

Life Is On

Schneider
Electric

Federal data center optimization initiative

Federal data center solutions that reduce operating costs while delivering the highest reliability.

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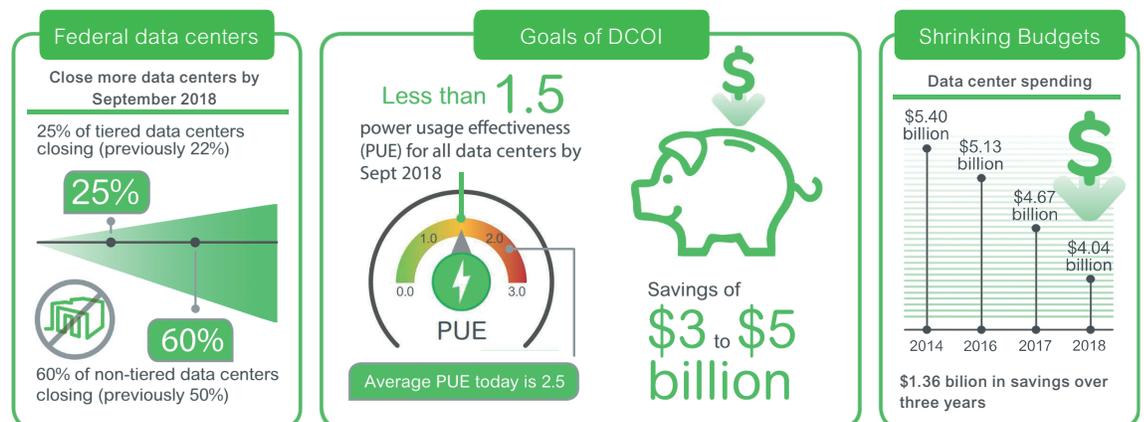
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Consolidating your data center

Achieve measurable, sustainable savings and enhanced reliability.

When your mission is critical, so are your data centers. But historic growth in the number of data centers is inefficient and unsustainable. How will you reduce and optimize your data centers among shrinking budgets?



For the U.S. government, IT is key to securing and advancing some of the most important missions in the world. But you face unique challenges. Data center managers must ensure availability of mission-critical IT while reducing operating costs and supporting the swift evolution of technologies that demand higher densities, more flexibility, and more visibility. Among these challenges, government mandates and data center consolidation initiatives require you to identify and eliminate duplication and waste.

It's no easy undertaking, especially with limited funds — unless Schneider Electric is at your side.



What is the data center optimization initiative?

- DCOI – March 2016
- Builds upon and supersedes DCCI
- Data center efficiency goals same as EO 13693 (FDCCI)
- PUE goals remain below 1.5 for existing, 1.2/1.4 for new
- Data center with power usage effectiveness (PUE) 1.5 or over to be shuttered by FY 2018
- No new data centers to be constructed without federal CIO approval
- Agency CIO responsible for implementing and measuring progress toward goals
- DCIM must be deployed in all data centers by FY 2018
- Compliance with DCOI goals by end FY 2018

Important Facts

According to the U.S. Government Accountability Office:

- 1,690 government data centers were closed.
- There are currently 11,700 government data centers in operation.
- Approximately 2,000 more will be consolidated.
- 19 of 24 participating agencies saved \$1.1 billion in cost savings and cost avoidance from 2011 — 2013.
- 21 agencies had collectively reported planning an additional \$2.1 billion in cost savings and avoidances by the end of fiscal year 2015.

Rely on Federal Data Center Solutions by Schneider Electric

We combine customized strategies with innovative technologies and services to drive maximized savings and the highest reliability.

Save up to **30%**
with economizer modes on cooling systems¹

Save up to **10%**
with more efficient power equipment²

Save up to **15%**
with hot aisle containment³

\$ Capital in short supply? Leverage guaranteed savings and private sector financing to pay for your consolidation. Energy savings performance contracts achieve up to 50% savings.



