



ORockCloud with Intel's Hardened Security

Key Benefits

BOTTOM-UP STACK SECURITY

Security commencing with the hardware to firmware, BIOS and boot-driver layers of the stack

ROBUST TECHNOLOGIES

Leverages Intel technologies for boot and runtime security with HPE Integrated Lights-Out (iLO 5) and ORock's comprehensive cloud security with up to 421 controls

BLOCK HARDER-TO-DETECT THREATS

Attacks aimed at lower layers of the stack are harder for organizations to identify and detect than attacks on layers above the OS—until now

HARDWARE-ENFORCED FIREWALLING

Helps to separate sensitive data from untrusted workloads and provides more deterministic workload performance and QoS

MALWARE & THREAT SIMULATION

Design, test and train against cybersecurity threats without the worry of compromising existing environments

LEADING TECHNOLOGY PARTNERS

ORock continues to work with leading technology partners to deliver unparalleled cloud security options



When Performance, Security and Flexibility Are Mission Critical

The world has seen a dramatic increase in cyber attacks while at the same time requiring innovative ways to drive costs and complexities out of existing IT estates. The cloud is one vital pillar of a comprehensive hybrid IT strategy, but all too often the perception of cloud security can cause hesitation in leveraging it for critical applications and workloads.

ORockCloud: Built Security Strong

Since the founding of ORock Technologies, as we built our cloud from scratch, the overarching company mission has been SECURITY. Every element of the ORockCloud was architected and built based on integrating the latest generation of physical, hardware, network and software components.

A cloud built to rigid commercial, government and Department of Defense security standards now serves as a leading public cloud service provider to government, commercial and highly regulated organizations and companies.

In pursuing such high compliance and security standards, ORock has partnered with world-leading technology companies that share in a security-first approach. Partnering with organizations like HPE, Intel and Red Hat to deploy cloud solutions that deliver proven quality of service (QoS), outstanding value with cost predictability, and an agile approach to tackle unique customer IT demands.

ORockCloud & ORockCloud with Intel's Hardened Security

ORock understands that not all workloads or applications fit within the typical constraints of cloud computing. While the ORockCloud achieves more than 325 comprehensive government and industry security controls, ORock recognizes that organizations need solutions that build upon these leading security controls and enable security features that advance the way organizations can protect themselves, and detect and respond to threats.

Partnering with Intel, Lockheed Martin and HPE, ORockCloud with Intel's Hardened Security is a solution that takes cloud security to the next level. By combining hardware, software and firmware security technologies, ORock now offers an affordable boot through runtime protection for critical applications. At the Virtual Machine (VM) level, this protection:

