So you want to build a data centre?
Look what’s coming from BICSI!

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So you want to build a data centre?

• Who do you contact?
• How do you work out what you need?
• Where do you find out the best design practice?
Data centre design is Multi-disciplined

• It requires an understanding of
  – IT
  – Power
  – Cooling
  – IT Cabling
  – Security
  – Fire systems
  – Architectural Layouts
  – Access Floors
And it often starts like this....

So how big does your computer room need to be?

I have 200 servers!
The start of the project

Facilities Manager: How much cooling do you need?

IT Manager: I have a SAN with 10 zettabytes of storage!
The start of the project

How much power do you need?

I will need 40Gb connectivity to each server!
Facilities Manager

They are talking different languages

IT Manager

I have 200 servers!

I will need 40Gb connectivity to each server!
Why didn’t you say so!

I will need 200sqm 300kW cooling 400kVA power.
So we get in some outside help

- Architect
So we get in some outside help

- Professional Team
So we get in some outside help

- Data Centre fit-out Specialist

Sometimes the hot air needs a bit of encouragement to leave by the ceiling!
So we get in some outside help

- Specialist Data Centre Consultant
Gain some knowledge yourself so you can understand if what’s offered is what you need.

So we’ve given you a hot aisle/cold aisle design with 4kW per rack.

Yes, that’s perfect for my needs.
What can you read?
Data Centre Standards

- TIA 942
- BISCSI 002
- EN 50600 series
- EN 50173-5
- ISO/IEC 24764
Data Centre Cabling Standards

- TIA 942
- BISCSI 002
- EN 50600 series
- EN 50173-5
- ISO/IEC 24764
TAI 942

TIA STANDARD

Bicsi
TIA 942

- Started development in 2002
- An attempt to combine all data centre disciplines
- Input from IT, ASHRAE, architects & users
- Ratified in April 2005 and updated in 2010
- Developed Tier strategy for DC’s from Tier 1 to Tier 4
TIA 942

• A lot of telecommunications but also
  – Temp
  – Humidity
  – Floor loadings
  – Colour of the walls
  – Etc......
BICSI 002

• Released in 2010
• Designed as a “How to do” best practices manual
• In excess of 500 pages
• Last two chapter finalised in January 2011
• Will soon be ANSI-BICSI-002
BICSI 002

• An expansion of the TIA942 but not the same
  – Ceiling Height
    • TIA-942: 2.6m-3m
    • BICSI 002: min 3m
  – Resilience
    • TIA: Tiers 1-4
    • BICSI 002: Classes 0-4

• Lots of good information in some detail......
Data Centre Design and Implementation Best Practices Standard – Intended Audience

• IT & Telecom Designers
• IT & Telecom Management
• IT Operations Management
• Facilities Management
• Security & Loss Prevention
• Architects & Engineers
• Construction Companies
BICSI-002 - Content

- Space Planning
- Site Selection
- Architectural
- Structural
- Electrical Systems
- Mechanical
- Fire Protection
- Security
- Building Automation Systems
- Telecommunications
- Information Technology
- Commissioning
- Data Center Maintenance
BICSI-002 - Content

- Space Planning
- Site Selection
- Architectural
- Structural
- Electrical Systems
- Mechanical
- Fire Protection
- Security
- Building Automation Systems
- Telecommunications
- Information Technology
- Commissioning
- Data Center Maintenance
BICSI-002 - Content

- Space Planning
- Site Selection
- Architectural
- Structural
- **Electrical Systems**
- Mechanical
- Fire Protection
- Security
- Building Automation Systems
- Telecommunications
- Information Technology
- Commissioning
- Data Center Maintenance
BICSI-002 - Electrical Systems

- Utility Service
- Distribution
- Mechanical Equipment Support
- Uninterruptible Power Supply (UPS)
- Standby and Emergency Power Systems
- Automation and Control
- Lighting
- Bonding and grounding
- Labelling and Signage
- Testing and Quality Assurance
- Ongoing Operations
- Availability Classes
BICSI-002 - Content

