1   Expert Profile

PHILIP J. ISAAK, PE, P.Eng., DCDC, RCDD, SMIEEE

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Philp Isaak, PE, P.Eng., DCDC, RCDD is a senior engineer and President of Isaak Technologies, Inc. Mr. Isaak is an electrical and network infrastructure engineer, program and project manager with 21 years of engineering experience. Phil has provided data center design and operations consulting or training to clients located in 28 countries and territories across 6 continents. Phil's engineering experience encompasses data center facilities, network infrastructure, IT platforms, Enterprise and Cloud data center services. He received his B.S. Electrical Engineering degree from the University of Manitoba, and his Data Center Design Consultant and Registered Communications Distribution Designer designations from the Building Industry Consulting Service International organization.

1.1 Degrees, Licenses and Designations

Bachelor of Science in Engineering, Electrical

University of Manitoba, Winnipeg, Manitoba, Canada

May 29, 1996

Professional Engineer (P.Eng.)

Province of Manitoba[1]: License #20893

August 31, 2000 to present

Professional Engineer (PE)

State of Arizona[2]: License #43745

December 20, 2005 to present

Registered Communications Distribution Designer (RCDD)

Building Industry Consulting Service International (BICSI)[3]: Registration #182224R

October 27, 1997 to present

Data Center Design Consultant (DCDC)

Building Industry Consulting Service International (BICSI)[3]: Registration #201045D

September 19, 2011 to present

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[1] http://www.apegm.mb.ca/Directory.html
[2] https://azbtrprod.glsuite.us/GLSuiteWeb/Clients/AZBTR/Public/RegistrantRosterSearch/RegistrantRosterSearch.aspx
[3] https://www.bicsi.org/forms/Verify/CredentialHolder/

1.2 Awards and Recognition

Institute of Electrical and Electronic Engineers (IEEE)

In recognition of professional standing the Officers and Board of Directors of the IEEE certify that Philip Isaak has been elected to the grade of Senior Member (SMIEEE). (2016)

A not-for-profit organization, IEEE is the world's largest professional association for the advancement of technology. Only 9% of IEEE's approximately 428,000 members hold this grade, which requires extensive experience, and reflects professional maturity and documented achievements of significance.

The Green Grid

The Recognition of Contribution Award has been issued to Phil Isaak for his contributions to the data center industry whitepaper, WP#72 ICT Capacity and Utilization Metrics, published by The Green Grid. (2017)

The Green Grid Association is a non-profit, open industry consortium of information and communications technology (ICT) industry end-users, policymakers, technology providers, facility architects, and utility companies that works to improve IT and data center resource efficiency around the world. The Green Grid offers the data center expertise that governments turn to for industry insight and counsel, bringing to bear the combined influence of a diverse body of ICT industry leaders.

1.3   Past and Present Positions

Present Positions:

Owner, President

Isaak Technologies, Inc. (2011 to present)

Chair, BICSI Data Center Operations Standard Subcommittee

Building Industry Consulting Service International (BICSI), (2015 to present)

Chair, Author and Editor of BICSI Standards subcommittee responsible for developing

the ANSI/BICSI 009 Data Center Operations Standard

Member, BICSI Data Center Design Standard Subcommittee

Building Industry Consulting Service International (BICSI), (2004 to present)

Author and Editor of BICSI Standards subcommittee responsible for developing the

ANSI/BICSI 002 Data Center Design Standard

Member, AR#16-001 Open Standard for Data Center Availability

The Green Grid, Global Technical Committee (2016 to present)

Co-developer of Open Standard for Data Center Availability (OSDA) tool algorithms

Member, AR#16-006 Redfish API Schema for Large Scale-Out Data Centers

The Green Grid, Power Work Group (2016 to present)

Assisting work group in developing API schema for large scale-out data center critical

systems open protocol

Member, AR#17-003 Data Center Infrastructure Usage Effectiveness

The Green Grid, Global Technical Committee (2017 to present)