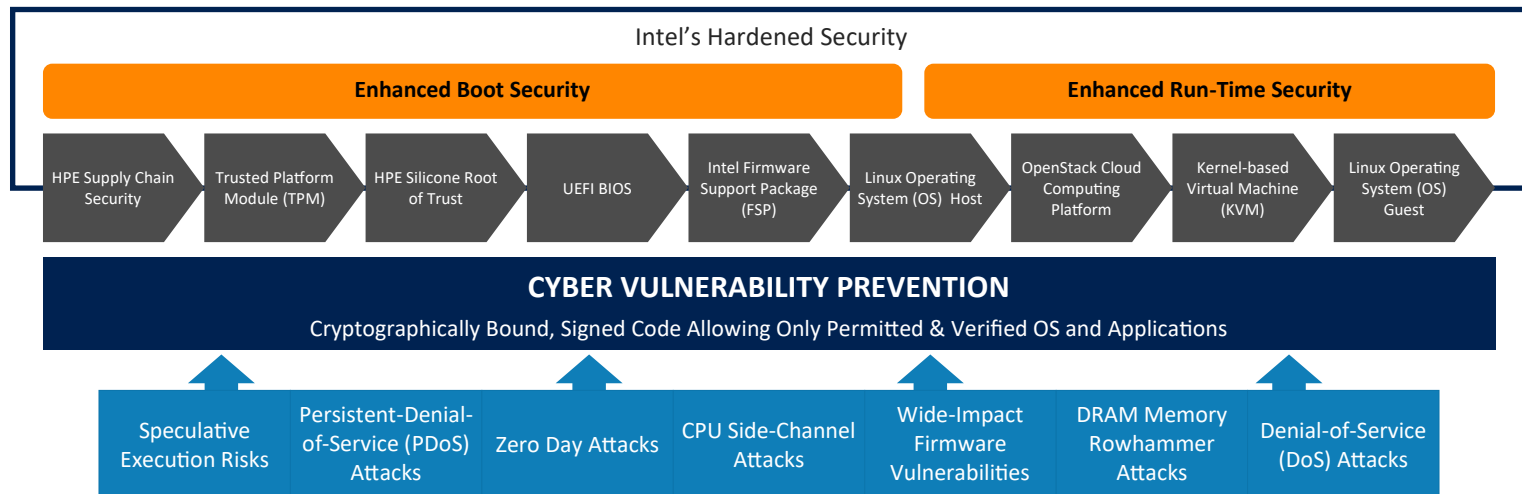
- Provides cybersecurity deeper in the IT stack
- Prevents persistent threats from using rootkits and other means to compromise low-level components
- Protects at the hypervisor, boot drivers, BIOS and firmware—security built in at every independent layer of the stack

OROCKCLOUD—ADDRESSING FULL STACK SECURITY HEAD-ON

Extending Security Up and Down the Stack

With Intel’s and HPE’s security innovations, security technologies now meet the ever-increasing sophistication of cyber criminals as they exploit security vulnerabilities deeper and further down the IT stack. Now, ORockCloud with Intel’s Hardened Security provides an advanced level of protection not offered in other hyperscale clouds—and only available in the ORockCloud as an enhanced security option to its multi-tenant cloud offerings.

OROCKCLOUD FULL STACK SECURITY







Reduced Attack Surface and Secure Runtimes

By reducing the available attack surface from over 6 million lines of code in the Unified Extensible Firmware Interface (UEFI) BIOS and firmware support package (FSP), the solution now provides a platform initialization module (PIM) BIOS and FSP of just 25,000 lines—a reduction of over 99%. In addition, even at the hypervisor tier, Intel managed to gain a fifty percent reduction in lines of code to approximately 50,000.

Reduced Resource and Workload Vulnerabilities

For workloads and applications that demand additional cloud security, ORockCloud with Intel’s Hardened Security addresses that concern head on. ORock offers the only multi-tenant cloud hosting solution that offers additional tiers of security by providing hardware firewalling that helps separate sensitive data from non-trusted workloads, while also providing cross-domain protection against leakage, modification, and privilege escalation. To accomplish this, even ORockCloud Virtual Machines (VMs) can logically dedicate cores, memory, interrupts and cache.

ORockCloud with Intel’s Hardened Security—Value Propositions

CYBERSECURITY	DESIGNED-IN SECURITY	PERFORMANCE	COST
 <ul style="list-style-type: none"> Help protect your most sensitive workloads and data sets against cyber threats ORock SOC cloud monitoring and management Compliance with government and commercial security controls 	 <ul style="list-style-type: none"> Enhanced trusted supply chain through software provisioning in a controlled factory environment 	 <ul style="list-style-type: none"> VM environment with quality of service (QoS) matching that of dedicated environments Critical workloads and situations that benefit from a public cloud deployment yet mitigate any potential of a “noisy-neighbor” impact 	 <ul style="list-style-type: none"> Lower TCO by consolidating critical workloads running on dedicated bare-metal servers to the ORockCloud virtualized platform

The ORockCloud—Designed for Even the Most Advanced Workloads

Running advanced and mission-critical workloads in the cloud is a challenging proposition even for the most experienced IT teams. In selecting a cloud, you want to alleviate as much of the risk as possible upfront, to ensure your migration or workload deployment is a success. This means that choosing the right cloud services partner is essential. What should you consider?