Get the most from your investment

To help meet mandates and data center consolidation initiatives, we create customized strategies that fit your needs for measurable savings, enhanced reliability, and even funding.

Assessment and planning for targeted approach

We'll help you identify which data centers can be consolidated for maximum efficiency gains and improved power usage effectiveness PUE.

Infrastructure improvements that benefit all parts of your operation

Our integrated, high-density, high-efficiency IT room systems increase availability and agility while lowering operating costs.

Fund improvements with energy savings — guaranteed

With an energy savings performance contract (ESPC), you can fund energy improvement projects using private financing, and it's paid for through utility saving over time. If you don't see the savings, Schneider Electric will write you a check. Performance contracting is a great strategy for federal IT departments trying to do more with shrinking budgets.

Understanding PUE

We use a three-part methodology as a standard approach to address the challenges of measuring PUE.

1. Establish a standard to categorize data center subsystems as either:
 - IT load
 - Physical infrastructure
 - Not included in the calculation
2. If a subsystem's power consumption cannot be directly measured because it is shared with non-data-center loads, estimate the power using a standardized methodology for that subsystem type.
3. If a subsystem's power cannot be directly measured because of technical barriers to measurement, estimate the power using a standardized methodology for that subsystem type.

Data center optimization life cycle

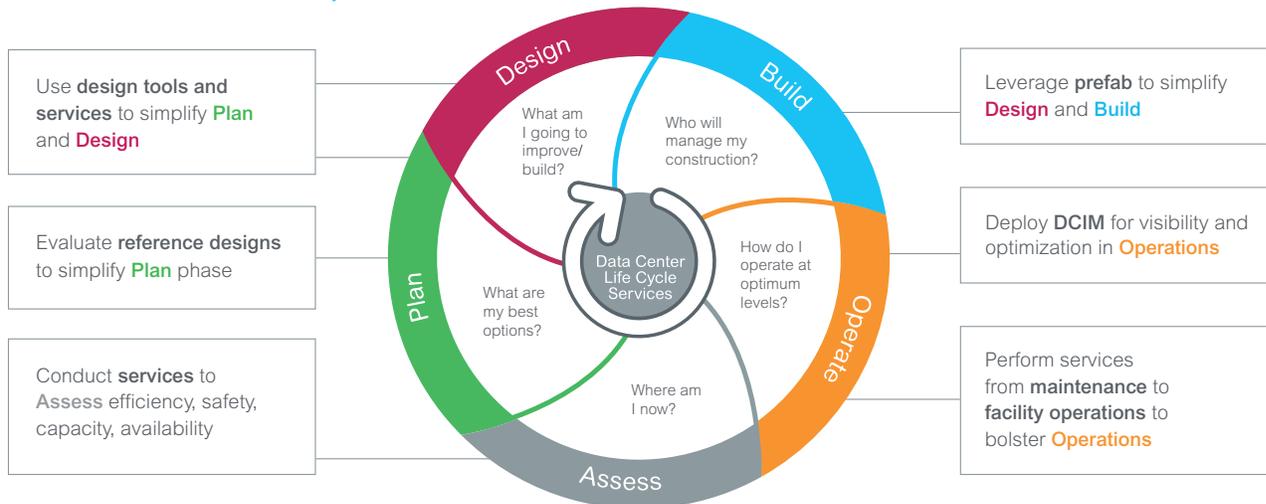
Schneider Electric has decades of experience with mission-critical data centers of all sizes and configurations. This experience enables us to offer services throughout the life cycle of your data center. From efficiency and consolidation assessments, to equipment installation and new data center design and construction, Schneider Electric services are tailored to meet your needs. We can service any equipment, any brand, at any time.

Solutions you can count on — for every data center need

It's a challenge to find federal dollars, meet mandates, and achieve your goals while never compromising reliability. But Schneider Electric cuts through the complexities and delivers the reliability that is critical to your organization.

