

The Feasibility of White Box Servers as an Enterprise-Class Solution for Modern Data Centers

White Box Servers Are a Viable Option for Today's Organizations

In the past, conventional wisdom held that top-tier IT brands afforded server customers the best value when it came to reliability, consistency, performance, and support. This perception was based on the reputation that powerbroker brands like Dell Technologies, Hewlett Packard Enterprise, Lenovo, Cisco Systems, Inc., and others had built by offering standardized components, features, and configurations, along with dedicated hardware support.

Today, the popularity of cloud-based networking and software-defined infrastructure has gone a long way to transforming this notion. The availability of servers assembled from readily available components — sold with or without branding by lesser-known manufacturers — frees resellers and enterprises from their reliance on top-name, legacy brand manufacturers.

The global white box server market, valued at \$5.61 billion in 2017, is projected to register a compound annual growth rate of 22% between 2018 and 2025.¹ Growing demand for low-cost servers, higher uptime, and a high degree of customization and flexibility in hardware design are anticipated to escalate the growth of the market.

According to a 2019 worldwide forecast by IDC, a growing appetite for enterprise firms to shift to a modular, do-it-yourself, software-defined infrastructure is creating opportunities for a well-defined class of “white box” infrastructure solutions.² These include general-purpose compute, storage, and networking hardware platforms built with industry-standard, commercial off-the-shelf components and delivered as unbranded equipment.

In increasing numbers, today's buyers are side-stepping vendor lock-in mechanisms, including branded components, purpose-built configurations, precise customizations, and ongoing technical support, and avoiding the higher hardware price tags charged by big-name manufacturers. Resellers and end-users are purchasing white box server products directly from original design manufacturers (ODMs) and value-added resellers. Customers benefit from the significant cost savings these unbranded products offer.

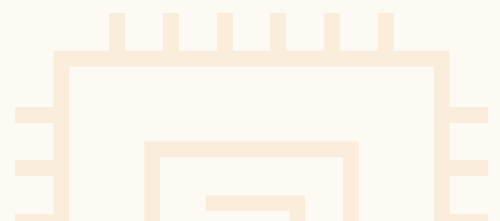
As the benefits of white box servers become more apparent, and increasing numbers of companies such as Amazon, Google, Facebook, and others integrate generic servers into their operations, more companies may follow suit.

Growth of the White Box Server Market

Driven by a surge in demand from hyperscale cloud service providers, global server shipments surged by 27% during the last quarter of 2019 compared to prior quarter and the last quarter of 2018. A total of 11.9 million servers shipped during 2019, up from 11.4 million in 2018.³ In 2020, the server market continues to rebound due to COVID-19 demand, as enterprises and consumers rely on cloud services to cope with a sudden increase in remote and virtual operations.²

Commoditization of networking equipment and the emergence of the Open Compute Project (OCP) have led the industry to innovate new hardware designs to support an upsurge of data and networking capacity. This shift toward open networking models creates new opportunities for original equipment manufacturers (OEMs) and ODMs that foster the growth of the market.¹ In addition, the following trends are creating opportunities specifically for ODMs:

- **Cloud Computing.** The rise of cloud computing, big data, analytics, and the Internet of Things creates a need for more servers in enterprise data centers. Many midsize and large companies run thousands of servers each day.
- **COVID-19 and Tight IT Budgets.** As the global COVID-19 pandemic wages on and the data center landscape evolves, more companies are phasing out OEM legacy hardware in favor of more cost-efficient ODM white box servers.
- **Emulation of Web Service Company Infrastructure.** Big-name cloud service providers like AWS, Google, Facebook, and Microsoft Azure are using white box servers for optimal and cost-effective hardware. Many large firms with the technical competence to configure these systems in-house are following suit.
- **Containerized and Mobile Data Centers.** Increased adoption of containerized and micro-mobile data center solutions has fueled the growth of the white box server market. These solutions offer organizations a quick, cost-effective way to implement extra capacity for data centers that have run out of space or cooling capabilities, as well as those in remote and temporary locations.
- **Bidding Competition From ODMs in China and Taiwan.** Ongoing overseas price wars enable large-volume sales by suppliers who resell these products to other reseller and end-user customers. As favorable pricing takes root, more IT managers are considering replacing their branded servers with generic alternatives.
- **Hardware and Software Customization.** Organizations with the right technical expertise are designing their own purpose-built servers. This trend is leading to growth of technological service companies that configure servers to site-specific needs through available components they can match and source from a wide range of suppliers.
- **Focus on Energy-Efficient Products.** ODMs are building more features and functionality into their hardware and developing switching and white box storage products that are more energy efficient and price competitive than name-brand, legacy hardware.
- **Growth of the Software-Defined Data Center.** Ease of deployment and speed based on code-driven applications frees IT departments from hardware limitations. Organizations can more easily deploy and manage white box products, without the need for OEM support.
- **Open Networking Infrastructure.** The emergence of open source systems, including OCP, that are independent of hardware systems (bare metal networking) enables change-out of management tools and provisioning systems without the complexity created by proprietary or closed-programming interfaces. The growth of open source products provides buyers the opportunity to apply full lifecycle management thinking to their networks.



