Typical Client Profile and Scope of Work:

Power system failure is not an option for the mission critical data center operations of large, international financial institutions. Power flow must be monitored and real-time data analytics must be clearly expressed through instantaneous, user-friendly dashboard monitoring screens. Data center operations personnel know that comprehensive situational awareness of every aspect of their internal power flow, backup generation, and utility interconnections provides the ability to identify and correct power system anomalies before they become serious power problems which can result in lost efficiency, damaged equipment, injured employees, or prolonged power outages.

Power Analytics has been protecting the data center operations of several large national and international financial institutions for many years with our sophisticated power system monitoring and analysis Paladin® software suite.

Mission Critical Challenge:

Effectively and efficiently managing the power infrastructure of a data center is a Herculean task. The power usage, efficiency, and safety of each asset must be monitored in real time. Stringent Power Utilization Effectiveness (PUE) performance metrics must be met. Automated controls must be in place to meet unexpected emergency situations. Data center management must be able to meet the short-term, daily objectives of safe, reliable, and low-cost operations, while also planning to achieve various long-term goals such as: maximization of energy efficiency best practices, facility expansion, and the potential use of additional on-site Distributed Energy Resources (DER) for power backup protection and possible future power market participation.

"Managing and assessing energy performance requires the use of established data center performance metrics, and metering is needed to provide the data for such metrics."
U.S. Department of Energy,
Data Center Metering and Resource Guide, July 2016

Power Analytics Case Study – Data Centers
Critical Infrastructure Protection

Process and Analysis:

All of our data center projects begin with a power flow analysis by the Power Analytics professional engineers. Each data center system is configured with a Paladin® DesignBase™ power model and the full suite of Paladin Live™ including: Gateway™, DesignView™, and Paladin Reports. The Paladin Live system, in conjunction with the DesignBase power model, provides real-time analytics of the electrical power system at each data center site, including real-time arc flash monitoring.

While DesignView allows data center operators to monitor the power system with state-of-the-art graphics, the analytics on the one-line screens enable operators to determine if the system is operating as designed and to identify potential problems. The Paladin Blackboard™ screens provide the ability to run simulations on the system to test and verify maintenance procedures. The Trending™ and Waveform Capture™ capabilities permit operators to retrieve and display historical data for analysis and investigations of anomalies.

We provide comprehensive
data center situational awareness.
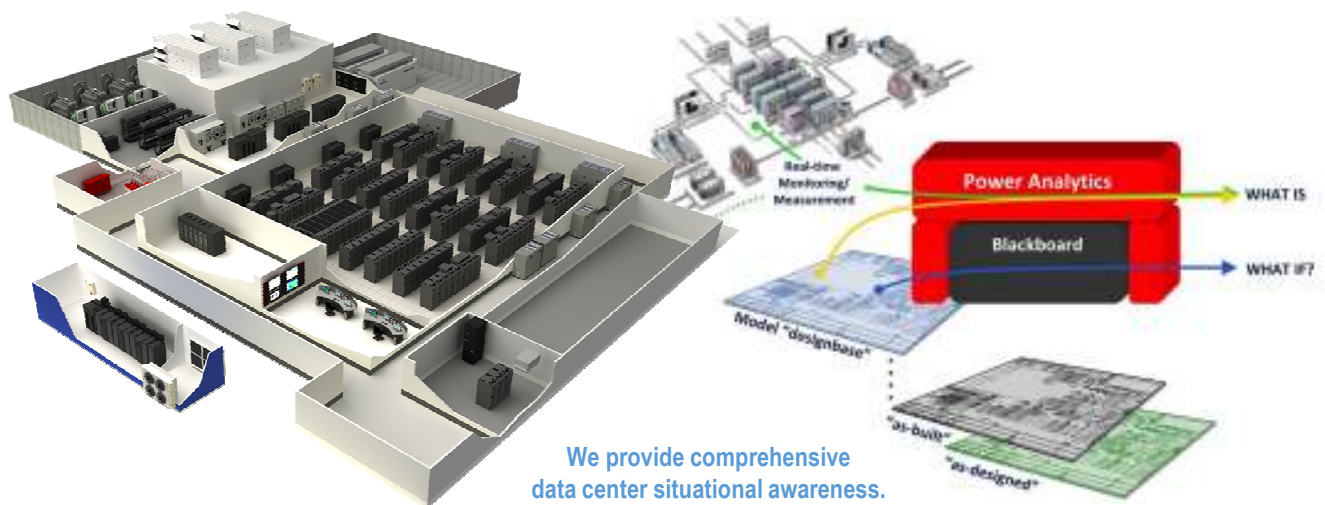
Solution:

For our national and international financial clients with multiple data center sites, Power Analytics installed the Paladin Live monitoring and analytics software at each site, and installed a single Enterprise level system (which combined the information from the multiple data centers) at the client's headquarters. Several of our data center clients have also installed White Space Management (WSM), which provides a visual display of all the Remote Power Panels (RPPs) in the data halls and allows operators to add/remove/modify the breaker configuration on each panel. These RPP widgets calculate kW and kWh on a real-time basis with meter data inputs from panels and archive this data for trending and analysis purposes. If at some future time, any of these entities want to install an on-site microgrid, the Paladin Live system they already have in place can control and protect that energy resource.

Value Provided:

The Paladin DesignBase power model, when used in conjunction with Paladin Live, allows data center operators to monitor and analyze their power systems in real time. In addition, the power model enables data center management to predict the potential impact of any changes to facility methods of procedure (MoP) or power system upgrades—such as capacity expansion, energy efficiency measures, or the addition of renewable/alternative backup generation, including a full-scale microgrid. Each of our financial institution clients now have a holistic. real-time view of their data center power systems that can evolve into a command, control, optimization, and protection system as needed.

**For more information or to request a demonstration, contact
Sales, Power Analytics**
sales@poweranalytics.com   (919) 882-0300