

Best Practices

EMS

Modular Data Centers Meet Changing Business Needs

Company

Elliptical Mobile Solutions (EMS)

Industry

Portable data centers

Location

Chandler, Arizona

Contact

www.ellipticalmedia.com

To Learn More

For more information about EMS Micro-Modular Data Centers, visit www.ellipticalmobilesolutions.com

For more information on Seagate Enterprise HDDs, visit www.seagate.com

Challenge: Boosting Flexibility, Agility of Data Center Deployments

The traditional data center model has been highly effective for decades, offering companies the ability to consolidate compute and storage assets in a centralized location with the requisite space, power and cooling capacity. But this model also entails significant drawbacks: high costs, difficulties in scaling out due to lack of space and overtaxed cooling capabilities as storage density increases.

The limitations of such monolithic data centers have become more challenging as today's organizations seek to reduce expenses while simultaneously growing storage capacity. Adding more square feet to existing data centers can be prohibitively expensive, but simply installing more servers/storage within a data center's current space is not without added costs either. Increasing the number of devices that produce heat puts extra strain on a facility's cooling infrastructure, and upgrading can require significant investment.



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In addition, companies frequently demand a degree of flexibility and agility that conventional data centers cannot efficiently address. For example, some firms require the ability to quickly and affordably deploy on-premise or virtual private clouds. These might be located within branch offices or other remote sites, often with minimal supporting infrastructure. Other businesses may wish to repurpose their data center facilities altogether for other company uses and replace them with more space- and cost-effective alternatives.

Meeting these challenges requires a different type of solution, a data center that is essentially a self-contained unit—with all of the necessary cooling, security and fire suppression capabilities built into it. This *data-center-in-a-box* approach can enable companies to deploy new data centers in locations (such as the typical office space or an outdoor environment) that lack the supporting physical infrastructure of a conventional data center facility. It also enables firms to add servers/storage to an existing data center without needing to upgrade its cooling capabilities.

Solution: Modular Data Centers With Closed-Loop, In-Row Cooling

Though a number of manufacturers offer modular data center solutions, one firm has distinguished itself from its competitors. Elliptical Mobile Solutions (EMS) builds the Micro-Modular Data Center, the only company in the world to build modular data centers at the rack level with onboard closed-loop cooling, adaptive suspension, robust security and fire suppression. They fully replicate the features of traditional, containerized and cloud data centers while delivering significant benefits and cost savings.

For example, the company's new R.A.S.E.R. Agility In-Row Cooling solution gives customers the ability to adapt to ever-changing density requirements in any data center environment, both indoors and outdoors. It offers flexible densities (from 2.5kW to 80kW IT load per cabinet) with little to no additional engineering or building modifications required. Data center operators can deploy additional cabinets—with scalable densities to accommodate evolving IT needs—within the same row without having to worry about how higher-density cabinets will impact the rest of the data center.

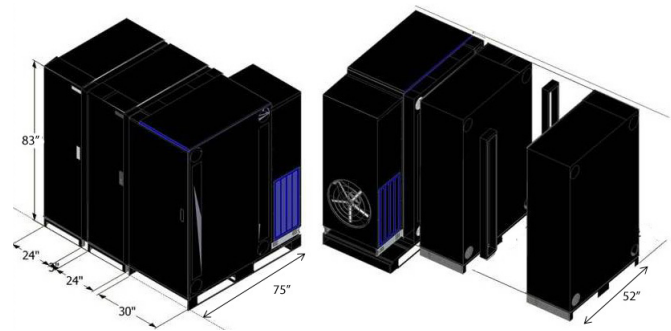


Figure 1. Self-contained R.A.S.E.R. Agility In-Row Cooling cabinets

This flexibility enables data center professionals to quickly and easily respond to changes in business conditions in real time, as they arise. The R.A.S.E.R. Agility In-Row Cooling product line gives companies an in-row cooling solution that can be deployed anywhere, anytime, while significantly reducing complexity, cost and deployment time.

All In-Row Cooling Solutions Are Not Alike

The advantages of in-row cooling are significant; unlike traditional data centers that simply fill an entire room with cold air, in-row systems deliver significantly greater cooling capacity and efficiency by locating the cooling units closer to the server cabinets that house the loads that actually produce heat.