Co-developing Infrastructure Usage Effectiveness (IUE) metric to address space, power,

cooling and network utilization vs capacity

Past Positions:

Chair, AR#17-002 Power Metrics for ITE, Whitepaper #76

The Green Grid, Power Work Group (2017)

Managing Principal, Senior Electrical & Network Infrastructure Engineer,

Reliable Resources (2010 to 2011)

Principal, Senior Electrical & Network Infrastructure Engineer,

Reliable Resources (2004 to 2010)

Associate, Manager of Communications Engineering,

Mazzetti & Associates (2003 to 2004)

Telecommunications/Technology Project Manager,

Arden Technologies International (2002 to 2003)

Member, TIA TR-42 Telecommunications Cabling Systems

Telecommunications Industry Association (TIA), (2001 to 2002)

Author and Editor of TIA Standards committee responsible for developing the TIA-942

Telecommunications Infrastructure Standard for Data Centers

Electrical/Network Engineer,

Ellerbe Becket (1999 to 2002)

Electrical/Network Engineer,

Scouten, Mitchell, Sigurdson & Associates, Ltd (1996 to 1999)

1.4   Publications

Power Metrics for ITE, Whitepaper #76, 2017[4]
The Green Grid

> This paper describes the outcome of an initiative undertaken by The Green Grid in early 2017 (WI #17-002) to define a set of metrics that can quantify the power demand and energy consumed of ITE platforms within a data center. The ITE systems are defined as the compute processing, storage and network hardware within the data center. Trending the power demand over a multi-year timeframe can serve as a useful indicator for future capacity requirements (capital expenditures), while trending energy over a multi-year timeframe can serve as a useful indicator for future operational expenditures. Mr. Isaak wrote the Power Metrics for ITE data center industry whitepaper in collaboration with the other work group members.

Open Standard for Data Center Availability Tool, 2017[5]
The Green Grid

> The Open Standard for Datacenter Availability (OSDA) was kicked off by The Green Grid early in 2016 to create an availability classification and rating system that is intended to promote innovation in energy efficiency and sustainable designs of data centers. The published tool, currently only available to members of The Green Grid, allows users to compare data center designs using the OSDA scale. The OSDA score will give a relative comparison of designs and NOT an absolute value for availability and reliability. This is intentional, since predicting actual design performance is fraught with complexity and assumptions. Mr. Isaak co-developed the OSDA algorithms in collaboration with the other work group members.

ICT Capacity & Utilization Metrics, Whitepaper #72, 2017[6]
The Green Grid

> This white paper describes the outcome of an initiative undertaken by The Green Grid in early 2015 to define a metric or set of metrics that can quantify the maximum volume of information and communications technology (ICT) services that can be delivered by a data center for a given investment ("ICT capacity") and provide an indicator of the share of that capacity that is actually utilized ("ICT utilization"). Mr. Isaak co-wrote the ICT Capacity & Utilization Metrics data center industry whitepaper in collaboration with the other work group members.

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[4] https://www.thegreengrid.org/en/resources/library-and-tools/467-WP#76---Power-Metrics-for-ITE
[5] https://www.thegreengrid.org/en/resources/library-and-tools/460-Open-Standard-for-Datacenter-Availability-Tool
[6] https://www.thegreengrid.org/en/resources/library-and-tools/436-WP#72---ICT-Capacity-and-Utilization-Metrics

Data Center Design & Implementation Best Practices standard, *BICSI 002, 2010 ed*[7]
Building Industry Consulting Service International (BICSI)

Data Center Design & Implementation Best Practices standard, *ANSI/BICSI 002, 2011 ed*[8]
Building Industry Consulting Service International (BICSI)

Data Center Design & Implementation Best Practices standard, *ANSI/BICSI 002, 2014 ed*[9]
Building Industry Consulting Service International (BICSI)

Mr. Isaak developed the content within the following sections of the Data Center standard.