We can provide a single solution or integrate every aspect of your data center infrastructure:

- Power — From substation to rack and everything in between, including modular high-density UPS.
- Cooling — Intelligent thermal containment solutions to achieve maximum power density.
- Rack systems — Rack enclosures, accessories, and air containment to support any vendor's IT equipment.
- Physical security — Access control and monitoring for one or multiple facilities from a single dashboard.
- Management software — Exclusive integrated software for visibility and control over energy efficiency and usage.
- Life cycle services — Receive tailored services to ensure your data center maintains availability, optimum efficiency, reliability, and safety throughout the entire life cycle, from planning to ongoing operations.



A life cycle services approach helps mission-critical data centers reduce, eliminate, improve, and create

REDUCE

- Number of decisions and complexity of data centers
- Number of equipment and service providers
- Operating costs
- One-time engineering
- On-site fabrication
- Maintenance
- Human error

ELIMINATE

- Oversizing
- Component-level specification process
- Unusable capacity
- Rework
- Surprises

IMPROVE

- Efficiency, power density
- Deployment speed
- Predictability, including availability, capacity, and density
- Aesthetics

CREATE

- Standardized reference designs
- Solution-level performance specifications
- Simple specification methods
- Automated selection and design tools

Take control of your remote IT environments

All too frequently, businesses lack visibility to their remote IT installations, leading to a chaotic and unmanaged environment. Unlike data centers, which may have qualified staff on hand 24/7, these remote environments may only be accessible to unqualified local staff whose primary role has nothing to do with IT. During normal operation, these sites frequently go unchecked and unsupervised. There is often no clear record of what is installed, what capacities may or may not be available, and what may be in some state of malfunction. This is where Schneider Electric can help.

Four steps to controlling your remote IT installations



Evaluate your current assets

Our first step is to review your current list of assets, often with data you supply. However, we can also conduct an on-site asset collection or assessment. The first provides a simplistic site inventory including asset age, status, part number, and serial number. The latter is a more comprehensive review of the IT environment including power and cooling performance, inventories, layouts, pictures, and recommendations.



Determine your needs

Once inventories are taken and sites assessed, recommendations are made to bring sites up to standards. Any upgrades to IT Infrastructure systems can be managed turnkey by Schneider Electric.



Connect sites to our experts

One option to maintaining the integrity of remote IT infrastructure is to digitally connect all related devices to the Schneider Electric StruxureOn service. This connects your infrastructure systems to the experts who can be a primary or secondary set of eyes for proactively monitoring any system faults 24/7. Connecting your assets makes them accessible via the StruxureOn mobile app and links you directly to Schneider Electric customer service for quick issue resolution.



Manage infrastructure systems

It is a common scenario: You are responsible for a "fleet" of IT infrastructure systems, you have limited staff on location, and there are constant issues happening or about to happen. Managing incidents will keep local staff focused on their primary roles, keep systems up, and the business functioning. Again, this is where Schneider Electric can help with infrastructure fleet management. An enhancement to the StruxureOn service, Fleet Management adds on-site resolution to system faults, helping to spot a problem before it has a chance to escalate, fixing it quickly, and greatly reducing the overall mean time to repair.



Solving customer challenges



Customer example: Site assessment

Customer challenge

The customer was spending too much time managing different systems and equipment across all field offices. When any IT equipment failed or needed to be updated, the facilities department had to coordinate both a Schneider Electric technician and an electrician to resolve the issue. Scheduling issues often resulted in multiple visits to the site for additional maintenance, creating frustration and a loss of time and money. The customer needed help optimizing the process, removing risk, and improving speed of service.

The solution

Schneider Electric implemented turnkey operations for each of the facility sites.

All end-user products are managed by Schneider Electric as a single point of coordination, including planning, preparation, and execution of all IT facility operations.

