

The Role of Operating Systems in IT and Security Strategy

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Executive summary

Operating systems (OS) play a critical role in IT and security strategies, important to resource management, security, application support and network management. The past decade has seen significant advancements in OS security, cloud integration, performance optimization and user experience. OS impacts cybersecurity solutions, in particular security frameworks, tool support, update mechanisms and compatibility.

Oracle Linux 9 OS offers unique security features, as well as compatibility with Red Hat Enterprise Linux (RHEL) and advanced tools like DTrace and Ksplice. It compares favorably with other enterprise-class Linux distributions, such as RHEL, Ubuntu and CentOS, specifically in key buyer criteria like vendor support, security, performance, compatibility, scalability, community and cost.

As such, Ivanti has adopted Oracle Linux 9 as the preferred OS to enhance our VPN solution. Customers will benefit from a modernized tech stack, seamless integration with third-party technologies and an overall improved security posture. This document highlights the technical, strategic and business value impacts of this operating system on customer environments.

Role of the operating system (OS)

Operating systems are the backbone of any IT infrastructure. They provide the necessary environment for software applications to run, manage hardware resources and offer essential services to ensure smooth operations. The OS plays several key roles in an IT and security strategy:

- **Resource management:** The OS manages the hardware resources of a computer system, including the CPU, memory, storage and peripheral devices. Efficient resource management ensures optimal performance and reliability, a necessity for supporting a robust IT infrastructure.
- **Security:** Operating systems enforce security policies and provide mechanisms to protect data and resources from unauthorized access. Features like user authentication, access control, encryption and auditing are integral parts of an OS's security framework.
- **Platform for applications:** The OS serves as a platform for running various applications that organizations rely on for their day-to-day operations. It also provides APIs and services that developers use to build and deploy software solutions.
- **Network management:** OSs manage network connections and ensure secure communication between devices. They handle tasks like routing, traffic control and encryption, which are essential for maintaining a secure and efficient network.

User expectations and effective operating systems

Users typically evaluate new operating systems with the expectation that a new OS will solve several key problems and enhance their overall experience:

- Improved system performance and speed, ensuring applications run smoothly and efficiently.
- Enhanced security controls that protect against malware, viruses and unauthorized access.
- Better compatibility and greater support for a wide range of hardware and software, reducing compatibility issues.
- A user-friendly interface that is intuitive and easy to navigate, making it accessible for users with varying skill levels.
- Reliable, automated updates and support, ensuring the system includes the latest features and security patches.

These improvements collectively contribute to a more effortless, secure and efficient user experience.

OS transformation over the past decade

The last decade has seen significant advancements in operating systems, driven by the need for better security, performance and user experience:

- **Enhanced security:** Security has become a top priority, with OS developers implementing advanced features like sandboxing, secure boot and hardware-based security measures. The rise of malware and cyber threats has prompted OSs to adopt more robust security frameworks.
- **Cloud integration:** With the increasing adoption of cloud computing, OSs have evolved to support seamless integration with cloud services. Features like containerization, virtualization and cloud-native applications have become standard.
- **Performance optimization:** Improvements in hardware capabilities have led OSs to optimize performance to take advantage of multi-core processors, high-speed storage and advanced graphics. Techniques like memory compression and better task scheduling have enhanced overall efficiency.
- **User experience:** Modern OSs focus on delivering a better user experience with intuitive interfaces, seamless updates and improved accessibility features. The rise of mobile computing has also influenced OS design, making them more responsive and adaptable.

Impact of an OS on IT and security strategies and solutions

The choice of operating system can significantly affect an organization's ability to develop and support new cybersecurity solutions. Key considerations include:

- **Security framework:** An OS with a robust security framework provides a solid foundation for building secure applications. Features like built-in encryption, secure boot and access control mechanisms are essential for developing effective cybersecurity solutions.
- **Support for security tools:** The availability of security tools and APIs can simplify the development of cybersecurity applications. OSs that support a wide range of security libraries, frameworks and protocols enable developers to create more comprehensive solutions.
- **Update mechanism:** An efficient update mechanism ensures that security patches and updates are deployed promptly, reducing the risk of vulnerabilities. OSs with automated update processes help organizations maintain a secure environment.
- **Compatibility and integration:** Integration with existing security infrastructure and tools is critical. OSs that offer compatibility with popular security solutions and standards facilitate smoother implementation and support.

