EcoStruxure™
Innovation At Every Level

AGILE

Taking the Guesswork out of Building Data Centers

WWT — St. Louis, MO

World Wide Technology relies on flexibility, customized racks, power and cooling from Schneider Electric to design, build, educate, demonstrate and deploy solutions in its Advanced Technology Center and Global Integration Centers.

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With real data center scenarios, World Wide Technology helps its customers be more agile and save time and money. Its Advanced Technology Center is a blank slate where building a proof of concept closes the divide between what customers think they need and what they actually require. Its Global Integration Centers bring those concepts to life, at scale.

Challenge

Create innovative testing and production environments to bring together a vast range of partner solutions, where real data centers can be built and rebuilt quickly and easily to simulate the business needs of different customers upon request

Resolution

Customized, integrated racks and flexible power and cooling solutions to enable speed, predictability and agility.

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Overview

Building a data center from the ground up is a big undertaking. Trying to find space, figuring out what equipment to invest in and knowing how to configure and plan for capacity requires some guesswork. Or does it?

World Wide Technology's (WWT) Advanced Technology Center (ATC) is a research lab and testing environment where a data center can be constructed by request. Customers can see how — and if — it meets their specific business needs before buying and deploying.

What's more, the company's Global Integration Centers, located in North America, Europe and Asia, are climate-controlled production environments with advanced networking, secure remote access and ISO-certified procedures. Here, certified engineers with logistical and technical expertise help reduce the risk, cost and complexity of IT deployments.

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Objective

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Advanced Technology Center: a safe place to experiment

The ATC is a physical campus with global virtual access and labs used for demos, proofs of concept, building reference architectures and more. It's known as "Silicon Valley in St. Louis" for bringing together the latest products and solutions from countless technology providers — with infrastructure being the final piece in the ecosystem.

"One of the original goals behind the ATC was to provide our customers the opportunity to evaluate different OEMs in one place and at one time," says Mike Parham, technical solutions architect, WWT. "We wanted to create a user-friendly, unbiased environment that could show how all the various solutions work together — including those from the major players in Silicon Valley."

WWT is using EcoStruxure as a management platform to help run the ATC and enable customer demonstrations. But it's not simply a showroom; it's an incubator, a place for customers to build and experiment with live working data centers that can be scaled up and down to mimic their real environments. Select demos can also be viewed remotely via a cloud-based portal so customers don't have to travel to the ATC to reap the benefits.

The ATC is also a safe place for failure. Breaks that could not otherwise be tested for fear of downtime are purposeful. As businesses large and small start moving to the edge, assessing new scenarios will be especially important. The new remote environments add uncertainty and complexity compared to more centralized data center models.

WWT's engineers help customers configure and test equipment and applications from many different providers. The ATC also runs edge applications and demos and can advise on IT methodology that is standardized, scalable and modular. As a result, customers often look at their data centers in entirely new ways.

"We're a solutions innovator," says Parham. "We start by asking what problem you are trying to solve, not what equipment you need. A customer might definitively think it needs 30 racks of IT equipment, but we'd stop and ask what those 30 racks are really meant to do."
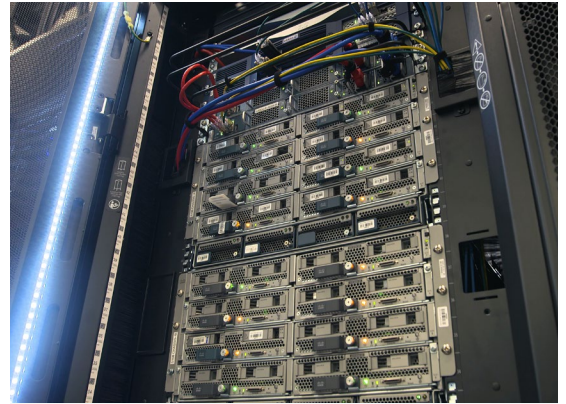
Solutions Spotlight

World Wide Technology uses the following Schneider Electric solutions in its Advanced Technology Center:

- Symmetra PX 250
- Symmetra 1.6MW
- iBusway
- APC NetShelter 52U/30" wide/48" deep Custom rack, pre-integrated with accessories
- APC 2nd Gen APC Rack PDUs
- APC Customized Rack PDUs
- InRow RC 300MM, 600MM, InRow RP 600MM

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How to go from six racks to 150+ without building an entirely new space

The first iteration of the ATC started in 2009 with six racks. The next iteration, in 2013, expanded into other spaces on the campus using customized Schneider Electric racks and grew to a whopping 150+ racks.

"What we do doesn't fit into the traditional data center scheme," explains Bill Hoelzer, a WWT facilities technical architect. "In most data centers, you put the gear in, set it and kind of forget it for about three years. Whereas in the ATC, equipment is coming in and out of the racks, and our power requirements are changing constantly. We never know what a customer will ask for."

Housing such capacity meant using alternative spaces such as former classrooms. Without the benefit of a dedicated, purpose-built data center space, rack configurations as they were wouldn't work.