Benefits to the customer

The customer has greatly reduced their risk and is able to focus on the full portfolio of their sites per region. Countless man hours have been saved and risk has been removed.

Customer example: Fleet Management/StruxureWare

Customer challenge

The customer had no IT staff on-site and needed help increasing the speed of recovery and equipment installation.

The solution

Fleet Management Service from Schneider Electric is an all-inclusive package that provides proactive monitoring, remote troubleshooting, and repair or replacement of equipment in the event of failure, regardless of UPS age or location.

Benefits to the customer

Utilizing Schneider Electric's Fleet Management Services and StruxureWare™ software

solutions, the customer saw a 99% drop in site outages and greatly increased their availability and site up-time.

Schneider Electric offers a wide variety of services to help your critical equipment stay up and running with as little management as you desire. Let us know how we can help with your challenges.

Integrated IT solutions

Five steps to easy integration

Schneider Electric's integrated IT solutions simplify infrastructure supply chain, reduce time and cost to deploy, and reduce the overall complexity of your IT solutions and operations.



Choose your rack

Schneider Electric has the right rack system to fit your needs. Choose from traditional IT cabinets, CX furniture enclosures, wall-mount enclosures, or multi-bay enclosures.



Select your components

Customize your racks and have them prebuilt and preconfigured with your power strips, UPS, data cabling panels, organizers, fans, and other IT gear.



All components installed

Schneider Electric has a comprehensive selection of components, all installed at customer-defined locations within the rack.



Delivered on shock-proof pallets

Our shock packaging pallets are designed to safely load, transport, unload, and deploy a cabinet with up to 2,000 lbs of IT equipment installed.



Rack installed at your location

Schneider Electric can help you with everything from electrical and mechanical installation, to third-party management services. We're here for you.



Simplify your IT infrastructure solution

Keep up with the speed of business with integrated infrastructure solutions from Schneider Electric.

- Improve speed and simplicity of deployment
- Reduce costs and time associated with managing multiple solutions providers
- Boost uptime of IT system with a standardized solution

Our integrated IT rack system helps lower deployment costs and time by providing a full rack with all rack components and UPS installed, delivered to you on a shock pallet, and installed at your designated location.



- Reduce total cost per site by consolidating vendors and shipping costs
- Decrease installation and technician costs with majority of components preinstalled
- Speed installation by lowering the number of components installed on site
- Lower complexity with uniform parts and locations within rack

- Reduce tracking of multiple orders and vendors for the site
- Ensure availability of all components to eliminate delays in installation

Solving customer challenges

With limited or no IT staff on site, the customer needed to reduce equipment installation time in each store. Also, each location was operating independently, creating confusion when trying to address IT issues.

The solution

Schneider Electric preinstalled the required equipment in each rack at our factory, assigning specific rack locations to specific data center equipment.

Benefits to the customer

1. Simplified deployment by bringing six vendors down to one
 - One quote, one PO, one order to track (vs. six)

2. Reduced shipping cost
 - One configured rack vs. six separate components with separate shipping costs
3. Increased speed of install
 - Reduced complexity during store installation

Schneider Electric offers a wide variety of services to help your critical equipment stay up and running with as little management as you desire. Let us know how we can help with your challenges.

StruxureWare for Data Centers

DCIM simplifies, automates, and manages critical infrastructure in and around the data center to optimize efficiency.

Power and energy management

Power and energy management systems help you maximize your data center uptime and power distribution reliability, improve your energy performance, and enhance your operational efficiency.

Generators and fuel tanks

Having backup is critical to disaster recovery and business continuity planning, and affects availability and service level agreements (SLAs).

Access and security

Access control provides the right access to the right people. Plus, in order to be security compliant, agencies must have audits in place. Security cameras provide audit trails.

Cable management

Accurate and timely knowledge of the critical elements of the cabinet, such as network cable availability, ensure better planning and optimization.