Unique value of Oracle Linux 9 OS

Oracle Linux 9 is a powerful enterprise OS that offers several unique advantages:

- **Security:** Oracle Linux 9 emphasizes security with features like Linux Security Modules (LSM), secure boot and extensive auditing capabilities. It also supports cloud infrastructure integration, providing a secure platform for cloud deployments.
- **Support and compatibility:** Oracle Linux 9 is fully compatible with Red Hat Enterprise Linux (RHEL), ensuring compatibility with a wide range of applications and tools. Oracle offers comprehensive support and updates, making it a reliable choice for enterprises.
- **Features:** Oracle Linux 9 includes features like DTrace for real-time diagnostics and Ksplice for zero-downtime kernel updates.
- **Ease of use:** Oracle Linux 9 automates repetitive, error-prone manual tasks, speeds time to resolution and presents a standard stack of tools that can be used for other apps (such as configuration tools) within the network infrastructure. This significantly reduces the burden on admins and streamlines workflow.

Comparison with other popular Linux distros

Oracle Linux 9 stands out for its enterprise-grade features, optimized performance for Oracle workloads and comprehensive support. Its compatibility with RHEL ensures a smooth transition for organizations.

- **Red Hat Enterprise Linux (RHEL):** RHEL is a popular enterprise OS known for its stability, performance and extensive support. It is compatible with and offers similar features to Oracle Linux, including robust security, cloud integration and container support.
- **Ubuntu:** Ubuntu is a versatile OS favored for its ease of use and extensive community support. While it is widely used in both server and desktop environments, it does not offer the same level of enterprise-specific features and support as Oracle Linux or RHEL. Ubuntu is well-suited for development and cloud environments but requires added customization for enterprise use.
- **CentOS:** CentOS is a free and open-source OS that is binary-compatible with RHEL. While it offers a stable and reliable platform for enterprise use, it does not provide commercial support. Oracle Linux is a better choice for organizations that require professional support.

Empowering users with unparalleled control, security and customization

Combining a security solution with a Linux OS provides customers with enhanced protection, reliability and peace of mind. This integration ensures that strong security measures are in place, safeguarding sensitive data and systems from potential threats while leveraging the stability and flexibility of Linux.

Ivanti's security solutions, when combined with Oracle Linux OS, enhance the user experience in several key ways.

Customer support

- Linux is known for its resilience and minimal downtime, ensuring that Ivanti's 24-7 "follow-the-sun" model and customer support systems remain operational and responsive.
- Linux allows for extensive customization, letting the Ivanti support team tailor the OS to meet specific needs and streamline support processes.

Security

- Linux is known for its robust security features. Its open-source nature means that vulnerabilities can be quickly identified and patched by the community.
- The Linux architecture makes it less susceptible to malware and viruses compared to other operating systems.

Performance and stability

- Linux is highly stable and reliable, making it ideal for servers and critical applications, and it can run for extended periods without requiring a reboot, which is crucial for maintaining uptime in enterprise environments.
- Linux OS is designed to optimize system resources, leading to improved performance and reduced latency.

Modernization and scalability

- Linux OS supports a wide range of automation tools and DevOps practices, accelerating IT modernization efforts and enabling faster deployment of applications and services.
- Linux's flexibility and compatibility with multiple hardware and cloud environments make it ideal for scaling IT infrastructure to meet growing business demands.

Cloud and container compatibility

- Linux OS is lightweight and efficient, making it ideal for cloud and container environments where resource optimization is essential for performance and cost-effectiveness.
- Linux supports a wide range of containerization platforms like Docker and Kubernetes as well as cloud platforms, enabling easy deployment, management and scaling of applications.

