

10 Reasons Why LinuxONE

Executive Summary:

The shift to the digital economy has increased the risks for most companies, making survival in the corporate jungle tougher than it has ever been. Companies everywhere struggle with cyber privacy and security demands, increased competitive pressures, constrained revenue growth and budgets, limited technical skills, support challenges, and geopolitical issues.

While privacy and security have always been a standing requirement, successful cyberattacks over the last 12 months have exposed companies and demonstrated that the current approach is failing. New regulatory requirements, such as the general data protection regulation (GDPR), will force organizations to do even more. Additionally, organizations must transform their IT applications and systems to be customer driven, which impacts their cost structures, system performance and scalability as well as user interfaces.

The new generation of LinuxONE servers was architected to address these business issues and offers technology that significantly differentiate it from other solutions on the market. Below are the top 10 reasons to use a LinuxONE server solution as your platform of choice.

Top 10 reasons:

1. Least risk solution
2. Best data server using latest next generation technologies
3. Security
4. Performance
5. Scalability
6. Availability
7. Productivity
8. Agility/flexibility
9. Disaster recovery
10. Best value

Top 10 reasons (detail):

1. Least risk solution – LinuxONE is unique in that it reduces business, compliance, financial, operations, and project risks. Its availability, disaster recovery, scalability and security features minimize the business and financial exposures that could occur due to downtime, fines and penalties due to breaches or non-

compliance, as well as human error impacts. The latter frequently occurs when reconfiguring systems due to the addition of hardware to support a growing number of transactions and workloads. Project risks are minimized because LinuxONE systems come with many features such as pervasive encryption that are already built into the operating system, leaving the project team to just worry about their applications or microservices. By reducing the work, amount of code required and number of interfaces to worry about, projects can be completed sooner and with fewer people and bugs. A higher probability of success is not only a positive for the project but also for the members of the project team. Each LinuxONE core can replace 10 to 12 x86 cores, thereby reducing the footprint and number of servers in the data center. This simplifies daily operations and reduces the number of times new servers are added. Constant reconfiguration of systems and components exposes daily operations to human errors and downtime. It also simplifies backup/recovery and disaster recovery times and outages. With pervasive encryption, logical partition (LPAR) isolation, and secure containers, the chance of data privacy exposures are significantly reduced; thereby lessening compliance exposures.

2. Best data server using latest next generation technologies – The LinuxONE architecture is unique in that it provides for data sharing on a non-sharded basis amongst different workloads on the server. This is known as a shared-everything architecture. x86 servers are architected with a shared-nothing design, which means each workload must have its own copy of the data and somehow this data needs to be synced up at some point. Thus, LinuxONE supports a single version of the truth with encryption built in. Moreover, the LinuxONE server supports the latest technologies – Java and other modern languages, Hadoop and other analytics tools, Docker and other containers, Chef, Puppet, KVM, multiple Linux distributions, open source, etc. – and can be used in a datacenter in a traditional legacy environment or can be used as the platform of choice for hosting a cloud platform. LinuxONE supports tools that enable DevOps similar to those on x86 servers.
3. Security – LinuxONE is the only Linux server providing end-to-end pervasive encryption, enabled by much faster hardware encryption both on-chip and in the separate CryptoExpress card, and secured by protected keys. Customers and executives will no longer will have to worry about the privacy and security of their data in transit or at rest. Another unique feature is the implementation of Secure Service Containers. With Secure Service Containers, there can be no prying administration eyes gaining access to the data – even the debug data is encrypted. There is no direct operating system access and memory access is also disabled. Furthermore, LPAR isolation (standard on all IBM Z processors for

generations) virtually eliminates east-west, north-south security breaches and their damaging impact both financially and to an organization's credibility.

