



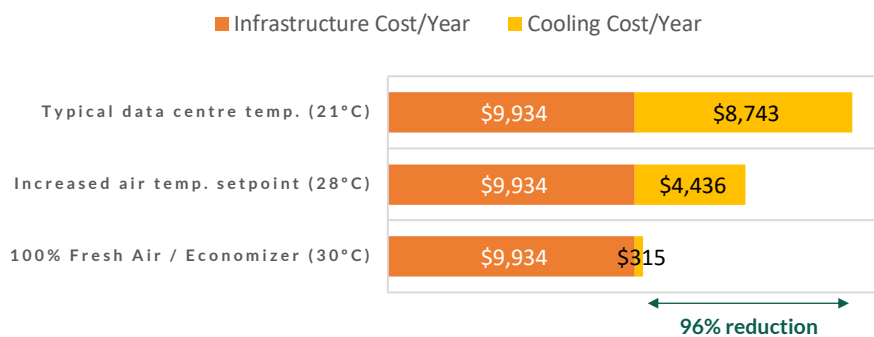
# HARSHPRO

## REDUCE YOUR DATA CENTER COOLING COSTS BY 96% WITH A SERVER BUILT FOR THE HEAT

Standard data centers operate at around 20 to 22°C to optimize performance. When running a data center in a tropical climate, up to 33% of the energy consumed is dedicated just to operating the cooling systems and infrastructure, electricity costs may contribute more than 50% of the operating expenses<sup>1</sup>.

Enterprises like Intel, Microsoft and Oracle have explored various ways to reduce energy consumption and costs. One solution is to raise the overall temperature of data centers by hardening the IT equipment and reducing the need for cooling. Studies show that a 1°C increase in temperature can reduce 2 to 5% of the energy cost<sup>2</sup>, which translates into significant operational cost savings. Some companies have explored removing air-conditioning altogether, running on fresh air further reduces the energy cost.

Total Operational Cost per Year from Increasing Data Center Ambient Temperature<sup>3</sup>



The LanternEdge **HarshPro™ IP20 Server** is a powerful rugged server with a high operating temperature that drastically reduces the costs of running a data center without compromising on power. Equipped with an Intel® Xeon® D processor, the HarshPro Server has an operating temperature of up to 50°C and can handle up to 90% relative humidity, minimizing the need for cooling infrastructure even in tropical climates. The HarshPro Server is designed to be reliable, remotely operated, and low maintenance, ensuring a dark data center is always up and running when temperatures spike.



### HarshPro™ IP20 Server

- Ω Built for warm ambient temperatures: Operating temperature up to 50°C
- Ω Powerful Intel® Xeon® processor + High-capacity NVMe SSDs
- Ω Built to last + low maintenance
- Ω Remote management ready supporting automated provisioning

For technical specifications and purchase information, contact us at [partnerwithus@lanternedge.com](mailto:partnerwithus@lanternedge.com)

<sup>1</sup> 13 Solutions Group, Infocomm Media Development Authority of Singapore (IMDA). 2014. [Green Data Centre Technology Roadmap](#). National Climate Change Secretariat (NCCS)

<sup>2</sup> Nosayba El-Sayed, Ioan Stefanovici, George Amvrosiadis, Andy A. Hwang, Biana Schroder. 2012. [Temperature Management in Data Centers: Why Some \(Might\) Like It Hot](#). Department of Computer Science, University of Toronto


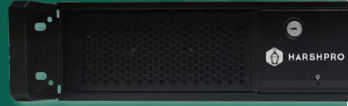
<sup>3</sup> Estimate rounded to closest whole number, calculations based on 29°C outdoor temperature and 6.3kW server load.