Power/UPS health

Power health is absolutely critical to ensuring and maintaining uptime and business availability. It also helps deliver (SLAs).

Switchgear

Incorporating switchgear provides a more overarching view of power consumption and shows the quality of power. This knowledge informs managers of potential business impacts in the data center.

Cooling/HVAC/CRAC

Too much heat in a data center results in downtime, whereas appropriate cooling ensures availability and protects business assets. Cooling information enables insight for proper optimization to enable greater efficiency, improved PUE, and reduced OpEx.

Asset management

Enables compliance for FITARA and the understanding of your true asset footprint. Identifies the unneeded assets to reduce costs.

Compute utilization

Shows the cost of your operating IT assets and provides savings opportunities. Identifies candidates for consolidation to reduce footprint.

Available/occupied rack space

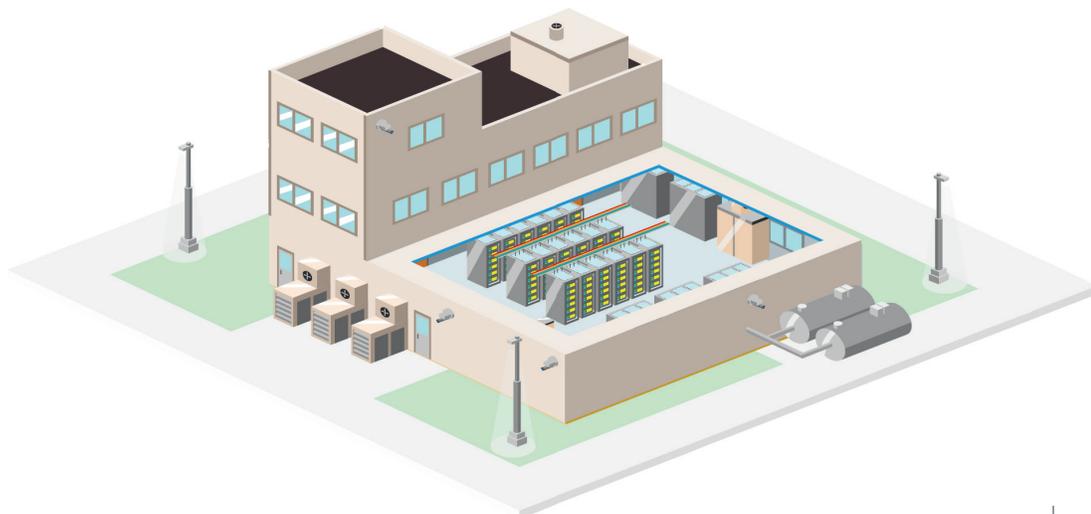
In operations and planning, this helps to understand physical capability and optimize available space to extend the life of the data center and reduce CapEx.

Power consumption

Provides visibility for power optimization and can extend the capacity and life of the data center by reducing unnecessary power consumers.

Building management

Provides a single interface that ties into your building management system for one solution.



DCOI metrics and how we can help

Metric	Definition	Schneider Electric application	Method
Energy metering	Floor space measured/total floor space	DCO-Colo	Illustrate the metrics regarding floor space in the data center
PUE	Total power into DC/power for IT load	DCO, energy efficiency	Captures power at various points in the chain Shows the losses and trend of the PUE
Virtualization	Count hardware servers virtualized/total servers	DCO, IT optimize, ETL	Illustrates the virtualization of the IT assets
Server utilization	Percentage of busy time within the IT asset	DCO, IT optimize	Measures CPU utilization and illustrates energy usage
Facility utilization	Percentage of floor space with a rack containing at least one IT asset Active rack count sq. ft./rack/total floor space	DCO-Colo, Insight, StruxureWare Power, and StruxureWare Buildings	Illustrates total floor space, inventory report showing usage of cabinet

