White Paper

# Enabling Modern Infrastructure Across On-Premises and Cloud with Oracle Linux

Sponsored by: Oracle Inc.

Greg Macatee Gary Chen Jevin Jensen
May 2023

## IDC OPINION

Enterprises are increasingly adopting hybrid cloud, public cloud, and multicloud platforms to speed time to market while keeping their applications secure as they progress toward digital transformation (DX). IDC estimates that worldwide enterprise spend on public cloud infrastructure will surpass that of traditional IT infrastructure by 2023. Enterprises are also adopting modern application architectures and Agile development processes to bring products to the market faster. While public cloud platforms and modern application architectures provide scale and agility, they are not without challenges. Some enterprises lack the skill set and maturity to operate cloud-based and cloud-native platforms. Enterprises also find managing heterogeneous environments difficult. Operating system (OS) environments, being the foundation for digital transformation, can help mitigate these challenges by providing a common, standard platform.

IDC's research shows that Linux-based operating systems are most frequently used in public cloud environments but have continued to gain foothold over the past several years in on-premises and edge spaces as well, which has been reflected over time in market share gains as shown in IDC's operating system studies. A commercial Linux distribution can help enterprises overcome many of the challenges of open source operating systems.

IDC recommends evaluating the right choice of commercial distribution based on the flexibility it enables, support for heterogeneous environments, type of support provided, and the application performance materialized. Commercial distributions such as Oracle Linux can make a significant impact on the digital transformation journeys of enterprises. The key differentiators for Oracle Linux include security, performance, flexibility, and choice; integrated tooling for better day 2 operations; support for heterogeneous applications; and one-stop shop support. For customers subscribing to Oracle Linux's Premier level of support, they are afforded additional benefits such as access to Oracle Linux KVM and virtualization manager; the Oracle Cloud Native Environment, which includes a Cloud Native Computing Foundation (CNCF)-certified Kubernetes; and other management and automation tools centered around the OS itself. In addition, Oracle Ksplice, available with a Premier support or Oracle Cloud Infrastructure (OCI) subscription, updates the Linux operating system kernel, hypervisor, and key user space libraries while the OS is running on premises or in the cloud, without a reboot or interruptions, making it possible to apply critical security patches and important updates immediately, and without the resources, operational costs, and business disruptions associated with forced reboots.

In our opinion, IT automation is essential to a successful digital business. Ansible automation can provide for an agile, consistent, and compliant OS experience whether located on premises, at the edge, or in the public cloud. IT automation can help bridge the gap in workforce skill issues by allowing operations teams to do more with the same staffing levels. Ansible can address challenges in day 1 provisioning and day 2 monitoring and support of the OS and applications. Further, Oracle provides Ansible Collection playbooks, in addition to their Terraform provider, to automate resources in its Oracle Cloud Infrastructure (OCI) platform.

This paper discusses how operating systems provide the foundation for enterprise digital transformation and provides recommendations for selecting the right commercial operating system for IT buyers.

## SITUATION OVERVIEW

### Trends in Enterprise Business Applications

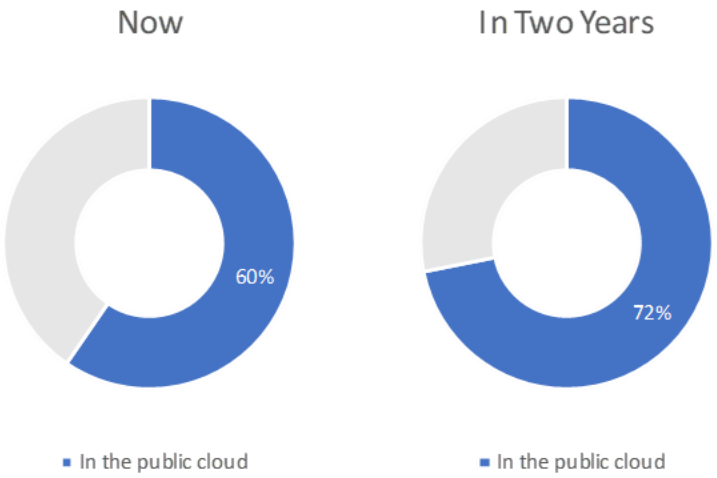
Enterprises are quickly adopting modern infrastructure paradigms such as cloud platforms, cloud-native technologies, and AI/ML technologies for their business-critical applications. According to a recent IDC study, enterprises will continue their journeys to the public cloud, with the surveyed share of workloads deployed in the public cloud growing from 60% to 72% over the next two years (see Figure 1). Most enterprise workloads that are migrated to the public cloud are being rehosted (commonly referred to as "lift and shift"), with scope for future optimization through application modernization techniques.

