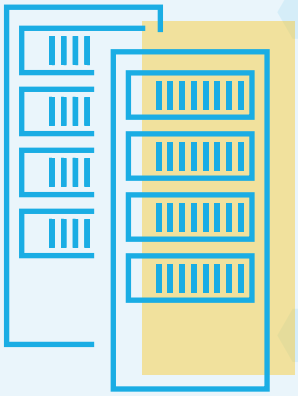
SynCells

Smart, Sustainable Data Center Power, Cooling and IT Infrastructure from SynCells



From small corporate operations to hyperscale data centers, energy availability and cost are paramount. However, sensitivity to overall energy use, energy sources and water consumption are making the data center manager's job more challenging. In addition, ESG mandates fueled by corporate responsibility along with shareholder and customer mandates are forcing operators to use more sustainable sources of energy and energy-conserving practices.

Regardless of the energy source, data centers still must ensure reliable power through redundant and backup infrastructure to avoid loss or corruption of customer data and services due to disruptions to the power grid or on-premise power sources. All of these factors, plus the increasing trend to expand data center presence to the cloud, are driving the need for a smarter energy platform.

According to the May 3, 2021, "Gartner Insights" report, analysts advise data center owners to update existing infrastructure with new energy solutions that both reduce carbon footprint and offer a more cost-effective way to achieve more efficient cooling and temperature control. SynCells makes it all possible today.

SynCells' hyperconverged, liquid-cooled nanogrid solution is revolutionizing sustainable energy possibilities for today's data centers — and it can generate electricity for up to 40% less than utilities with a fraction of the greenhouse gases. SynCells leverages our patented design solutions to redefine how data center systems are integrated. Unlike traditional or OCP infrastructure, the SynCells platform standardizes the power, cooling, and physical support infrastructure while still offering open integration for top-tier compute motherboards and components. Plus, by using native DC power distributed throughout the data center, SynCells eliminates many transformation losses from the grid through UPS, resulting in a more cost-effective, flexible, easy-to-maintain and sustainable energy solution.

"For those looking to retrofit data centers for extreme densities in a small footprint, perhaps for quantum computing or artificial intelligence (AI) applications, consider liquid or immersive cooling systems as viable options.

"By 2025, data centers deploying specialty cooling and density techniques will see 20% to 40% reductions in operating costs."

Gartner Insights, May 3, 2021

Benefits for Data Centers

0 Renewable, green fuel options for net zero carbon footprint

55% Reduction in carbon footprint (compared to U.S. average 0.455 kgCO2/kWh)

30-40% Reduction in electricity costs

<1.05 PUE

65%+ Footprint reduction

Why SynCells for Data Centers?

The SynCells platform gives you the control and convenience to build and power your data center anywhere, without total reliance on the grid. SynCells' modular, plug-and-play SmartCell products can be configured and scaled to any infrastructure requirements to deliver benefits that make data center management and operations more efficient and cost-effective. And with SynCells, you can even build and manage your energy platform yourself.

- Generate, store, and manage energy — and integrate IT services — on a single, renewable energy and technology platform.
- Tap into stored renewable energy for power redundancy or backup.
- Lower energy consumption, cost, and carbon footprint.
- Achieve a PUE <1.1 for lower capital and operational cost.
- Reduce the need for UPS.
- Leverage a single source of AC and DC power.
- Increase availability of data center space via liquid cooling.
- Extend the cloud with platform as a service (PaaS) using standardized hardware that can be deployed in more adverse locations.
- Improve the working environment for data center staff.

Here are more even more ways that SynCells streamlines energy infrastructure for data centers:

✓ **SynCells' "Nanogrid"**
Unlike the conventional grid, MicroGrid, and CHP/Cogen solutions, SynCells' modular, scalable nanogrid CHP energy and technology platform is approximately 90% efficient and available 24x365 to deliver clean, consistent data-center-grade power. It reduces the need for UPS while providing a single source of AC and DC to power everything from lighting to servers. SynCells' nanogrid energy cells can also store renewable energy for immediate use as a redundancy strategy.

✓ **Integrated Power + Cooling**
With SynCells' unique energy-efficient liquid-cooling solutions, there's no need to constrict data center space with hot-aisle/cold-aisle configurations. SynCells' modules are 100% liquid-cooled, so no airflow is required in the SynCells data center. This significantly improves the cooling efficiency of the data center and reduces/negates the need for air-handlers. Plus, because of the improved thermodynamics and front-only access, racks may be placed back-to-back to reduce the number of service aisles by almost half.

DC power is delivered to the SmartCells via a chassis that has power connectors and cooling manifolds in the backplane. Simply insert the SmartCell, lock it in place, and you're good to go. Power feeds are redundant and can be remotely managed for lights-out operations.

✓ **Less Upfront Infrastructure Investment**
Configure your data center space more efficiently and with more flexibility. Besides sustainable energy delivered as a liquid-cooled solution, the smart, flexible SynCells energy and technology platform can support your entire IT infrastructure, including cybersecurity. Purchase, install, and manage your own SynCells modular energy solution, or contract it as a service through SynCells.