Is There a Place for White Box Servers in Today's Data Centers?

While the economics are compelling, enterprise buyers have characteristically been reluctant to adopt off-brand server products because of a lack of enterprise-grade support and maintenance options. The vast majority of organizations don't have the volume server purchasing needs of web services companies like Google, Facebook, Amazon, Microsoft, and others.

Additionally, many organizations lack the in-house break/fix and technical expertise needed to support white box server installation, operation, management, and maintenance. While some white box manufacturers support their products, the support is generally not to the scale of the big-name legacy brands.

How then do organizations seeking the cost efficiency of white box servers and the support typically found only with big brand names advance their objectives? Custom compute systems integrators may hold the key.

Cost-Effective White Box Implementation

While the majority of white box server manufacturers don't provide comprehensive support for their products, independent service organizations (ISOs) such as custom compute systems integrators can bridge the gap. These firms partner with resellers and end-user customers to build, sell, and support off-brand server hardware. Based on their deep knowledge of the white box market and their strong supplier relationships, many of these organizations are able to provide their customers with white-glove deployment.

By partnering with a custom compute systems integrator that designs, builds, and supports all server hardware, software, and networking needs, organizations enjoy the best of both worlds: the lower hardware costs of white box servers and the hardware layer management interface of name-brand legacy servers.

Custom compute systems integrators afford numerous other benefits to resellers and end-users:

- **Avoidance of the Price-Manageability Trade-Off.** Generic servers often translate into fewer bells and whistles, absence of bundled offerings, and lack of ongoing support. Equipment owners then assume responsibility for hardware operation, as well as the sourcing of supplemental software, monitoring support, and other professional services. By partnering with a systems integrator, organizations rely on a single trusted source to fully support all their technical requirements.
- **Improved Customization of Functionality.** When servers aren't preconfigured for specific applications, buyers can mold the servers to meet their needs and futureproof them to meet ever-changing requirements. Without the deep expertise needed in handling this level of operational server customization, buyers struggle through myriad complexities.
- **Custom Branding Flexibility.** Many leading custom compute system integrators afford custom branding options for the server chassis, bezels, paint, cartons, and documentation. They offer a wide variety of rackmount, pedestal, and high-density storage server configurations, along with application-optimized hardware, blade storage, and GPU systems.
- **Server Management Support.** Some custom compute systems integrators support cloud infrastructure, including software-defined networking, as well as storage backup.
- **System Imaging.** Organizations benefit by partnering with a custom provider that can download the enterprise's software image on each custom configuration and then factory-test the configuration for quality assurance before the equipment is sent out. In many instances, same-day shipping is available for preconfigured systems, and fast turnarounds on custom-built systems.
- **Dedicated Advisors.** By partnering with a custom compute systems integrator, organizations additionally benefit from a dedicated account manager who is well-versed in all the technical competencies.

Conclusion

Organizations of all sizes can benefit from adopting white box servers. Large organizations with extensive IT department and logistics capabilities may see a lower total cost of ownership and greater energy efficiency — in exchange for managing their own software, systems integration, logistics, and server management issues. Small and midsize organizations can benefit from white box server adoption, too — particularly because many ODMs offer a term warranty and up-front parts warranty with all transactions. White box servers are especially attractive to smaller organizations when they partner with a custom compute services provider that can fill in ongoing support gaps.

About Equus Compute Solutions

Equus Compute Solutions customizes white box servers and storage solutions to enable flexible, software-defined infrastructure. Delivering low-cost solutions for the enterprise, software appliance vendors, and cloud providers, Equus is one of the leading white box systems and solutions integrators. Over the past 28 years, we have delivered more than 3.5 million custom-configured servers, software appliances, desktops, and notebooks throughout the world. Our advanced systems support software-defined storage, networking, and virtualization that enable a generation of hyperconverged scale-out applications and solutions. From components to complete servers purchased online through ServersDirect.com, to fully customized fixed-configurations, white box is our DNA. Custom cost-optimized compute solutions are what we do, and driving successful customer business outcomes is what we deliver.

To learn more about the suitability of white box servers for your operating environment, call 800.641.1475 or visit www.equuscs.com.

Equus Compute Solutions

201 General Mills Blvd., Golden Valley, MN 55426
800.641.1475 | www.equuscs.com

¹ Grand View Research, “White box Server Market Size, Share & Trends Analysis Report By Server (Rack & Tower, Blade, Density Optimized), By Business Type (Datacenters, Enterprise), By Processor, And Segment Forecasts, 2018 – 2025,” Nov. 2018.

² IDC, “Worldwide White-Box Server Forecast 2019-2023,” Dec. 2019.

³ Light Reading, “Dell, HPE, White Boxes Dominate Cloud Server Market,” May 6, 2020.