Measure savings in the data center

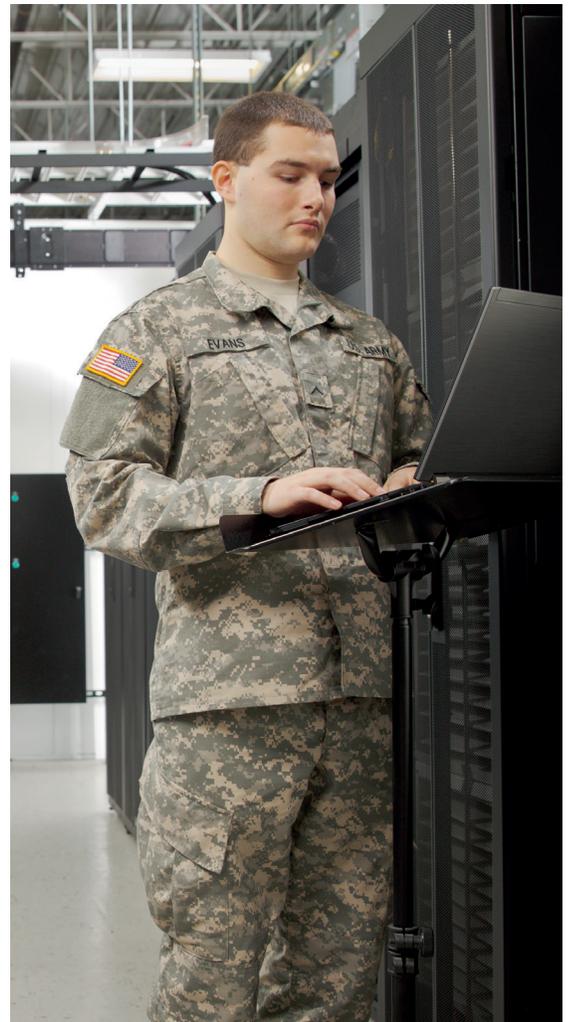
Data center operations

- **Energy cost**
Cost of the energy use of the cabinet with time trending
- **IT optimize**
Identify retirement assets for cost avoidance, assets costs
- **Cooling optimize**
Illustrates cooling usage and savings over time
- **Energy efficiency**
PUE improvement over time, and costs of the subset losses
- **Data center expert**
Reporting metrics can illustrate reduction in energy costs over time

Data center closing

Targeted reduction number of data centers and in data center footprint
Schneider Electric solution: Data center Colo

- Identifies metrics about the data center floor space
- Provides reporting metrics about floor space
- Shows reduction in data center floor space utilization



Energy efficient data centers where you need them — Anywhere in the world



Like data center in a box, the Schneider Electric containerized and modular computing environments can go anywhere your agency goes.

Schneider Electric builds standardized and custom modular data centers using ISO containers in both high-cube and standard height formats. Our data centers for military use are built to withstand the most demanding conditions and environments, enabling quicker deployment, portability, predictability, and lower cost with quick connections for power, cooling, and data.

Features such as anti-vibration pads, anti-ballistic armoring, DoD and NATO approved locks, or TEMPEST protection are included in our designs. The data centers can fit inside aircraft cargo bays for air transportation with quick deployment anywhere in the world. Should you prefer to build out a complete data center inside a shell using prefabricated solutions, or require a rapidly deployable stand-alone data center, we can build a solution to meet your needs.

Schneider Electric has experience building these solutions for numerous federal civilian agencies, the U.S. Armed Forces, NATO, the Intelligence Community, and friendly foreign governments.

The consolidated data center: Keep it cool efficiently with EcoAisle high-density containment pods.

In consolidated data centers, more hot equipment is concentrated in a smaller space. A thermal containment system from Schneider Electric is the most energy-efficient way to ramp up your power density. The use of the high-density pod overlay method can allow an existing legacy data center to transform into a high-density, high-efficiency data center during a consolidation project. The self-contained nature of the pod means that minimal planning, design, or engineering is required to place a pod in any existing environment, allowing for a high degree of standardization and reduction of the deployment cycle time.