Notably, Windows-based workloads provide an opportunity for re-factoring/re-architecting using open source–based alternatives. For example, monolithic .NET applications can be re-factored to use .NET Core, thereby reducing the application footprint. Workloads can be either re-factored to use cloud-based services or re-architected into smaller components to run microservices on.

## FIGURE 1

### Workload Migration to Public Cloud

*Q.* *What percentage of all workloads running in your organization run in the public cloud? What percentage will run in the public cloud in two years?*



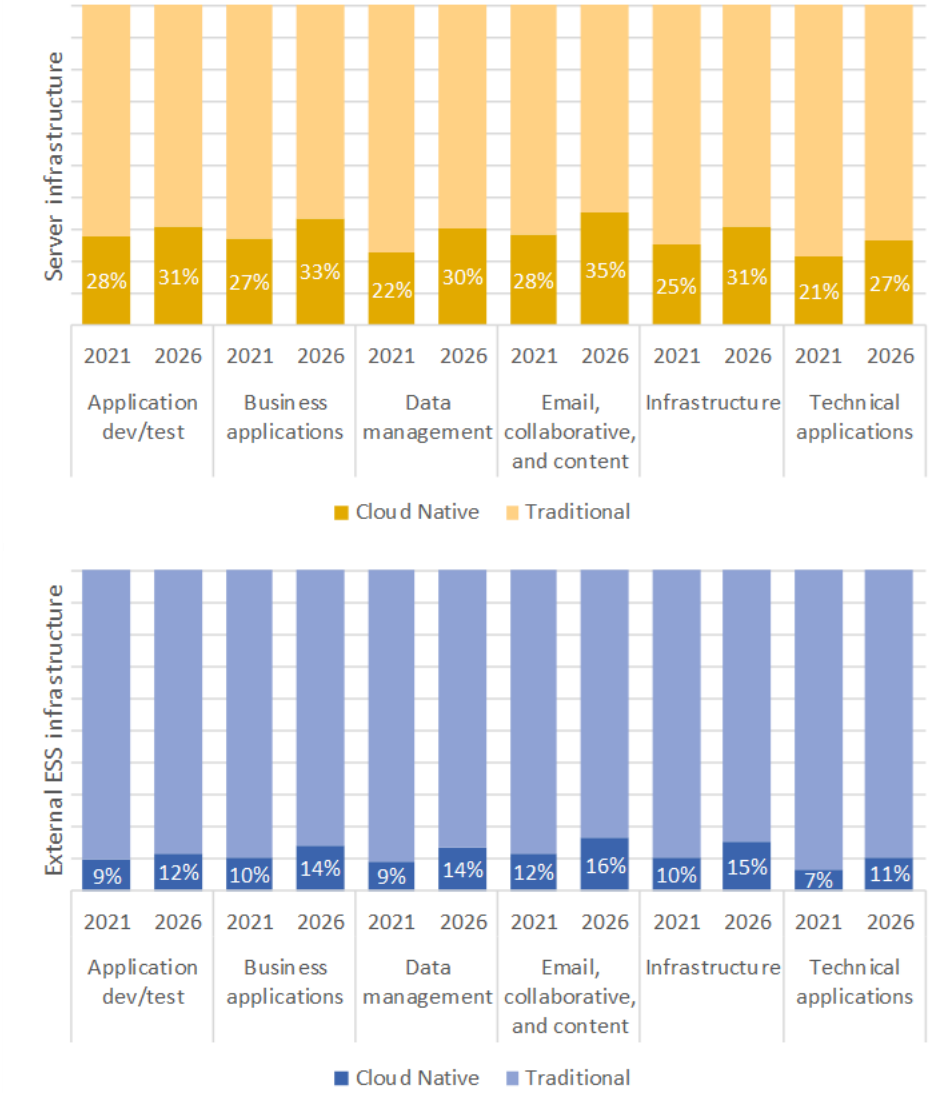

n = 600

Source: IDC's *Enterprise Infrastructure Workloads Survey,* November 2022

Enterprises are also increasingly adopting modern architectural paradigms such as cloud-native architectures, microservices-based design, or low-code/no-code design for their business needs (see Figure 2). IDC forecasts that by 2026, more than half of all categories of enterprise applications will be deployed on cloud-based infrastructure. Most of these applications will be based on cloud-native technologies, microservices-based designs, low-code/no-code paradigms, and next-generation appliances.

