

## WEDNESDAY, NOVEMBER 15TH

7:00 A.M.

### Breakfast

8:30 A.M.

### Opening Remarks

Bob Cassiliano will review highlights from day two and address housekeeping items of interest.

8:45 A.M.

### Keynote Address: IBM – A Case Study in High Density Cooling: A Practical Application for Water in the Data Center

Most data center owners today cite challenges in space utilization, power delivery, cooling, and even structural loading in their facilities. The real life case study of a computing cluster at Georgia Tech demonstrates a cost-effective, forward-looking solution for two of the above parametric challenges: space utilization and cooling. A water based rack door heat exchanger was deployed as the centerpiece of a cooling solution for an area where the power/cooling density was 10 times greater than the capabilities of the rest of the facility. The solution was pivotal in creating the showcase-caliber facility that was desired by the end user.

**Bret W. Lehman, P.E.**

*Senior Engineer  
IBM Corporation*

**Batosz Ilkowski**

*Senior Research Technologist  
Georgia Institute of Technology*

**Stephen L. Peet**

*Manager, Technical Support  
Bell South, RDC Atlanta*

**Steven M. Battenfeld, P.E.**

*Mechanical Department Head  
Minick Engineering, Inc.*

9:45 A.M.

### Refreshment Break

10:15 A.M.

### Case Study: USPS Processing and Distribution Center

After 70 years of continuous operation at a single location in downtown Philadelphia, the USPS was eager to modernize their aging mail distribution operation and gain easier access to major interstate arteries and air transportation. US Postal Service's new Processing and Distribution Center will not only cut costs and

improve service for the federal agency, but will work as a model to do so at USPS facilities all across the country. Ensuring the safe passage of 4,000 employees and 8,000,000 pieces of mail in and out of the facility every 24 hours presented some substantial challenges including security of personnel and process, operational reliability and maintenance in a low cost model environment.

**Frank Nemia, P.E.**

*Engineering Design Principal  
Kling*

**Richard Farley, AIA, P.E.**

*Principal, Project Director  
Kling*

**Tom Samra**

*Facilities Vice President  
USPS Pennsylvania*

11:15 A.M.

### Electrical Failures: The Good News

This presentation consists of several case studies involving electrical power system equipment failure investigations. Each case study includes photos of the equipment and a discussion of the cause. Photos show failures involving transformers, fuses, breakers, switchgear, meters, busduct and other power system equipment. Lessons learned from these failures have been condensed into a handy checklist to improve electrical equipment maintenance and system reliability. This checklist is a valuable tool for those responsible, maintenance, operation or design of electrical facilities.

**Ashley Harkness**

*Manager of Laboratory Services  
Electrical Reliability Services*

12:15 P.M.

### Conference Adjourns



# 2006 FALL CONFERENCE

## TWO QUICK STEPS TO REGISTRATION:

### 1. CONFERENCE REGISTRATION

Complete a Conference Registration Form for each participant, on-line or mail or fax a copy of the Conference Registration Form on page 11 to:

**7x24 Exchange**  
322 Eighth Avenue, Suite 501  
New York, NY 10001

**Phone:** 646.486.3818  
**Fax:** 212.645.1147

[www.7x24exchange.org](http://www.7x24exchange.org)

To guarantee early bird rate, registrations must be received by October 20, 2006.

### 2. HOTEL RESERVATIONS

To take advantage of *7x24 Exchange's* special rates at the Hyatt Regency Gainey Ranch please call Central Reservations # 888.421.1442 and ask for the *7x24 Exchange* Conference room rate of \$219.00 single or double.

Conference rates are available from November 10, 2006 through November 17, 2006. To ensure rate availability, reservations must be received by October 13, 2006. After October 13, 2006, rooms and rates are subject to space availability and current hotel rates.

Please note that there are a limited number of rooms available at the group rate which will be reserved on a first come first served basis. *7x24 Exchange* makes every effort to reserve the appropriate number of room nights for attendees, however we cannot be responsible if the room block sells out prior to October 13, 2006. In the event of a sell out *7x24 Exchange* will recommend nearby accommodations.

#### **Hyatt Regency Gainey Ranch**

7500 E. Doubletree Ranch Road  
Scottsdale, Arizona 85258

**Phone:** 480.483.5540  
**Central Reservations:** 888.421.1442

## NEW THIS FALL FOR GUESTS!

Monday, November 13 &  
Tuesday, November 14, 2006

### **Scottsdale "Shop Til You Drop" Shuttle.**

You can "shop til you drop" with the multitude of shopping available in Scottsdale and Phoenix! You'll have a chance to shop the top shopping areas in the Valley of The Sun including El Pedregal, The Borgata, Biltmore Fashion Park, Scottsdale Fashion Square, Old Town Fifth Avenue, and Kierland Commons. You'll have the opportunity to shop the sales, boutiques, and specialty shops in order to purchase whatever you're looking for. You may also pick up souvenirs and mementos of your visit to Arizona. A customized shuttle schedule will be available on site.

## VENDOR/CONSULTANT POLICIES & PROCEDURES

### **Information Tables and Pop-Up Displays**

All vendors and consultants are encouraged to participate in *7x24 Exchange*.

However, the group is primarily driven by user interest. Tables are provided at the conference for the distribution of product literature, educational material and other useful information at no cost. Display signs are not permitted on literature tables. Overt selling at *7x24 Exchange* meetings and the use of *7x24 Exchange* membership lists for direct selling are prohibited.

Conference sponsors at the Key level or higher will be permitted to occupy one full six foot table for literature and/or a pop up display at no cost. Non sponsoring companies can set up pop up displays for a fee.

If you wish to coordinate a display please contact Brandon Dolci at 646.486.3818. All displays **MUST** be registered with *7x24 Exchange* by October 13th and accompanied by one full conference registration by a representative of the company.

### **Hospitality Suites**

Hospitality suites/demo rooms are permitted on Monday, November 13, 2006 between the hours of 6:30PM and 10:30PM. All hospitality suite hosts must be a Key member of the *7x24 Exchange* Corporate Leadership Program (CLP). In order to be recognized by *7x24 Exchange* vendors must complete a suite registration form.

As always, hosting a hospitality suite gives vendors, direct access to the conference attendees and provides the opportunity to promote products and services in an enjoyable relaxed environment.

If you are interested in hosting a suite on Monday, November 13, 2006, please contact Brandon Dolci at 646.486.3818 x 108 before October 13th.



# 2006 FALL CONFERENCE

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