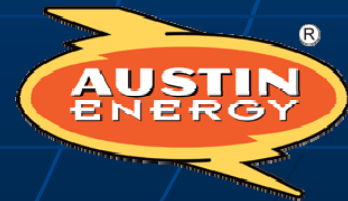


# Trends in Data Centers

*Server Farm in a Box*

*Jerrel Lee Wallace*

*Power Systems Consulting Engineer*



# Data Center Trends

- Customer inquiry
- Container-based data centers
- Concerns
- Discussion



# Customer Inquiry

- Excess capacity
- Two substations
- Initial 10 MW (within 8-10 months)
- Adding 10 MW monthly
- Ultimate 100 MW
- 10 months



# Data Center in a Box

## “Container Based Data Center”



# Flash Drive/Data Center



# Vendors

- Google
- Sun
- Rackable systems
- Cisco
- HP
- IBM
- Dell
- APC



# In a Trailer Truck



# ISO Standard Shipping Container





# What's Inside?

- Some are fully self contained with power conditioning equipment, UPS, etc.
- Some may even include backup generation
- Typical data center racks with blade servers



# A Look Inside



# Plug and Play

- Concrete pad, with/without a roof structure
- Inside a warehouse type building
- Umbilical connections for broadband, water, power



# One Example



# Power

- Some require 208V, others 240V
- 250 to 500 kW per container
- One article projected densities in the 1,000 to 1,400 watts per square foot range



# Concerns

- **Short timelines**
  - 12-16 week delivery
- **Power density**
- **Portability**



# Information Sources

- Data Center Knowledge

<http://www.datacenterknowledge.com/>

- HP's Web site

<http://h20338.www2.hp.com/enterprise/cache/595887-0-0-0-121.html>



# QUESTIONS