Industry experience, technical knowledge, application expertise, and technology and service solutions to help you manage the total life cycle of your data center.



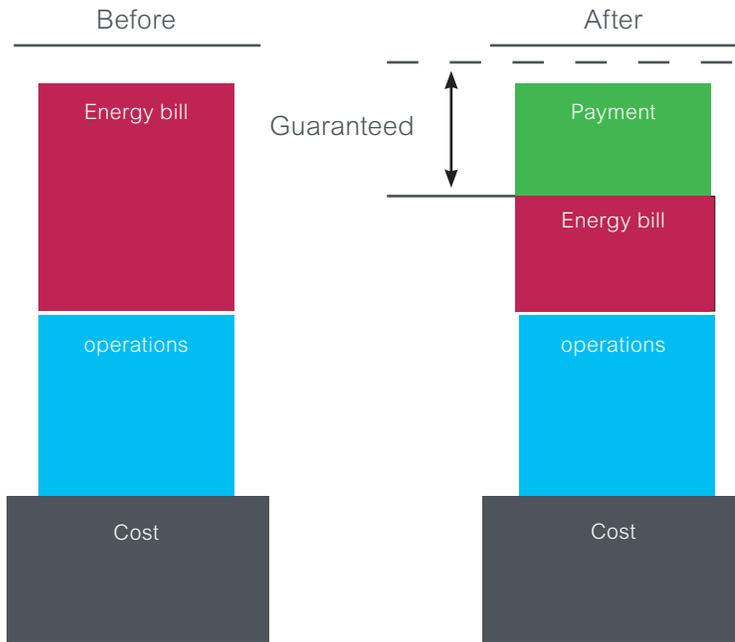
- EcoAisle high-density containment pods enclose the hot or cold aisles, preventing the hot and cold air from mixing, and “right-sizes” cooling airflow.
- Other key features include a fire-safe system, high-efficiency lighting, breakaway emergency doors, and over-aisle access.
- EcoAisle high-density containment pods increase data center cooling efficiency while protecting critical IT equipment and personnel.

What is an energy savings performance contract?



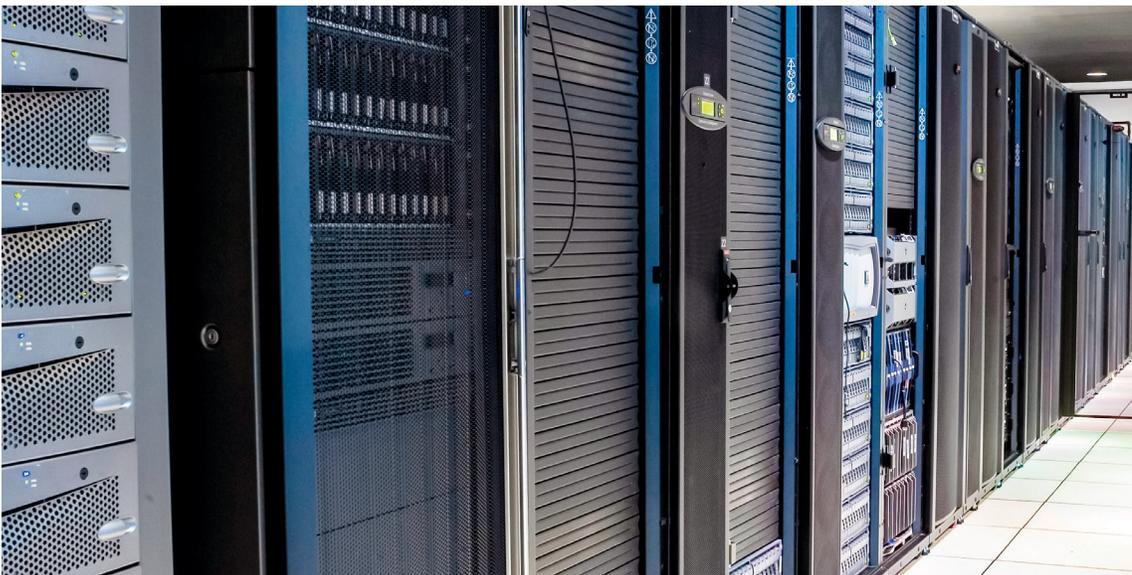
The cost of operating and maintaining federal agency data centers is extremely high. Although mandates and initiatives have been put in place to address these costs through energy conservation, the initial capital investment can be