Indeed, a recent IMS Research study (*The World Market for Data Center Cooling – 2012 Edition*) emphasized that data centers require specialized cooling to handle the heating load from IT equipment. The study found that increasing computing capacity of new servers of greater power density has created the need to cool *hot-spots* in the data center more efficiently, and it concluded that rack- and row-level cooling are the most suitable solutions.

While there are numerous data center in-row cooling solutions on the market today, they still require a room to be built out and engineered to accommodate circulating air and environmental conditions. By contrast, the R.A.S.E.R. Agility In-Row Cooling solution can operate in any environment because it's engineered to leverage EMS's patented closed-loop cooling within the row, which creates shared cold and hot aisle plenums (see Figure 2). These completely sealed enclosures include onboard cooling, security and fire suppression.

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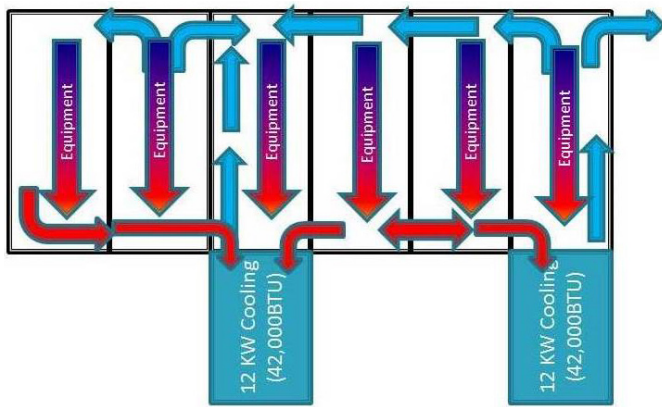


Figure 2. Closed-loop cooling addresses compute load independent of room in which it's installed

Because the units are self-contained with standard NEMA 3R or optional NEMA 4 environmental packages, no infrastructure modifications are required to protect them from dust, dirt, water, humidity or temperature variations. The units' sealed architecture also requires a smaller amount of air volume, which further reduces cooling and operating costs and makes them particularly well-suited for energy-efficient environments.

The unique capabilities of the R.A.S.E.R. Agility In-Row Cooling make it a highly effective solution in a variety of circumstances: co-location and managed service providers whose clients have changing density requirements; small, medium and large data centers with cooling problems and hot spots; and data centers in remote and non-standard locations throughout the world.

Key Benefits

- Capital savings potential of 50%-80% for new data center builds or data center retrofits
- Capable of reducing cooling and electricity costs up to 50%
- Operational savings possible from 40%-65%
- Reduction of data center footprint up to 75%
- Rapid deployment—enables clients to have a complete turnkey solution in weeks rather than months or years

- Mobility—enables clients to move or relocate their data center as an asset rather than the typical demolition and construction cycle that results from a needed expansion or relocation
- Scalability—provides clients with the building blocks to add computing capacity as needed in a timely and pay-as-you-grow manner
- Vendor-agnostic—enables clients to select the IT equipment that best meets their needs

Seagate® SSDs and HDDs Deliver Optimum Blend of Capacity, Performance Density and Energy Efficiency for Modular Data Centers

Seagate offers a wide variety of enterprise-class solid state drives (SSD) and hard disk drives (HDD) that are perfect complements to high-efficiency, high-density data center solutions from EMS.

Seagate works with EMS to help its customers and partners understand the tradeoffs to be considered when choosing between HDDs, solid state hybrid drives (SSHD) and SSDs. In addition, the flexibility and freedom afforded by EMS's modular data center solutions enable customers to tailor their solution to their specific needs.

Deploying the right storage device or mix of storage devices to meet a specific application's performance and capacity requirements is essential. When it comes to deploying a modular data center solution, achieving the correct density is particularly important. EMS modular data centers, when combined with the appropriate Seagate drives, deliver the optimum capacity and performance density while ensuring the needed flexibility and scalability as storage demands evolve and grow.

Only Seagate provides a complete portfolio of 2.5-inch products—from SSD to SSHD to HDD—that enable customers to maximize the performance, capacity and energy efficiency obtained from the available server and storage footprint.

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