Solution Brief
Oracle® Linux
Intel® Xeon® Processor E7-8800/4800 v3 Product Families

Oracle® Linux on Intel® Architecture: The Power and Freedom to Innovate

Enterprise infrastructure based on Oracle Linux and the Intel® Xeon® processor E7-8800/4800 v3 product families delivers state-of-the-art performance and mission-critical reliability, on a cost-effective and truly open platform. Building on over 20 years of collaboration between Oracle and Intel, the technology stack brings out the best of hardware and software that are engineered to work together.

IT organizations searching for ways to do more with less are implementing open-standards infrastructure based on Oracle Linux and Intel® Xeon® processors. As a single consolidation target to replace multiple technologies and Linux* variants, these systems offer a flexible, powerful platform for innovation that is based on highly optimized combinations of hardware and software building blocks.

Oracle Linux is free to download, use, update, and distribute. Customers are free to purchase support on only the servers that need it and to choose the specific support levels that are appropriate on a server-by-server basis. This cost-effective approach to licensing is complemented by the simplicity of running the identical version of the OS and updates on all systems in the enterprise, regardless of individual support levels. Oracle Linux Support provides outstanding global support for the Linux operating system at a low cost. Oracle Premium support comes with zero-downtime updates (Ksplice), management and clustering software, premier backports, comprehensive legal indemnification, and Oracle OpenStack* for Oracle Linux.

Oracle Linux: Fast, Reliable, Scalable, and Secure

Best Linux subscription value

- Included with Oracle Premier Support for Systems
- No additional, expensive add-ons
- Freedom to choose
- Outstanding consulting and training

Strategic differentiation

- Zero-downtime kernel updates with Ksplice
- Diagnostics and tracing with DTrace
- Stability, scalability, and performance with the Unbreakable Enterprise Kernel

Binary compatible to Red Hat Enterprise Linux

- Built from the same source
- Simple migration path; no reinstall
- Third-party ISV compatibility

The only Linux distribution recommended for Oracle products

- Used by Oracle's engineered systems
- Linux development standard at Oracle
- Comprehensive testing across stack
- Pre-configured in Oracle VM Templates for rapid deployment of Oracle applications

"When I stack up Linux—and I have seen it for over 10 years—as the distributions go, [Oracle Linux] is a better engineered product. When you look at application guides, the way products are deployed, and validated configurations, Oracle has done a very good job of that. [And] Oracle has done a good job of validating hardware. We are very happy with the investments we have made."

- John Dome, Lead Systems Engineer, Progressive Insurance[2]

Oracle offers customers a choice of two kernels:

- **Unbreakable Enterprise Kernel (UEK) for Oracle Linux** provides robust support for new hardware features on the latest Intel® Xeon® processors and is used in Intel® architecture-based engineered systems from Oracle such as Oracle Exadata Database Machine, Virtual Compute Appliance, and Exalogic Elastic Cloud.
- **Red Hat Compatible Kernel (RHCK) for Oracle Linux** provides an option for customers to run the exact same kernel as Red Hat Enterprise Linux, if they choose.

Oracle Linux (with Unbreakable Enterprise Kernel) and Oracle virtualization solutions are key infrastructure components of both Oracle Public Cloud and private cloud services. With Oracle Linux, customers can take advantage of optimizations and benefits of availability, stability, and performance built for the cloud.

Oracle and Intel Commitment Advances Open Source for the Enterprise

Key to the enterprise leadership of the combination of Oracle Linux and the Intel Xeon processor E7-8800/4800 v3 product families is the ongoing commitment both companies share to open source, and especially to the Linux kernel and related projects. In fact, a recent report from the Linux Foundation[1] identifies Intel as both the employer that sponsors the most development work on the kernel and the employer bringing in the most new developers to work on it.

Of course, the kernel itself is only a relatively small part of the software that runs on an Oracle Linux server. Oracle and Intel also each maintain significant commitments to many other projects that benefit the ecosystem as a whole as well as organizations that run Linux. Among the examples that are most recognized by enterprise customers are such projects as Java®, MySQL, Xen*, OpenStack* and NetBeans.

These commitments go far beyond actual contributions of code, including enablement and validation of solutions across the open-source ecosystem, as part of the overall companies' strategy that includes the following components:

- **Deliver complete solutions** to customers that are open and integrated.
- **Create enterprise-ready solution stacks** based on hardware and software that are engineered to work together.
- **Promote and support the use of open standards** as the basis of innovation.

This strategic approach ultimately benefits customers by helping them control costs, improve manageability, and realize benefits in terms of performance and scalability.