Role	Reference		Section Title
Author	Section 1	pp. 1-2	Introduction
Author	Section 5	pp. 25-44	Site Selection
Author	Section 6	pp. 45-91	Space Planning
Co-Author	Section 9	pp. 97-215	Electrical Systems
Co-Author	Section 10	pp. 217-255	Mechanical
Co-Author	Section 14	pp. 319-383	Telecommunications Cabling, Infrastructure, Pathways and Spaces
Co-Author	Section 15	pp. 384-402	Information Technology
Author	Appendix A	pp. 432-438	Design Process
Co-Author	Appendix B	pp. 440-453	Reliability and Availability
Author	Appendix C	pp. 455-463	Alignment of Data Center Services Reliability with Application and System Architecture
Author	Appendix D	pp. 465-468	Data Center Outsourcing Models
Author	Appendix E	pp. 469-472	Multi-Data Center Architecture

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[7] https://web.archive.org/web/20101229021341/https://www.bicsi.org/book_details.aspx?Book=BICSI-002-CD-v2&d=0

[8] https://web.archive.org/web/20120115173020/http://www.bicsi.org:80/book_details.aspx?Book=BICSI-002-CD-11-v2&d=0

[9] https://www.bicsi.org/book_details.aspx?Book=BICSI-002-CM-14-v5

Data Center Handbook, John Wiley & Sons, Inc., Hoboken, NJ, 2014, pp.163-181[10]

The Data Center Handbook is a collective representation of an international community with scientists and professionals from eight countries around the world. Fifty-one authors, from data center industry, R&D, and academia, plus fifteen members at Technical Advisory Board have contributed to this book.

The Data Center Handbook instructs readers to:
- Prepare strategic plan that includes location plan, site selection, roadmap and capacity planning
- Design and build "green" data centers, with mission critical and energy-efficient infrastructure
- Apply best practices to reduce energy consumption and carbon emissions
- Apply IT technologies such as cloud and virtualization
- Manage data centers in order to sustain operations with minimum costs
- Prepare and practice disaster recovery and business continuity plan

The book imparts essential knowledge needed to implement data center design and construction, apply IT technologies, and continually improve data center operations. The specific section authored by Mr. Isaak is Chapter 9, Architecture Design: Data Center Rack Floor Plan and Facility Layout Design.

Telecommunications Infrastructure Standard for Data Centers, TIA-942, 2005 ed[11]
Telecommunications Industry Association (TIA)

This TIA-942 Standard specifies the minimum requirements for telecommunications infrastructure of data centers and computer rooms including single tenant enterprise data centers and multi-tenant Internet hosting data centers. Mr. Isaak was one of six editors who co-wrote the standard along with other members of the TR42 Engineering Committee.

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[10] https://www.wiley.com/en-us/Data+Center+Handbook-p-9781118937570
[11] https://global.ihs.com/doc_detail.cfm?&csf=TIA&item_s_key=00414811&item_key_date=960613&input_doc_number=TIA%2D942&input_doc_title=#abstract

1.5   Presentations

Panel Discussion - Impact of Standards on Data Center & Building Facilities
Consultants Forum, Marrakesh, Morocco, September 18, 2017
Panduit Corporation

Standards and the Future of the Data Center
Consultants Forum, Marrakesh, Morocco, September 18, 2017
Panduit Corporation

Who's in Charge - Data Center Network Architecture, Topology or Infrastructure
Consultants Forum, Marrakesh, Morocco, September 18, 2017
Panduit Corporation

How Data Center IT and Facility Operations Can Improve Energy Efficiency
Data Center Summit Conference, San Jose, Costa Rica, August 10, 2017
Data Center Consultores

Applying ICT Capacity and Utilization Metrics to Improve Data Center Efficiency
Global Member and Non-Member Webinar, March 16, 2017
The Green Grid