Parham says that's when they turned to the Schneider Electric team for a customized rack solution. The result is a taller, wider, deeper 52U cabinet to maximize the footprint and provide an additional 10U per rack space.

"We worked with Schneider Electric to come up with extra tall, extra deep and extra wide racks that allowed us to bridge the gap between having to build a new space and using the space we had available," says Parham.

Hoezler adds, "We told the custom rack systems team what we needed — specifying down to the size of the rack, the way the PDUs were mounted in the rack, the amount of clearances we had and how it moved around. That's how we came up with the 52U rack. Realizing we pay for square footage not cubic footage, taking up as much cubic feet vertically as possible put money back in our pockets. Plus, the more customer equipment we could put into an environment, the more efficient we can be about moving more customers through there."

The customization worked out so well, it's now the standard footprint for all other racks. Every rack that's placed will be flexible enough to "accommodate anything a customer requests," according to Hoezler.

"The flexibility allows us to test a newly released product for our partners as well. We can show them how it works in the broader environment," says Parham.

As customers see what the customized racks do, the demand grew. Higher demand, says, means lower lead times are needed. That called for a more efficient way to assemble the racks when building out data center solutions for deployment in the integration centers.

Before, everything (PDUs, for example) arrived in separate boxes, which added hours to the process. Schneider Electric wanted to ensure optimal speed-to-market for WWT without adding cost and agreed to pre-integrate at the Schneider Electric factory before shipping to the center.

"With the customized racks," Hoezler says, "cable management is in. Doors are on. Rails are set at the right length, and holes are punched. The rack shows up, and it's ready to go. The huge amount of packing materials alone was a waste, not to mention the amount of floor space, people and time taken up to manually integrate these racks. APC is a trusted advisor in rack and packaging and committed to delivering a finished product. In turn, our delivery time was improved."

Chilling out and standardizing

It takes more than customized racks to make a data center flexible and agile enough to go from low-density to high-density in 24 hours. WWT's customers often struggle with scale as well, so Parham says they became their own test case. "Power and cooling are very complicated, and companies tend to overbuild. They go with a raised floor, and it's very hard to calculate."

WWT found predictability with cooling solutions from Schneider Electric. "The products allow us to be very agile. One rack can go from zero or low density when it's not consuming any power to, the very next day, consuming high density, 20 Kw of power. Without the in-row cooling and hot aisle containment, we couldn't be as flexible nor allow our customers to build on the fly. Hot aisle containment has also eliminated hot spots," Parham explains.

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– Bill Hoelzer
  Facilities Technical Architect
  World Wide Technology

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Global Integration Centers: bringing the plan to life

At the Global Integration Centers, plans and designs conceived in the ATC can be implemented. The centers provide controlled environments where tasks are performed on equipment according to customer requirements. Companies use integration centers to:

- Stage their entire data center technology infrastructure during facility construction or preparation

- Rack and stack components from multiple manufacturers into ready-to-deploy systems

- Configure thousands of network, collaboration, security and end-user devices

The centers are constantly and quickly changing to accommodate different project timelines, power requirements and IT types. Schneider Electric power infrastructure enables this flow and gives WWT the flexibility it needs to support all the variances.

Hoezler adds, "No other in the industry offers a modular style UPS at the size like Schneider Electric. We've also standardized the busway with Schneider Electric equipment. Overhead distribution is a critical part of how we can be so flexible. I don't have to hire an electrician to re-run power every time I need to change the rack. I simply change it at the overhead level."

Solutions Spotlight

World Wide Technology uses the following Schneider Electric solutions in its Global Integration Centers:

- iBusway
- Symmetra PX 40kVA (Modular UPS)
- Symmetra PX 250kVA (Modular UPS)
- InRow Modular RPP (480v/415v)
- Uniflair Perimeter CRAC
- Integrated Rack Packaging Testing and Partner Certification with APC NetShelter

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Taking the guesswork out of building data centers

Historically, building a data center has involved a lot of guesswork, according to Parham. Changing the rack load and adding IT equipment generates more heat. Yet, the more cabling and piping underneath a raised floor, the more the airflow is blocked.

 "There's no crystal ball to foresee future needs, but with the containment methodology and row-based cooling, we can be very predictable in buying power and cooling," says Parham.

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From product benchmarking and design validation to functionality testing and upgrades, the technology centers allow customers to preserve capex and adopt more of a pay-as-you-grow methodology. They can build an infrastructure for today and experiment for tomorrow without having to make the investment up front.

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– Mike Parham
  Technical Solutions Architect
  World Wide Technology

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Leading to the edge

As companies expand out to the edge, what was once considered a small server room is now thought of as an edge data center, according to Parham. In this new context, and because edge deployments will be more distributed than ever, he believes both technology centers will play an increasingly critical role in edge computing and so will Schneider Electric.

With performance directly impacting end users, edge data centers are mission-critical to business. Yet, as the number of deployments go up, the amount of resources to manage these remote sites shrinks. Making sure an edge data center is standardized, redundant, optimized and as automated as possible before deployed is of utmost importance. To that end, the ATC is enabling experimenting — and ultimately success — at the edge.