- Choose the right partner with a purpose-built cloud that can support and successfully handle mission-critical workloads
- Ensure your cloud partner will work hand in hand with you to understand your unique cloud environment and IT needs. One that can provide engineering and cloud architectural support, from initial assessment through production deployment
- A partner that understands that the entire cloud and infrastructure stack matters and backs it up by leveraging the latest generation of hardware, software and security
- A cloud partner with product options that address stringent and advance security needs, computational needs, and network & storage performance needs, and who provides outstanding support—all at a great competitive value

ORockCloud Security Delivers Customer Options

Whether you are a government agency or a commercial organization, ORock understands that customers need the right cloud security and technology stack to address application and workload requirements.



Bare-Metal Performance in a Virtual Cloud Environment

ORock and its technology partners are excited to offer the latest advancements in multi-tenant cloud computing and hybrid IT technologies. The introduction of ORockCloud with Intel’s Hardened Security offers customers greater end-to-end security capabilities and computing power, while delivering bare-metal performance and cloud-like flexibility.

- Spin-up and tear-down environments, resources and infrastructure
- Ideal for mission-critical and advanced computing workloads and applications
- The solution provides secure, deterministic performance IT at all levels of the cloud stack
- All of the convenient options of a public cloud, pay-as-you-go and reserved instances for scalable and burstable requirements

Key Benefits & Workloads

- Eliminate “noisy neighbor”
- Deploy true hybrid cloud model
- Secure data to the edge—devices and tactical
- CI/CD pipeline
- Cyber simulation lab
- Application development



Don't Just Take Our Word— Independently Tested and Verified

The advanced technologies from Intel and HPE that power ORockCloud with Intel's Hardened Security underwent third-party attack and vulnerability attempts by leading security firm InfusionPoints. What was their conclusion?

"We were unable to successfully circumvent the protections provided by the Secure VM Isolation solution. Combined with HPE's Silicon Root of Trust, and Secure Boot technology, the solution provides a trusted execution environment that has integrity validation built in from the moment the server is powered on. Its plug-and-play architecture allows it to easily integrate into well-known orchestration projects based on libvirt and the ubiquitous OpenStack, providing an opportunity for cloud providers to differentiate their cloud by offering new instance classes with high security profiles. Private cloud operators with regulated workloads can feel more confident that they have strong virtual isolation between instances running in their cloud environment and have an answer to these contemporary threats."

Tests Performed	Results
<p>Attempt to disrupt Secure Boot process, or compromise encrypted information contained in local storage</p> <p>Launched Spectre, Meltdown attacks</p> <p>ZombieLoad vulnerabilities</p> <p>Sandsifter exploit</p>	<p>Unable to find any misconfiguration in the disk encryption or Secure Boot Process</p> <p>Using publicly available exploit code, InfusionPoints was unable to successfully exploit</p> <p>Failed to steal memory secrets from other processes</p> <p>Detected security policy violation resulting in the termination of tenant domain</p>

Expand Your Cloud Security Capabilities to On-Premises and the Edge

If your IT requirements demand tighter integration between your cloud, on-premises and edge locations, let ORock's cloud and security team help you architect and deploy the most secure and performant hybrid IT solutions. ORockCloud with Intel's Hardened Security provides configurable compute, storage and network options that are tightly integrated to provide a seamless edge-to-edge solution.

Boundless Options and IT Deployment Configurations

- Common infrastructure between ORockCloud with Intel's Hardened Security (ORC-IHS) to ORock On-Premises to Cloud (OPC) integration (single API)
- Edge devices inherit security protocols
- Enable development of cloud applications and workloads
- Seamlessly migrate workloads between cloud, edge and on-prem
- Scale beyond IT infrastructure rapidly and cost effectively
- Maintain local edge processing and data security
- Increase security by eliminating centralized IT points