## FIGURE 2

### Growth of Cloud-Native Applications




Note: For more details, see IDC's Worldwide Quarterly Enterprise Infrastructure Tracker: Workloads and *Worldwide Enterprise Infrastructure Workloads Forecast Update, 2022-2026* (IDC #US49911722, December 2022).

Source: IDC, 2023

Enterprises cite agility, competitive advantage, and lower TCO as key drivers for application modernization. Popular methods to modernize applications include containerization, re-factoring, and re-architecting applications as follows:

- Containerization refers to packaging applications into one or more containers. Because containerization decouples the application from the operating system, it also reduces application dependencies on the OS and minimizes the need for forced upgrades. With the

support of stateful data sets by container orchestration platforms such as Kubernetes, database workloads can also be run on containers, obviating the need for large servers or virtual instances.

- Re-factoring involves making internal changes in the underlying components to better take advantage of services available in the cloud. Examples include adopting a database as a service, a broader platform as a service (PaaS), and native cloud-based management tools. Here, the migration integrates the higher-level services offered by the cloud service provider, such as database as a service or serverless functions, toward specific components of the legacy applications.
- Re-architecting refers to rewriting legacy applications to more efficient application architectures. The application continues to deliver the same business functionality. However, it is now architected to operate under a cloud-native framework (i.e., migrating to containerized/serverless architectures). Changes to the architecture are external to the cloud service itself but internal to the application. These changes may result in the application leveraging specific cloud-native services on the public cloud.

With the adoption of modern architectural paradigms, enterprises are also adopting modern application life-cycle management practices. The adoption of DevOps processes, such as CI/CD, is increasing. An IDC survey (see *2021 U.S. Application Services Survey: Application Modernization for the Next-Gen Enterprise,* IDC #US47588421, April 2021) of enterprises shows that 71% of the respondents rated application modernization as a high or top priority. Another IDC survey (see *U.S. Accelerated Application Delivery Survey,* IDC #US47924622, January 2022) reveals that more than 75% of the respondents have already adopted DevOps practices for at least 40% of their teams. These are important developments as enterprises continue to build applications that grant faster time to market, scalability improvements, and easier code reuse.

As more enterprises are pursuing application modernization, IDC observes that this is not without challenges. Key challenges include a lack of clarity on what applications to prioritize, a lack of application modernization expertise, and unrealistic TCO expectations. IDC's research on the maturity of DX (see *IDC MaturityScape Benchmark: Digital Maturity in the U.S.,* IDC #EUR149303622, July 2022) shows that only about 26% of the respondents are at mature stages of their journeys.

## Acceleration Through Hybrid Cloud Infrastructure and Its Impeding Challenges

IDC defines a hybrid cloud as using IT services (including IaaS, PaaS, and SaaS) across one or more deployment models and locations using a unified framework. This includes a combination of on-premises traditional IT, private cloud, and public cloud deployment models across multiple deployment locations. Hybrid cloud provides organizations with flexibility and infrastructure to deploy business applications and consistent operational experience across heterogeneous environments.

IDC observes that enterprise adoption of hybrid cloud environments is increasing for reasons such as optimal workload placement from a performance, security, and/or cost perspective; application migration to the public cloud; and data/tiering needs. Yet many of these benefits fail to be realized as enterprises struggle with the complexity around curating and managing multiple environments (in terms of skill sets and dedicated tools) and/or being unable to quantify and communicate specific ROIs to other organizational stakeholders.

IDC observes that though more enterprises are prioritizing infrastructure modernization, they are also facing challenges. Enterprises report operational complexity, workforce skill challenges, and

mismatched expectations as top inhibitors for infrastructure modernization. With nearly every enterprise reporting the use of multiple clouds, the complexity of managing modern applications in the cloud grows exponentially.