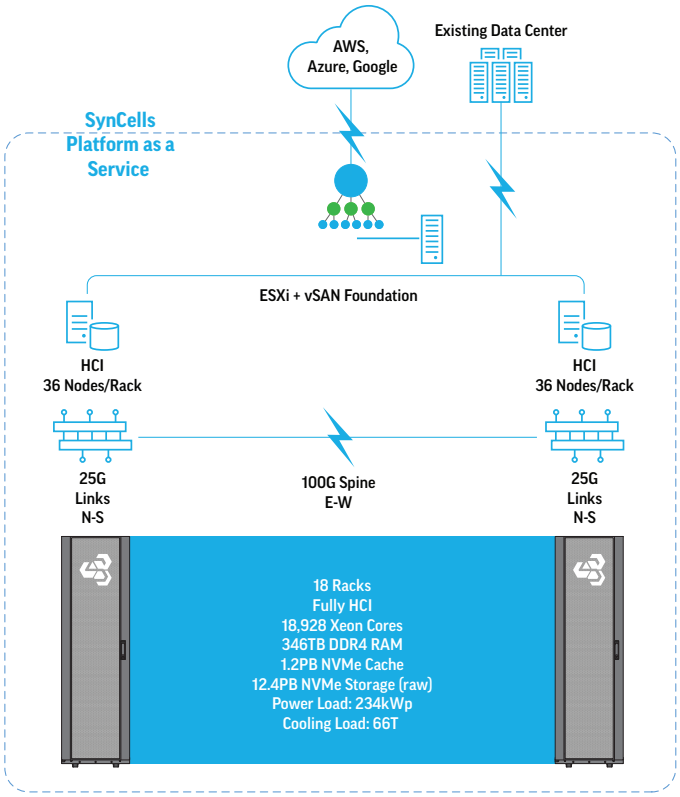
✓ **More Choice and Control of Your Energy Infrastructure**
SynCells can be your source of resilient backup power to ensure business continuity in case of grid failure. Or you can easily design, install, and integrate SynCells smart energy modules as your primary, scalable on-site power source. Either way, SynCells gives you more choices and control in building an energy infrastructure that is sustainable, renewable, and ultimately more cost-efficient for you and your data center customers.

✓ **Space, Energy, and Cost Savings**
A SynCells alternative to backup generators can be 10% of the size and placed indoors. It does not release toxic emissions, and it's always online. It can also be used as a whole-building UPS to keep critical resources operating while reducing electricity costs through peak shaving and similar cost-arbitrage measures.

Cost-effective Cloud Migration With SynCells PaaS for Data Centers

Moving data center infrastructure to the cloud delivers distinct benefits, but concerns about potential latency and performance issues, security risks, and other issues should factor into the decision. SynCells' hybrid PaaS for data centers — and other applications, including smart buildings — addresses such challenges in the following ways:

- Removes latency concerns and maximizes performance
- No data residency — data resides on customer site under customer control
- Can be upgraded to accommodate hybrid cloud/edge computing solutions
- Support for security (both physical and cybersecurity) and network communications
- Service and support — remote diagnostics, overnight part replacement shipping, simple DIY install



SynCells can deliver a turnkey PaaS solution similar to AWS Outpost and Azure Edge, but at a much lower cost. The following comparison illustrates how a data center can adopt a SynCells PaaS solution for 80% less than AWS:

Cloud Solution (Based on AWS pricing)	SynCells Solution
• 900 Hosts (c2 = 20 cores/node = 18,000 cores) • Reserved capacity • 12.2TB/host (max allowed config) = 11PB • All cloud, no Outpost	**Systems overview** • 18,928 Cores (928-2,928 more cores than existing env.) • 346TB RAM (DDR4, equivalent to existing env.) • 1.2PB NVMe Cache (no info on existing env.) • 12.4PB NVMe Storage (~1..4PB more than existing env.; all-flash storage vs. 50/50 SSD/HDD existing env.)
1yr Term • = $1,828,593/mth • => Term Cost = $21,943,116	**1yr Term** • = $687,500/mth (non VCF) • **=> Term Cost = $8,250,000**
3yr Term • = $1,611,783/mth • => Term Cost = $58,024,188	**3yr Term** • = $320,834/mth (non VCF) • **=> Term Cost = $11,550,000** • **80%+ less than AWS**

One Hybrid Platform for More Than Energy

An evolving sustainable energy strategy is just one component of both new and retrofitted data centers. Smartphones and Wi-Fi drove requirements for mobility and connectivity throughout buildings and businesses; now expectations and opportunities for smart data centers are rising. According to numerous studies, smart buildings make tenants feel more engaged and productive, use amenities more often, and stay with their employer longer.