4. **Performance** – LinuxONE provides best of breed workload management such that there is always a consistency of response – even if there are different workloads running on the same platform. As a result, LinuxONE is capable of driving processor utilization to virtually 100% without a latency impact, performance instabilities, or performance penalties. In addition, LinuxONE uses the fastest commercially available processors, running at 5.2MHz, offloads I/O to separate processors enabling the main processors to concentrate on application workloads, and enables much more data in memory with up to 32TB of main memory.
5. **Scalability** – LinuxONE systems are able to non-disruptively scale vertically or horizontally. This creates a level of stability one cannot get with x86 servers, which require reconfiguration (and frequently rewiring) resulting in a higher risk of human error. LinuxONE servers have demonstrated that they support exponential transactional and workload growth with linear cost increases whereas x86 system growth provides limited cost savings as they scale. Additionally, with the all-inclusive systems software and lack of server complexity, users can take advantage of simplified change control. This will allow executives and operations to sleep at night while addressing changing demands. Scaling can also be combined with other factors to deliver performance-at-scale and security-at-scale.
6. **Availability** – LinuxONE systems provide 99.999% availability built in at no added cost right out of the gate. Many users achieve 100% availability for months at a time, as the system is designed for continuous operations. These servers are hardened so that they keep on running in virtually any environment and are almost impervious to fire, water, and earthquakes. They are proven and trusted around the world. This level of high availability is enabled by duplication and redundancy of all key components, such as Redundant Array of Independent Memory (RAIM), along with software designed to keep the LinuxONE system running with virtually no downtime.
7. **Productivity** – Because of all the LinuxONE built-in features development should be simplified and cycles shortened compared to the creation of similar applications or microservices on an x86 server. Similarly, decades of experience show mainframe (and by extension LinuxONE) server operations – both regular and irregular operations as well as disaster recovery – are less complex and requires significantly fewer staff; thereby lowering labor costs and improving productivity. A modern DevOps environment is provided through support for

Docker containers, and the Secure Service Container framework is planned to expand to include Docker technology and container orchestration.

8. Agility/flexibility – LinuxONE servers enable Linux application portability from x86 servers without rewrites. The platform supports containers and can integrate analytics with transaction processing workloads. Servers do not need to be dedicated to single workloads or those that have similar – or dissimilar – characteristics. In fact, thousands of x86 cores can be consolidated on a single LinuxONE server. Companies have the flexibility to scale up workloads, scale – out workloads, or scale in any vertical and/or horizontal combination.
9. Disaster recovery – it is far easier and faster to recovery from a catastrophe if one has just a few LinuxONE servers than if one has to bring back online thousands of x86 servers and their associated databases. The difference in some cases could be measured in days. Because of the LinuxONE architecture one need not have to address the challenges that can occur from synchronizing the myriad server recovery points and logs. LinuxONE also supports IBM's GDPS (geographically disbursed parallel sysplex), which helps automate recovery procedures for planned and unplanned outages and better assures near-continuous availability and disaster recovery capabilities.
10. Best value – with reduced development and operations costs organizations obtain improved margins as every dollar saved goes directly to the bottom line. Additionally, time to market of new or enhanced workloads creates added business value through new revenues and potential loyalty. On the cost side of the equation, companies can pay for the platform's usage with a consumption-based model, which ties costs to usage benefits. Moreover, the TCO for a LinuxONE server is less than the comparable x86 solution when one includes the costs for all the added hardware, software, databases, and disaster recovery systems. Depending on the specific use case companies can save 30 to 50 percent over an x86 solution over a three-year period. Furthermore, LinuxONE can be upgraded over time at a significantly lower cost than full replacement. In contrast, when x86 servers become obsolete, new replacement servers must be purchased, configured and installed. LinuxONE servers offer the best value on day 1 and throughout a 5-year life cycle and beyond.

Summary – Key Features:

A LinuxONE server is the least risk, best performing server solution that can be acquired to meet most mid-sized to large enterprise business processing requirements. It can grow with the business with minimal impact to business finances, operations, and risks.



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Having a LinuxONE installation is like having one's own private cloud in that executives need not worry about the ability to scale up or down as they deal with economic uncertainties. The built-in security features make it much simpler for corporate management to meet their fiduciary requirements – and reduces their exposure to cyber incidents that result in bad press and a tarnished image.

Companies receive all these cloud-like benefits - reduced risks, productivity, cost advantages (ROI, TCA, TCO), refresh advantage, quality of service (QoS), and growth cost avoidance – automatically while still remaining in full control of their environment. No other platform offers so much – while cutting costs and minimizing operational risks.