Enterprises are also perplexed with the complexity of "day 2" operations across heterogeneous environments. Day 2 operations commonly refer to the maintenance and upkeep of day-to-day operations of the IT infrastructure to ensure continuous availability of infrastructure and applications. Enterprise IT admins have well-established processes and workflows to manage traditional datacenters. They also have full access and control of these environments. In the case of downtimes, they know what needs to be done to troubleshoot and fix the outage.

Public cloud platforms introduce additional complexity into day 2 operations with a different set of tooling and training and with different levels of visibility, access, and control. With multiple cloud platforms in the mix, managing these environments becomes even more complicated because of the lack of consistent APIs and tools to manage different cloud platforms. The results can mean longer times to identify and resolve incidents. This has driven the adoption of observability platform solutions by many enterprises. Providing a resilient and performant application is essential to today's digital business. Observability helps IT operations and SRE teams get to the root cause faster and more proactively. With data gravity and service gravity significantly influencing workload placement in a heterogeneous environment, the need for consistent tooling to manage and operate workloads across these environments is more pressing. To process the data from logs and fully manage multiple clouds, enterprises turn to AIOps solutions that work in parallel with observability to deliver a more autonomous infrastructure.

## A Foundation for DX

Modern infrastructure paradigms such as virtualization, cloud computing, containerization, serverless infrastructure, and accelerated hardware are key components of digital transformation. Adopting modern infrastructure paradigms enables enterprises to modernize their applications and business processes. Operating system environments provide necessary system primitives to support these infrastructure paradigms. Without the support of such primitives, applications cannot leverage these infrastructure abstractions. For example, virtualization is part of the Linux operating system kernel through the Kernel-Based Virtual Machine (KVM). This enables the Linux operating system kernel to operate as a hypervisor on x86 hardware containing virtualization extensions (Intel VT or AMD-V).

Containers are efficient packages of applications and their dependencies that run on an operating system host in a more secure sandboxed environment. Multiple containers can be packed onto a container host, which can be running on bare metal or in a virtual machine (VM), providing consolidation benefits. The efficient packaging format and fast start-up times enable more agile workflows and orchestration.

Deploying containerized applications at scale is not trivial; it involves various aspects such as providing a runtime environment, managing service dependencies, authorization and authentication, isolation, resource provisioning, hardware abstraction, and enabling programming access. A container orchestration platform is needed to provide such necessary primitives. Kubernetes has emerged as the most popular container orchestration platform. Managing containerized applications is also nontrivial, with newer approaches to monitoring, logging, tracing, and troubleshooting required. For example, tuning a Kubernetes cluster can require the review of up to 200 individual parameters. Open source–based projects have led innovations around this space to reduce complexity and automate deployment

of containers, with Linux being the most popular choice of operating system to deploy containerized applications.

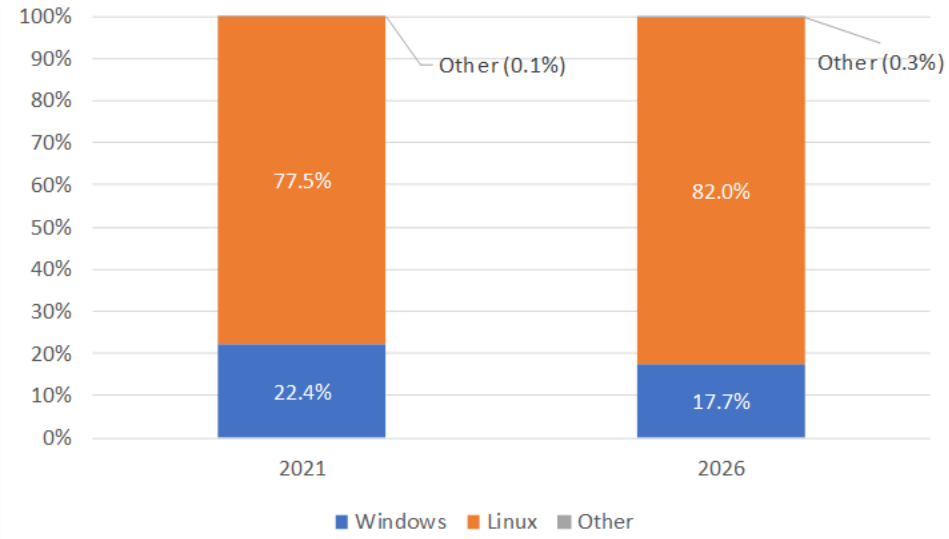
Operating systems also enable leveraging accelerated hardware such as GPUs through necessary hardware abstractions. Through these abstractions, AI/ML applications can leverage the power of GPUs to train or run inference on machine learning models. These abstractions also enable using a combination of heterogeneous hardware, such as x86 and GPUs, side by side.