- Space Planning
- Site Selection
- Architectural
- Structural
- Electrical Systems
- **Mechanical**
- Fire Protection
- Security
- Building Automation Systems
- Telecommunications
- Information Technology
- Commissioning
- Data Center Maintenance
BICSI-002 - Mechanical

- Code compliance and coordination
- Environmental conditions
- Thermal Management
- Mechanical Equipment (Design and Operation)
- Materials and finishes
BICSI-002 - Content

- Space Planning
- Site Selection
- Architectural
- Structural
- Electrical Systems
- Mechanical
- Fire Protection
- Security
- Building Automation Systems
- **Telecommunications**
- Information Technology
- Commissioning
- Data Center Maintenance
BICSI-002 - Telecommunications

- Access Providers and Outside Plant
- Telecommunications Spaces
- Telecommunications and Computer Cabinets and Racks
- Telecommunications Cabling Pathways
- Telecommunications Cabling
- Field Testing Data Center Telecommunications Cabling
- Telecommunications cabling pathways and spaces administration
- Telecommunications infrastructure classes
Data Centre Standards

- TIA 942
- BISCSI 942
- EN 50600
- EN 50173-5
- ISO/IEC 24764
• In development
• Classifying data centre infrastructure in terms of
EN50600

- In development
- Classifying data centre infrastructure in terms of Availability
EN50600

• In development
• Classifying data centre infrastructure in terms of Availability, Security
EN50600

- In development
- Classifying data centre infrastructure in terms of **Availability**, **Security** and **Energy Efficiency**
But won’t specify
- Temp, Humidity
- Hot aisle/cold aisle
- PUE
- etc.
Other influences
So there’s plenty to read?

But where do you start?
First a brief history lesson

• The IT equipment was the original focus
  – especially connectivity
• Space was the overriding design criteria
  – Only 4 servers per cabinet
• “Pizza box” 1u servers and then blade servers
• Now cooling is the problem.
• Original strategy was to refrigerate the room
• Now Energy is the big concern so we look for alternatives
Data Centre Training

• Data Centre training has mirrored this focus
  – IT focus
  – Layouts
  – Cooling and Power
  – Energy Efficiency
  – The future ??????
Choose your training carefully

Content

– Scope
– Practical Exercise
– Examination
Choose your training carefully

Instructor

– Qualified
– Knowledgeable
– Independent
– Current Experience
– Able to teach

BEng(Hons) CEng MIEE Chartered Engineer
Registrant of the engineering council

PRACTICING INDEPENDENT DATA CENTRE CONSULTANT
Qualifications

• There is no degree in Data Centre Design
• Current certifications are
  – by Company
  – by third party
• Neither provide guarantees to the usefulness of the course
• The key criteria to look for are always.....
Training – two key criteria

Content

Instructor

PRACTICING INDEPENDENT DATA CENTRE CONSULTANT
BICSI Data Center Program

BICSI 002-2010 Standard
• Data Centre Design and Implementation and Best Practices

BICSI DC110 Training
• Data Center Design Best Practices
• 3day course
BICSI DC110 Training Course

• Topics covered include:
  – Data centers and the design process
  – Risk, reliability and tier rankings
  – Site locations
  – Building specifications
  – Computer room layout and design
  – IT equipment and racks
  – Data center security
  – Data center electrical systems
  – Data center cooling
  – Green data centers
  – Data center telecommunications and cabling
  – Automation and control systems
  – Data center commissioning and maintenance planning
BICSI DC Program

• A new 4/5 day course
  – Target Q2/Q3 2011

“The expanded Data Center Course will feature a comprehensive look at the best practices of Data Center design (e.g. Power, Cooling, Telecommunications design & development). The class will feature an interactive supplemental content portion through the usage of Hands On exercises and activities”

• Data Center Credential Coming Soon
  – Target Q3/Q4 2011
Thank you for listening

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