Community and ecosystem

- Linux's active and engaged open-source community provides valuable resources, including forums, documentation and tutorials, which can be invaluable for troubleshooting and optimizing systems.
- Linux's rich ecosystem of compatible tools, applications and extensions enhances the flexibility and functionality of the distribution.

Impact on OpEx and Total Cost of Ownership

- Linux's stability and fewer vulnerabilities lead to lower maintenance and support costs, as fewer resources are needed to manage and troubleshoot the system.
- With built-in security features like SELinux and regular updates from a large community, Linux helps reduce the cost of implementing and supporting additional security measures. It also helps minimize the costs of security breaches and downtime.

Ivanti's Linux OS of choice, Oracle Linux 9, is open source and free to use. Source code, binaries and updates are freely available for download and use in production environments, ensuring that Oracle Linux remains accessible and cost-effective for all users.

By adopting a modern operating system like Oracle Linux 9, IT and security teams can enhance their security posture, improve performance and leverage the latest technologies to remain competitive.

Secure by Design: prioritizing security enhancements for Ivanti VPN solutions

Ivanti's security solutions are rooted in [Secure by Design](#) principles, which weave security into every stage of our software development lifecycle. These principles ensure that products are built with security embedded from the ground up, reducing the risk of vulnerabilities and making it more difficult for malicious actors to exploit them.

Ivanti has prioritized product security enhancements for Ivanti VPN solutions, including upgrades to Oracle Linux OS in 2025, as well as security hardening enhancements in our network security products. The robust security features of Oracle Linux 9 OS, such as SELinux and nftables, complement Ivanti's VPN solutions by providing an added layer of protection against known and unknown threats.

Summary and recommendation

Operating systems provide an essential platform for managing applications and infrastructure, enforcing security policies and overseeing network connectivity. They ensure optimal performance, reliability and security within IT environments. Users expect new operating systems to have a positive impact on user experience through a user-friendly interface, performance optimization, reduced latency, compatibility with other IT systems and consistent, reliable updates.

Modern OSs focus on security frameworks, seamless cloud integration, cloud-native applications and leveraging advanced hardware capabilities. The choice of OS plays a critical role in an organization's ability to develop and support cybersecurity solutions. The security framework, support for security tools, efficient update mechanisms and compatibility with existing security infrastructure are all key considerations when choosing an operating system.

The combination of Ivanti's security solutions with Oracle Linux 9 OS is designed to enhance protection, reliability and user experience. This combination lets you take advantage of seamless cloud integration capabilities to support modern IT infrastructures, while using the active Linux community for resources, troubleshooting and system optimization.

Using Oracle Linux 9, Ivanti's security solutions automatically apply regular updates and patches, keeping the system secure against known vulnerabilities. Security-Enhanced Linux (SELinux) provides mandatory access controls to enforce security policies and protect against unauthorized access. And features like Linux Security Modules (LSM), secure boot and extensive auditing capabilities further enhance system security.

Oracle Linux 9 includes DTrace for real-time diagnostics and Ksplice for zero-downtime kernel updates. Oracle Linux 9's ability to automate repetitive tasks and streamline workflows reduces the burden on administrators, while the stability of the Linux OS results in fewer vulnerabilities, leading to lower maintenance and support costs. By adopting a modern OS like Oracle Linux 9, security and IT teams can enhance their security posture, streamline operations and leverage the latest technologies to maintain a competitive edge.

About Ivanti

Ivanti is an enterprise software company that provides a comprehensive IT and security cloud-based platform. Ivanti provides software solutions that scale with our customers' needs to help enable IT and Security to improve operational efficiency while reducing costs and proactively reducing security risk. The Ivanti Neurons platform is cloud-native and is designed as a foundation of unified and reusable services and tools for consistent visibility, scalability and secure solution delivery. Over 34,000 customers, including 85 of the Fortune 100, have chosen Ivanti to meet challenges head-on with its end-to-end solutions. At Ivanti, we strive to create an environment where all perspectives are heard, respected and valued and we are committed to a more sustainable future for our customers, partners, employees and the planet. For more information, visit [ivanti.com](https://www.ivanti.com) and follow @Golvanti.



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