## Growth of Linux-Based Operating System Environments

While the Windows Server operating system takes the lion's share of OS revenue, the Linux operating system dominates the installed base. Linux is widely adopted among enterprises to power their business applications such as financial, warehouse management, and ERP systems. In 2021, about 78% of net-new operating system deployments (on premises or in the cloud) was on Linux. By 2026, Linux's share of the market is projected to grow to 82% with a five-year CAGR of 14% (see Figure 3).

### FIGURE 3

**Worldwide Server Operating System Environments Market Shares, 2021 and 2026**




Source: IDC, 2023

### *Challenges with Open Source Operating Systems*

While enterprises are increasingly adopting open source-based products/Linux distributions, they also face challenges using such products/distributions. Security concerns, a lack of unified support, and difficulty in day 2 operations are some of the critical inhibitors cited by enterprises. These enterprises cite security, a one-stop place for all their support needs, flexibility and choice (of application architecture, deployment models, and locations) provided, lower licensing costs, and better tooling to ease day 2 operations as key metrics when selecting an operating system.

### *Benefits of Commercial Linux OS*

A commercial Linux distribution such as Oracle Linux can help mitigate the key challenges cited by enterprises through its key differentiators, including:

- Security:
  - Security/enterprise-grade hardened operating system that provides application binary compatibility with other major Linux-based commercial operating systems
- Performance:
  - Performance optimized for database-intensive business applications
- Integrated tooling:
  - Integrated tooling for efficient day 2 operations
- Flexibility and choice:
  - Provides choice and flexibility of virtualization platforms (open source KVM and oVirt-based virtualization manager)
  - Supported on multiple cloud platforms including Oracle Cloud Infrastructure, AWS, and Azure
- Support for heterogeneous applications:
  - Enables cloud-native application development through support for popular container runtimes and container orchestration platform (Kubernetes)
- One-stop shop support:
  - Everything included in a single support offering – OS, virtualization, management, clustering, and cloud-native tools, which simplifies operations, reduces cost, and makes managing budgets easy
  - World-class support for business applications running on premises or in public cloud environments

## HOW ORACLE LINUX ENABLES DIGITAL TRANSFORMATION

The operating system plays a foundational but invisible role in enabling digital transformation. Oracle Linux – through its features, tools, and capabilities – can provide such a reliable foundation. More specifically, Oracle Linux can enable enterprises in digital transformation through the capabilities discussed in the sections that follow.

### Provides Foundational Support for Enterprise Applications

Enterprise business applications have demanding performance and high-availability requirements. Any loss of business continuity translates directly into a loss of business revenue. Any performance degradation affects customer experience and satisfaction and possible loss of transactions. While this has been the case in the past, today's digital business is more dependent on digital infrastructure than ever before.

Oracle Linux is fine-tuned for the high-performance requirements of the database applications and other demanding workloads deployed on both bare metal servers and virtual machines. Oracle Linux has also gained mindshare among enterprise organizations as the most sought-after operating environment for data management applications and business applications.

Enterprise IT environments and business applications are getting more virtualized. Oracle Linux includes the KVM hypervisor, and management is supported through Oracle Linux Virtualization Manager. Oracle Linux KVM supports other Linux distributions running as guest VMs, including Red Hat Enterprise Linux, CentOS, Ubuntu, and SUSE Linux Enterprise Server, as well as Microsoft's Windows Server. Oracle Linux Virtualization Manager, based on the open source oVirt project, allows enterprises to continue supporting existing KVM deployments on premises. As Oracle Cloud Infrastructure also uses the same hypervisor, Oracle Linux KVM enables an easy migration path for workloads to OCI.