SynCells is pioneering the hyperconvergence of energytech for data centers through the following approach:

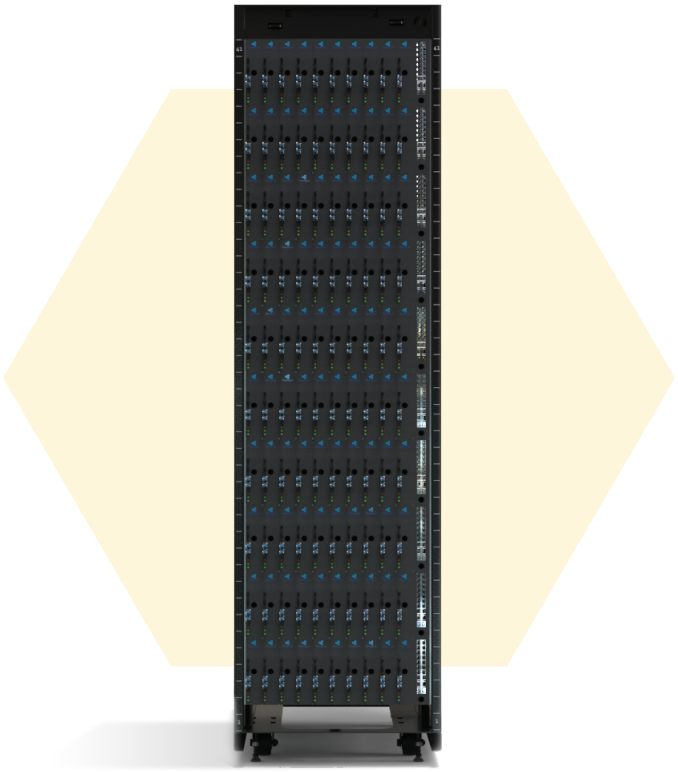
✓ **Standardized Infrastructure**
Using standardized support infrastructure for power, cooling, and racking, SynCells modules can be adapted to support compute, storage, and network functionality. Our standard module can support density-optimized motherboards from mainstream manufacturers to provide higher compute node density and storage compared to traditional services.

✓ **Efficient Power Source**
In some environments, only half of the power generated is consumed by the end application. Line and transformation losses as well as other variables account for the inefficiency. Through the use of SynCells' on-site nanogrid, power delivery is significantly more efficient with no power lost due to line and transformation losses. What's more, the associated thermal energy byproduct can be used to drive cooling loads.

✓ **Flexible Power Source**
SynCells' networking modules support the latest high-speed, high-power Power over Ethernet (POE @ 90W/port) and Power over HDBaseT (POH @ 100W/port) capabilities to provide a native DC-powered infrastructure for data centers and smart buildings.

✓ **Energy and Power Virtualization**
SynCells' patented energy virtualization solution changes how systems are controlled and data is exchanged by abstracting the user and controls from the physical systems. Rather than a single energy-control platform, SynCells enables integration of a number of controllers for a best-of-breed solution. No custom API scripting or development work is required. As a result, SynCells' energy virtualization solution makes it easier for data center energy distribution to be managed more effectively. Now you can make energy decisions based on demand or external factors as well as prioritize systems based on uptime requirements and service level agreements.

✓ **Full Support**
As data centers and buildings alike become more connected and smarter, technology dependencies are increasing. With that comes cybersecurity risks and support challenges. Now it's possible for developers, owners, and managers to offload all of those responsibilities to SynCells. We will support you, your staff, and operations while protecting your interests.



✓ **Certifications**

Aside from the energy, conservation, and sustainable measures achieved through the SynCells energy portfolio, many of the above strategies are eligible for additional points for innovation. Standards such as WELL depend on data and sharing actionable insights with data center management to promote change and track effectiveness. As a data- and policy-driven platform, SynCells can natively support these efforts.

About SynCells

SynCells is changing how energy and technology solutions are delivered to customers. Our platform revolutionizes how energy is produced, stored, and managed, giving individuals and business owners more control over their infrastructure by letting them choose where and how to deploy it to maximize financial return or outsource capabilities. The company represents the evolution of energy and technology convergence, providing a unique platform and range of services that decreases costs and carbon footprint while maximizing performance, security, resiliency, and flexibility.

SynCells meets the challenges of today's energy requirements with a modular, scalable, environmentally sustainable, and lower-cost energy and technology platform for commercial and residential buildings, data centers, utilities, and EVs. Buy and manage your own plug-and-play, modular SynCells energy platform, or let us deliver it as a turnkey service. Either way, SynCells simplifies the design, implementation, and management of energy systems for reduced upfront capital costs, a lower carbon footprint, and a smarter user experience.

SynCells services such as the virtual grid technology enabled by SynGrid, a management platform and portal for smart buildings, create new and unique opportunities. Individuals and companies can leverage and monetize their resources as part of an integrated energy management, demand response, energy trading, and smart building/smart city solution. SynCells also provides smart energy and smart technology solutions through its Smart Building as a Service solution and the supporting SynGrid mobile application.

From real estate companies and data centers to property development firms and smart buildings, more and more organizations are turning to SynCells for modular, flexible, and smart energytech solutions to reduce costs, achieve ESG goals, and capitalize on new opportunities.

Take Control of Your Data Center's Energy Infrastructure With SynCells

How could you benefit from a sustainable energy system for your data center that gives you more control and scalability? Contact SynCells and let us show you how our hyperconverged modular energy and technology solution can reduce upfront infrastructure costs and transform energy efficiency for data centers. Visit **www.syncells.com** to learn more.

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