"As a public utility, reliability is absolutely critical. Oracle shares that value. We have confidence in Oracle Database solutions because they are structured and built to ensure long-term scalability and durability. With Oracle, we have a solid technology foundation to address our key business challenges."

- Clayton Buss, Senior Database Administrator, Lincoln Electric System[3]

Joint Enablement for Mission-Critical Reliability

Oracle and Intel each dedicate significant engineering resources to development and enabling for mission-critical and business-critical applications. Representative properties of Oracle Linux and the Intel Xeon E7-8800/4800 v3 product families that enhance support for these implementations are shown in Table 1. In particular, Oracle Linux incorporates support and optimizations for the latest reliability, availability, and serviceability (RAS) features introduced in the Intel Xeon processor E7-8800/4800 v3 product families.

Oracle Linux also enables IT organizations to implement the latest bug fixes and enhancements for security and reliability without requiring upgrade to the latest version of the entire distribution. Contrary to the approach taken by most Linux vendors, this capability allows administrators to maintain an optimal level of mission-critical readiness while retaining older versions of the kernel when required for compatibility with specific third-party software products.

"SEI values Oracle, which is helping us drive an industry-leading departure from legacy, mainframe-based solutions to a more modern infrastructure. Oracle Linux gives SEI the stability and performance our business processes require. Additionally, it allows us to scale to meet company growth and customer demands, while increasing efficiency and effectiveness."

- Martin Breslin, Sr. Infrastructure Architect, SEI[4]

Table 1. Mission-critical readiness.

Oracle Linux	Intel® Xeon® Processor E7-8800/4800 v3 Product Families
• **Ksplice technology** allows administrators to reduce downtime by applying updated kernels dynamically, without taking the server offline to apply a debugging kernel for troubleshooting or to implement errata.	• **Enhanced Machine Check Architecture (eMCA) Recovery Gen 2** channels machine-check events through firmware to provide more information to the software layer, enabling recovery from a broader range of error conditions.
• **DTrace** is a comprehensive dynamic tracing facility that is built into Oracle Linux that can be used by administrators and developers on live production systems to examine the behavior of the operating system.	• **Address Range Memory Mirroring** increases the granularity with which the firmware or OS can specify a range of memory addresses to be mirrored, reducing the resources needed to protect critical regions of memory.
• **Hardening within Oracle** includes integration of Oracle Linux in Oracle engineered systems and development, testing, and support of Oracle applications natively on Oracle Linux, for enhanced validation across the solution stack.	• **DDR4 Recovery for Command and Address Parity Errors** allows recovery from parity errors detected in command and address transfers, reducing the incidence of fatal memory errors that would otherwise cause system crashes.
• **Oracle Clusterware** monitors and manages application clusters and supports failover to a different cluster node in the event of a hardware or software failure, providing high availability for mission-critical implementations.	• **Multiple Rank Sparing** helps reduce the frequency of server maintenance and downtime by providing a second rank for dynamic fail-over of a failing rank to a spare rank behind the same memory controller.

Conclusion

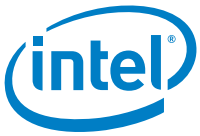
With Oracle Linux, customers have an enterprise-ready OS that delivers early, robust support for the latest hardware features of Intel platforms such as the Intel Xeon processor E7-8800/4800 v3 product families. The solution stack based on Oracle and Intel building blocks combines open-source leadership, scalable performance, and mission-critical RAS that draws on a co-engineering relationship between the two companies that spans more than 20 years. True to that legacy, the latest Oracle Linux and Intel Xeon processors provide the foundations to give companies of all types and sizes the power and freedom to innovate.

Learn more about Oracle Linux:

www.oracle.com/linux

Learn more about the Intel® Xeon® processor E7 v3 product family:

www.intel.com/xeon



[1] "Linux Kernel Development: How Fast is it Going, Who is Doing It, What Are They Doing and Who is Sponsoring the Work." A Linux Foundation publication, February 2015. http://www.linuxfoundation.org/publications/linux-foundation/who-writes-linux-2015.

[2] "Oracle Linux: Engineered into a Business-Class Solution." IDC, February 2014. http://www.oracle.com/us/corporate/analystreports/idc-linux-2157541.pdf

[3] "Lincoln Electric System Ensures Reliability for Critical Geographic Information and Outage Management Systems." Oracle customer case study. http://www.oracle.com/us/corporate/customers/customersearch/lincoln-electric-1-database-sl-2405158.html

[4] Oracle Linux Supports Innovative SEI Wealth Platform for Wealth Management." Oracle press release, July 13, 2013. http://www.oracle.com/us/corporate/press/1973590

0315/JR/MESH/PDF 332159-001US