## Enables Application Modernization

More enterprises are adopting cloud-native applications and architectures for their business needs. Support for building, deploying, and managing cloud-native applications is not trivial. IDC forecasts worldwide container growth to exceed 6.5 billion by 2025 (see *Container Infrastructure Software Market Assessment: Container Deployment Forecast, 2022-2025,* IDC #US48670722, January 2022). It involves enabling container runtimes, managing container images, orchestrating containers, supporting networking and storage abstractions, and providing ways to monitor/observe containerized applications.

Oracle Linux enables enterprises to build, deploy, and manage cloud-native applications along with virtualized applications through its support for the entire cloud-native stack. Oracle Linux also enables deploying cloud-native applications on both bare metal servers and virtual machines.

Oracle Linux includes container tools that enable developers to build, test, and run containers as part of their workflow. Oracle Linux 8 and 9 include the Podman suite, which includes Skopeo and Buildah.

Oracle Cloud Native Environment provides an open source Certified Kubernetes distribution along with necessary plug-ins (CNI for networking and CSI for storage) and associated projects (such as Prometheus for monitoring and Fluentd for logging). Through support for CNI plug-ins, cloud-native networking capabilities can be enabled through open source projects such as Calico and Flannel. Similarly, storage needs for stateful applications can be enabled through CSI plug-ins.

Oracle Cloud Native Environment supports popular container runtimes through CRI-O. Prebuilt container images and packages for popular tools and platforms such as Oracle Database, MySQL, and Java are available at the Oracle Container Registry, which makes building and deploying containerized applications easier.

Oracle Linux also enables running microservices-based applications through its support for Service Mesh Interface (SMI)-compliant service mesh platforms, including Istio. Finally, Oracle Linux provides the necessary capabilities to modernize traditional applications into cloud-native applications.

Oracle Verrazzano Enterprise Container Platform is a container and cluster management solution that provides simplified application modernization with enhanced automation that makes it easy to adopt. It runs on top of Oracle Cloud Native Environment, allowing container applications to be deployed on Kubernetes clusters, on premises or in the cloud, and easily migrated between the two. Oracle Verrazano simplifies the management of the life cycle of container-based applications, provides consistent tools for managing and securing those applications, streamlines development cycles by providing automated tools that work with a wide range of DevOps solutions, and simplifies the migration of traditional applications to containers.

## Makes Day 2 Operations Easier

Oracle Linux provides the following tools and capabilities to ease day 2 operations and provides consistent management of heterogeneous environments:

- **Ksplice** enables updating select, critical components on Oracle Linux deployment with all critical security patches without rebooting. Rebootless updates save time and pain, avoid downtime, and proactively prevent security incidents. Moreover, Ksplice's Known Exploit Detection capabilities for Oracle Linux help customers further shore up the security of their systems by acting as a first line of defense against select known vulnerabilities.
- **DTrace** is an advanced tracing tool to enable troubleshooting in real time. DTrace provides operational insights such as memory consumption, CPU utilization, and call stacks.
- **Oracle Linux Automation Manager** is also included with Premier support. It empowers teams to share, create, manage, and secure automation processes across the enterprise. Based on open YAML, these playbooks allow operations teams to quickly automate their Linux environment with Ansible compatibility.

Apart from providing powerful tools and capabilities to ease day 2 operations, Oracle also provides a one-stop shop for world-class support for the entire stack, from the virtualization layer to the application layer. Oracle Support is available in Premier and Basic, appropriately priced to provide better value. Through application binary-level compatibility, Oracle can extend its support capabilities for applications running on other Linux distributions such as RHEL. Subscribing to Oracle support is also less restrictive than competitors, with support costs paid only for the servers and instances when and where the support is enabled.

Oracle Autonomous Linux, available on Oracle Cloud Infrastructure, enables automatic patch updates and performance tuning without manual intervention. Because it is based on Oracle Linux, Oracle Autonomous Linux allows customers to run other Linux workloads without modification on OCI to leverage this capability.

## Optimizes Support Costs and Oracle Software License Costs

Through its Premier Support offering that includes 24 x 7 support for unlimited virtual machines, Oracle reduces the support costs of Oracle Linux VMs. Oracle Linux images are free to download and distribute without any licensing costs. Support costs are charged only when the support is enabled.

Oracle Linux also enables Oracle software cost optimizations through licensing advantages with Oracle Linux KVM and Virtualization Manager. Oracle Linux KVM offers an advanced feature for hard partitioning, also known as CPU pinning, which allows VMs to be assigned to specific CPU cores. This, in turn, minimizes Oracle software licensing costs.