Schneider Electric's secure infrastructure is already providing the physical layer support for WWT's edge applications and demonstrations as well. This includes racks, cooling, UPS, power distribution units and software. This is helping WWT deliver speed, agility, cost savings and simplification of IT systems in distributed environments for its customers.

Parham says, "Even though we often simulate bigger scenarios, Schneider Electric has a great product line that stretches from a large containment system to supporting one or two racks — a scenario that's going to be part of the edge.

With Schneider Electric's product line, once we show a design methodology works for large environments, we can easily scale it down to one rack at the edge. From our first Advanced Technology Center project of a handful of racks through the expansion to the larger 150+ rack development, we see firsthand the real value of the Schneider Electric approach. That's why, going forward, it's the only way we're going."

Want to learn more?

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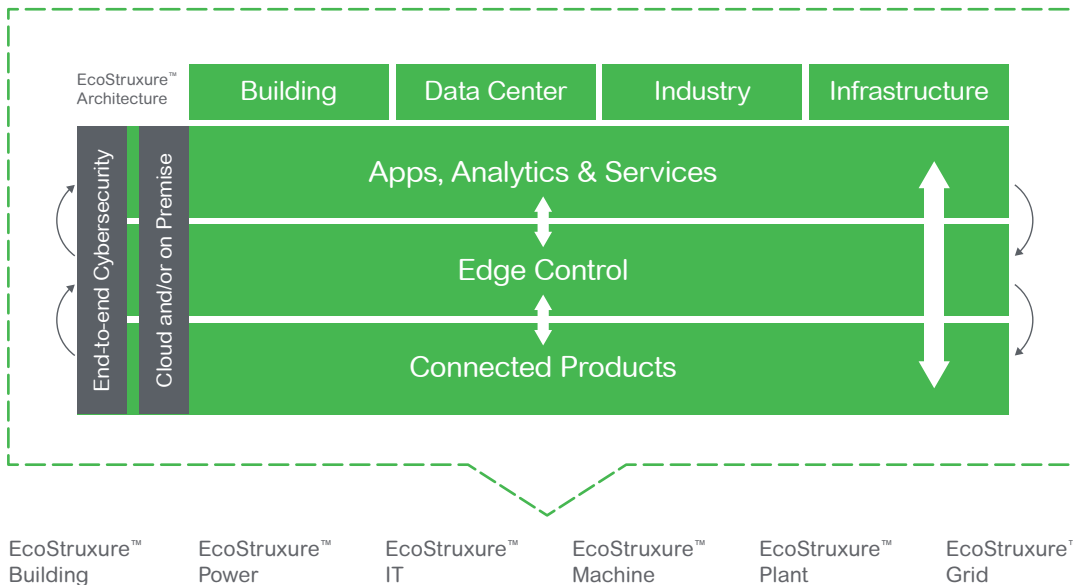# Eco Struxure™
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IoT-enabled solutions that drive operational and energy efficiency

EcoStruxure is Schneider Electric's open, interoperable, IoT-enabled system architecture and platform.

EcoStruxure delivers enhanced value around safety, reliability, efficiency, sustainability, and connectivity for our customers.

EcoStruxure leverages advancements in IoT, mobility, sensing, cloud, analytics, and cybersecurity to deliver Innovation at Every Level including Connected Products, Edge Control, and Apps, Analytics & Services. EcoStruxure has been deployed in 450,000+ installations, with the support of 9,000 system integrators, connecting over 1 billion devices.

One EcoStruxure architecture, serving 4 End Markets with 6 Domains of Expertise

EcoStruxure™ Architecture	Building	Data Center	Industry	Infrastructure

End-to-end Cybersecurity | Cloud and/or on Premise

Apps, Analytics & Services

Edge Control

Connected Products

EcoStruxure™ Building	EcoStruxure™ Power	EcoStruxure™ IT	EcoStruxure™ Machine	EcoStruxure™ Plant	EcoStruxure™ Grid

Connected Products

The Internet of Things starts with the best things. Our IoT-enabled best-in-class connected products include breakers, drives, UPSs, relays, sensors, and more. Devices with embedded intelligence drive better decision-making throughout operations.

Edge Control

Mission-critical scenarios can be unpredictable, so control of devices at the edge of the IoT network is a must. This essential capability provides real-time solutions that enable local control at the edge, protecting safety and uptime.

Apps, Analytics & Services

Interoperability is imperative to supporting the diverse hardware and systems in building, data center, industry, and grid environments. EcoStruxure enables a breadth of agnostic Applications, Analytics, & Services for seamless enterprise integration.

Find out more about EcoStruxure

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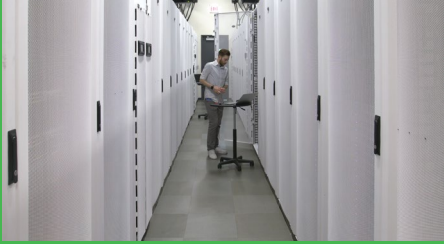
Custom Racks & Rack PDUs

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April 2019

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