a difficult hurdle. Energy savings performance contracts (ESPCs) provide federal agencies with an alternative financing option for energy-related facility improvements.



An ESPC is a partnership between a Federal agency and an energy service company.

ESPCs federal agencies to conduct energy projects with no upfront capital costs, minimizing the need for congressional appropriations.



How we solve customer challenges

Customer: Large federal agency

Customer challenge

The customer had no data center visualization of floor or racks, and no capacity knowledge, and was not utilizing an integrated solution. They were using a legacy monitoring system and were manually collecting energy monitoring data. They needed a single modern DCIM solution that would also leverage the legacy monitoring system.

The solution

Schneider Electric installed a DCIM system and integrated the existing legacy monitoring system, allowing the customer to continue leveraging the existing building management system.

Benefits to the customer

Now the customer has data center visuals at the rack and floor level, capacity knowledge, and real-time data from the legacy system into the new DCIM. The unified, singular management of an increasingly growing data center allows them to manage consolidation into the single data center.

Customer: Large federal agency

Customer challenge

The customer had no insight into the environment of the data center and no insight into the power usage. They needed a better asset management solution that could integrate with their existing change management ticketing system.

The solution

Schneider Electric installed Data Center Expert, operations, capacity, and change systems consistent with FITARA for asset management.

Benefits to the customer

The customer now has insight into power utilization at the individual cabinets, as well as power insight into the upstream consumers. They also have an automated collection of critical power and environmental, and no longer have to gather this manually. In addition, they have streamlined the change process by leveraging the existing ticketing system with the asset management tool of record.

Customer: Large federal agency

Customer challenge

The customer was required to capture rack-level power information such as current, power usage, available capacity, and redundancy within the cabinet. They had:

- No current methodology to capture rack power capacity
- A desire to gain knowledge of power usage (kwh) over a period of time for both cabinet level and asset level
- A desire to present this information to existing cabinet users in chargeback model

In addition, their data center was segmented into four separate business units, and they needed to be able to respect security requirements of those business units, all of which resided in the data center on the same UPS, (PDU's) and cooling systems.

The solution

Schneider Electric installed Data Center Expert, operations, capacity, and energy cost systems

Benefits to the customer

- Now with DCIM, the customer has visibility from both a power usage and capacity vantage
- They use that information to sustain a chargeback model for the data center based on the individual business units
- The DCIM solution resides on a network segment, completely separate from the other four business unit networks to respect the network security requirements
- From an asset implementation perspective, they now provide advisement to each unit, respecting the need for data center segmentation and ensuring that the assets are properly segmented physically
- Utilizing the portal, the administrator can view a dashboard of the entire data center, showing the key power, capacity, and alarming metrics



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Your facilities play a critical role in meeting your core mission, so those facilities need to operate intelligently and at maximum efficiency. We can help.

Schneider Electric provides a broad range of intelligent, integrated solutions from enterprise-level software and supervision to hardware and application components across the five critical domains of your facilities' infrastructure: power management, process and machine management, IT room management, building management, and security.

We have the largest team in the industry dedicated to the federal government. With decades of industry experience, knowledge application expertise, and technology and service solutions, we can help you manage the total life cycle of your data center.

Schneider Electric has solutions you can rely on.



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