## Supports Open Multicloud

Oracle Linux is supported on multiple cloud platforms, including OCI, AWS, and Azure. Oracle is the only vendor that offers the same Linux distribution to its customers that also runs on its own infrastructure. Through application binary compatibility with RHEL, Oracle Linux enables an easy migration from RHEL-compatible Linux distributions such as RHEL and CentOS Linux. With this combination of binary compatibility and multicloud platform support, Oracle Linux offers a solid choice for customers requiring multicloud support.

Enterprise customers running on-premises business applications on Oracle Linux have an easy and direct path to migrating to Oracle Cloud. Customers can leverage capabilities, such as Oracle Autonomous Linux available on OCI, and more automation, such as autoscaling, life-cycle management across pools, and monitoring. Customers can also migrate to other public cloud service platforms such as AWS or Azure as Oracle Linux is natively supported on these platforms.

Enterprise customers running applications on other Linux distributions such as RHEL can also migrate their applications as is to Oracle Linux both on premises or in the public cloud (including OCI) to leverage the advantages provided by Oracle Linux.

## FUTURE OUTLOOK

### Hybrid Environments — The New Normal

Hybrid environments are fast becoming the new normal of enterprise IT infrastructure. IDC expects this trend to continue, with enterprises leveraging diverse infrastructure abstractions across multiple locations through multiple deployment models. With the rapid growth of edge computing and associated applications getting closer to the end customer, this trend is likely to continue. Enterprises need to be able to manage different server types, CPUs, and storage back ends. They need to ensure the availability of applications running on bare metal servers, virtual machines, containers, and other infrastructure abstractions. Security boundaries are now extended past the datacenter, extending to public cloud and edge locations. With so much variety in heterogeneous environments, IT admins need a unified platform that delivers an intuitive, secure, consistent experience to simplify management and operations. The underlying operating system needs to provide the foundation for this consistent operational experience. Oracle Linux, through unique capabilities such as Autonomous Linux, is well positioned to provide such a foundation across hybrid cloud environments.

### The Growth of Cloud-Native Applications

More enterprises are adopting the right infrastructure abstraction for the right workload paradigm. For example, enterprises leverage containers and cloud-native technologies for applications that need massive scale and are less stateful. They are also embracing AI/ML technologies for new business use cases deployed across cloud, core, and edge locations. A recent IDC survey shows that 30% of respondents indicated that AI/ML workloads were one of the primary drivers to deploy containers (*Container Infrastructure Software Market Assessment: End-User Survey Results,* IDC #US48670722, January 2022).

Enterprises are increasingly adopting cloud-native architectures for their business workloads. IDC estimates that by 2026, roughly 35% of infrastructure spend on enterprise workloads is expected to power cloud-native applications.

With such growth in cloud-native applications and many infrastructure abstractions, it is more important than ever for the underlying operating system to support heterogeneous workloads. Oracle Linux is well positioned to be the foundation upon which enterprises can leverage heterogeneous workloads.

## CHALLENGES/OPPORTUNITIES

# Opportunities

### *Enabling Support for Heterogeneous Workloads*

Historically, Oracle and Oracle Linux have been strongly associated with database workloads. With optimizations for database workloads, enterprises have been primarily leveraging Oracle Linux for their database needs on bare metal environments.

However, Oracle Linux is not just about databases. With the support for KVM and oVirt managed virtualization, cloud-native technologies including Kubernetes, integrated tools for day 2 operations, and kernel-based support for multiple Linux distributions, Oracle Linux is well positioned to support heterogeneous workloads. Furthermore, capabilities such as support for SMI-compliant service mesh platforms such as Istio render Oracle Linux ready for microservices-based applications. Oracle Cloud Infrastructure also enables leveraging GPUs for AI/ML workloads through NVIDIA GPU Cloud (NGC) on OCI or bare metal GPU.

Enterprises are increasingly running heterogeneous applications and are using hybrid cloud platforms to deploy these applications. An open operating system that supports multiple infrastructure abstractions, provides compatibility with different operating system kernels, and enables interoperability between on-premises and public cloud environments proves itself as an ideal platform to support heterogeneous workloads across hybrid cloud infrastructure. Oracle Linux fits that bill.