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# HOW HARSHPRO SERVERS REDUCE YOUR TOTAL COST OF OWNERSHIP OVER TIME

A closer look at the Total Cost of Ownership (TCO) between a typical cooled data center running Xeon E servers versus a tropical data center utilizing HarshPro Servers at warmer temperatures

 <p><b>Cooled Server</b> Xeon® E 2278G Processor 32Gb Memory, 1Tb Storage 5-year Lifespan, Duty Cycle 80%</p> <p><b>Typical Data Center:</b> Air-conditioned at 21°C</p>	 <p><b>HarshPro Server</b> Xeon® D 1539 Processor 32 Gb Memory, 1Tb Storage 10-year Lifespan, Duty Cycle 100%</p> <p><b>Tropical Data Center:</b> Fresh-air cooled at 29°C</p>
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The costs of building and operating a data center typically fall into two categories:

- **Capital Expenditure (CapEx)** includes the initial purchase of servers and other equipment needed to set up the data center including but not limited to chillers, UPS, generators, and power distribution
- **Operating Expenditure (OpEx)** covers the day-to-day costs of running and maintaining the data center

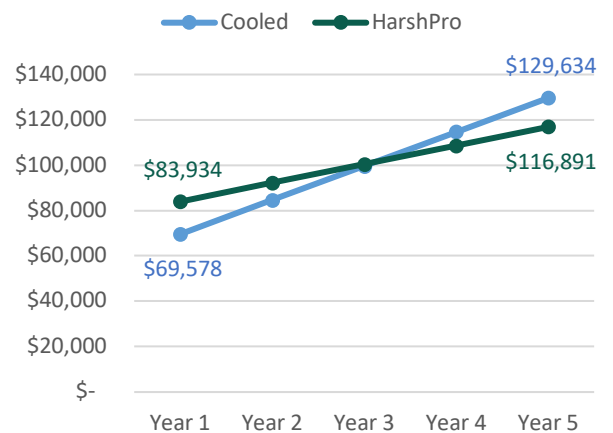
Fresh-air cooled tropical data centers are able to save on CapEx, as chillers and other cooling equipment are no longer needed to cool the data centers and IT equipment below ambient temperatures.

Fresh-air cooling operators can expect a **45% decrease in total electrical costs** and a dramatic **96% reduction in cooling costs**. With HarshPro servers in tropical data centers, savings begin around the third year, or earlier where electrical costs are high.

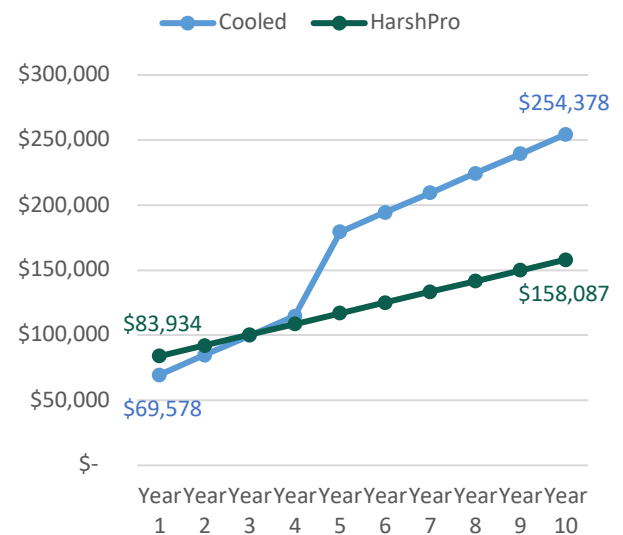
Savings from the HarshPro server accelerate in the 10-year comparison due to the Xeon D processor, which offers a 10-year lifespan at 100% usage. In contrast, the Xeon E processor used in the cooled server has a 5-year lifespan and an 80% duty cycle. For long term deployments, Xeon E based servers will require replacement, ultimately increasing the total cost of ownership by up to 60%.

In addition to lower total cost of operations, tropical data centers have the potential to unlock new value streams for business. For example, leveraging the ability to operate in elevated temperatures and the reduced need for cooling infrastructure, enables real estate owners to monetize unused or underutilized real estate through the creation of modular/containerized edge tropical data centers at those assets.

TCO comparison over 5 years



TCO comparison over 10 years



TCO comparison is estimated for 1 rack x 21 servers at US cents 14.47 per kWh for electrical cost

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