BAS-BMS-DCIM-CMMS-CFD: What Are We Supposed to Measure and How Do We Measure It
Data Center Summit Conference, San Jose, Costa Rica, August 30, 2016
Data Center Consultores

Data Center Disaster Recovery Site Selection
Data Center 1-day Seminar, San Jose, Costa Rica, December 11, 2015
Data Center Consultores

Expert Panel, Cloud Services for the World
Data Center Summit Conference, San Jose, Costa Rica, August 18, 2015
Data Center Consultores

Data Center Operations and Maintenance
Data Center Summit Conference, San Jose, Costa Rica, August 18, 2015
Data Center 1-day Seminar, San Jose, Costa Rica, June 11, 2015
Data Center Consultores

How to Ensure Your Design Will Meet the Future Demand of the Data Center
BICSI Fall Conference and Exhibition, ½ Day Seminar, Anaheim, CA USA, September 29, 2014
Building Industry Consulting Service International (BICSI)

BICSI 002, TIA-942, Uptime – Which One to Use
BICSI South East Asia Conference, Singapore, November 25, 2013
Building Industry Consulting Service International (BICSI)

Data Center Commissioning – Lessons Learned
Data Center Summit Conference, San Jose, Costa Rica, October 22, 2013
Data Center Consultores

Building Best in Breed Data Centers – Cloud and Data Center Track
The Future of the Network Conference, Washington, DC USA, October 10, 2013
Telecommunications Industry Association (TIA)

The Most Common Errors in the Design and Implementation of Data Centers & How to Avoid Them
BICSI Central America & Latin America District Webinar, August 21, 2013
Building Industry Consulting Service International (BICSI)

ANSI/BICSI 002-2011 Data Center Design and Implementation Best Practices
BICSI South East Asia District Board Meeting, Singapore, April 26, 2013
Building Industry Consulting Service International (BICSI)

Data Center Redundancy and Reliability, Analyzing the Facility and the Enterprise
BICSI Canadian Conference and Exhibition, Niagara Falls, ON Canada, April 30, 2012
Building Industry Consulting Service International (BICSI)

Data Center Reliability – How Much is Needed & How to Validate You Got It
Minnesota Chapter Meeting, Minneapolis, MN USA, August 10, 2012
Association for Computer Operations Managers (AFCOM)

Data Center Services Reliability
Interop "The Future of IT" Conference, New York, NY USA, October 6, 2011

Expert Panel, Natural Disasters - Impact on Data Center Infrastructure and Telecommunications
Data Center Summit Conference, San Jose, Costa Rica, August 30, 2011
Data Center Consultores

ANSI/BICSI 002-2011 Data Center Design and Implementation Best Practices
Data Center Summit Conference, San Jose, Costa Rica, August 29, 2011

High Reliability in Data Center Design
Data Center Summit Conference, San Jose, Costa Rica, August 29, 2011
Data Center Consultores

Keynote Address - From the Server Closet to the Data Center
Small Business Virtual Web Conference, October 21, 2010
Information Week / bMighty

ANSI Standards - Beyond the Technology Life Cycle
Data Center World Conference, Atlanta, GA USA, March 21, 2006
Association for Computer Operations Managers (AFCOM)

Data Center Standards Review
Data Center World Conference, Chicago, IL USA, October 11 and 12, 2005
Association for Computer Operations Managers (AFCOM)

Ask the Experts Panel
Data Center World Conference, Chicago, IL USA, October 12, 2005
Association for Computer Operations Managers (AFCOM)

Mission Critical Operations – Trends and Best Practices
Data Center World Conference, Las Vegas, NV USA, April 21, 2005
Association for Computer Operations Managers (AFCOM)

Physical Constraints within Networking
Masters in Telecommunications, Adjunct Instructor, February 20, 2004
Saint Mary's University of Minnesota

Design Best Practices for Critical Facilities
The American Institute of Architects – Minnesota Chapter, Minneapolis, MN USA, May 16, 2000