# Challenges

### *Mindshare*

Enterprises look to Oracle for their business-critical/mission-critical database needs. Enterprises adopt Oracle databases because of their performance and availability and the support capabilities provided by Oracle. Oracle customers are also taking advantage of Oracle's SaaS offerings to migrate their business-critical workloads to the cloud. However, many are not aware of Oracle's open source contributions.

Oracle has been a strong participant in the open source community, holding several sponsorship and leadership roles. Oracle is a founding member of key open source foundations, including the Linux Foundation, Eclipse Foundation, and the Java Community Process. Oracle is also a key sponsor of open source organizations that have been accelerating innovations around cloud-native technologies, including the Cloud Native Computing Foundation. Oracle is the home for Java and MySQL, the most popular open source language and database, respectively.

With such support for open source technologies across the stack — including the Linux kernel, virtualization, operating system, containers, middleware, language, and database – Oracle is uniquely positioned to enable digital transformation based on open source technologies.

## ESSENTIAL GUIDANCE FOR CUSTOMERS

# Consider Open/Flexible Operating Systems

IDC recommends enterprise organizations consider open operating systems that provide more flexibility and choice.

Enterprise IT organizations are increasingly leveraging heterogeneous workloads running on bare metal servers, virtual machines, or containers. Hybrid environments consisting of on-premises datacenters, edge, and public cloud infrastructure are also fast becoming a reality for enterprise IT organizations. Open operating systems enable enterprises to support heterogeneous workloads and place them strategically across on-premises or public cloud environments. This flexibility and choice in infrastructure enable developer agility, which in turn provides enterprises with competitive advantage.

Flexible, open operating systems also enable enterprises to move workloads running on the different operating systems to a single platform, thereby providing maximum flexibility. Such a consolidation of operating environments also provides an opportunity to optimize operating system licensing costs, thereby providing better TCO. IDC recommends considering open operating systems such as Oracle Linux that provide flexibility and choice to support heterogeneous workloads across on-premises and public cloud environments.

### Future-Proof Investments: Optimize for Now, Plan for Future

Enterprises are often caught in the dilemma of supporting legacy investments while planning for future innovations. An operating system that can support both legacy and modern workloads helps enterprises overcome this dilemma. IDC recommends that enterprises optimize for now by consolidating legacy workloads to an open and flexible platform so that they are well positioned to capitalize on future innovations.

### Think More than Databases

Enterprises also tend to focus on requirements posed by the workloads currently in use, such as databases or productivity workloads. In doing so, they tend to prioritize immediate technology drivers and business drivers while selecting an operating system. Technology drivers include support for diverse hardware, a flexible open source ecosystem, and improved day 2 operations. Business drivers include lower TCO, lower support costs, and support capabilities.

IDC recommends enterprises look beyond their current needs and consider the types of workloads they may be using in the future. With more enterprises adopting heterogeneous workloads across heterogeneous platforms, it is critical that the vendor understands the nuances of supporting business-critical workloads across such environments. IDC recommends selecting a vendor that has demonstrated a deeper understanding of supporting business-critical workloads across diverse environments.

## CONCLUSION

Operating systems provide the foundation for digital transformation. Oracle, with its Oracle Linux operating system, offers an optimized foundation through its security, performance, flexibility, and choice; integrated tooling for better day 2 operations; support for heterogeneous applications; and a one-stop shop for support.

IDC recommends that enterprises consider a commercial Linux operating system to overcome commonly faced challenges with open source alternatives. Further, IDC recommends selecting an operating system that supports flexibility, choice, and better tooling and that is backed by a vendor that can provide world-class support for the entire stack.

## About IDC

International Data Corporation (IDC) is the premier global provider of market intelligence, advisory services, and events for the information technology, telecommunications and consumer technology markets. IDC helps IT professionals, business executives, and the investment community make fact-based decisions on technology purchases and business strategy. More than 1,100 IDC analysts provide global, regional, and local expertise on technology and industry opportunities and trends in over 110 countries worldwide. For 50 years, IDC has provided strategic insights to help our clients achieve their key business objectives. IDC is a subsidiary of IDG, the world's leading technology media, research, and events company.

## Global Headquarters

140 Kendrick Street
Building B
Needham, MA 02494
USA
508.872.8200
Twitter: @IDC
blogs.idc.com
www.idc.com

---