Plug-and-Play Cloud Computing

Mirantis OpenStack* Express abstracts the provisioning of cloud infrastructure (compute, network, storage) to a single button. Powerful Intel® architecture behind the scenes sweetens the deal.

In today’s fast-paced business environment, the difference between competitive advantage and also-ran is often measured in days. Business innovators need a way to move from idea to proof of concept to production quickly. But they also need to consider ease of use, cost efficiency, and security. Mirantis OpenStack* Express, running on Intel® architecture, can help them meet these goals.

Mirantis OpenStack Express - Overview

Deploying OpenStack clouds manually in an on-premises data center takes time, and the process can be complex and expensive. OpenStack Express insulates developers from the complexity inherent in OpenStack and lets them focus on bringing their ideas to production in as little time as possible, without sacrificing user experience, cost efficiency, or security. Table 1 summarizes the benefits that OpenStack Express offers.

OpenStack Express is an on-demand private-cloud-as-a-service. It is a complete hosted cloud offering in which Mirantis OpenStack—an open, pluggable architecture—is deployed on IBM Cloud’s SoftLayer infrastructure. This infrastructure utilizes Intel architecture-based hardware with custom engineering and is offered to customers in managed form. OpenStack Express serves as an alternative to both standard public clouds and on-premises clouds. By adding additional layers of abstraction, OpenStack Express makes it possible to deploy a cloud environment using just a few clicks of the mouse button.

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<tr>
<th>BENEFIT</th>
<th>DESCRIPTION</th>
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<tr>
<td>Affordability</td>
<td>Because it is not necessary to buy, operate, and maintain hardware, an organization can convert capital expenditure to operational expenditure.</td>
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<td>Agility</td>
<td>A fully operational OpenStack environment is available from within seconds to just a few days (depending on the edition).</td>
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<td>Reliability</td>
<td>OpenStack Express is built with hardened Mirantis OpenStack, engineered for stability and high availability; rapid, compliant support for service-level agreements is provided.</td>
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<td>Consistency</td>
<td>As a pure-play OpenStack solution, OpenStack Express is interoperable with on-premises clouds (that is, it supports hybrid cloud solutions) and can exchange configurations with other OpenStack clouds.</td>
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<td>Flexibility</td>
<td>OpenStack Express provides standard OpenStack API access, instant scalability, and multiple options for compute, storage, and networking depending on a customer’s needs and workloads.</td>
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<tr>
<td>Performance</td>
<td>OpenStack Express Team and Enterprise Editions provide dedicated bare-metal servers and therefore offer all the usual I/O performance advantages over virtualized servers.</td>
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The preprovisioned cloud provided by OpenStack Express simplifies spinning up a virtual machine (VM), creating a development environment, and orchestrating the underlying infrastructure. Developers can deploy a cloud in 60 seconds—greatly accelerating the pipeline for developing, testing, and production. Use cases that require provisioning tenants quickly are especially poised to benefit from OpenStack Express.

Because OpenStack Express is based on a pure-play OpenStack distribution, the cloud it provides is effectively the same as any Internet-connected Mirantis OpenStack cloud built on-premises. For example, the same developer-level API access is available as in an on-premises cloud. Developers can easily set up the OpenStack command-line clients on any local VM or remote laptop to facilitate administration and DevOps; they can also write applications that access the cloud's REST (Representational State Transfer) interfaces. Applications developed on OpenStack Express can be ported to an on-premises OpenStack cloud with high assurance that they will work as expected.

With most editions of OpenStack Express, administrative capabilities are also the same as if the cloud was on-premises. For example, as requirements change, developers can log on and reconfigure nodes, and then redeploy clusters rapidly using Fuel*, which is a cloud configuration and deployment engine.

OpenStack’s complexity can potentially make maintenance of an on-premises cloud problematic. In contrast, Mirantis support staff can analyze and resolve issues as they arise, providing OpenStack Express customers rapid, compliant support for service-level agreements.

And unlike public clouds, which often support many tenants, thereby raising security and performance concerns, OpenStack Express is a hosted private cloud. Each customer’s hardware is dedicated, so there are no “noisy neighbors.”

Dashboard

All editions use the OpenStack Express dashboard, a sample of which is shown in Figure 1. The dashboard provides convenient access to Horizon*, which is OpenStack’s web-based user interface to OpenStack services. Developers can also use the dashboard to access documentation and tutorials, the application catalog, and other tools, depending on the edition of OpenStack Express. The dashboard also enables customers to instantly add quota capacity (Developer Edition) or bare metal servers (Team and Enterprise Editions).

Figure 1. The Mirantis OpenStack* Express dashboard enables easy access to interfaces for scaling, configuring, deploying, and administering a cloud.

New to OpenStack*?

OpenStack is an open source software package that abstracts cloud infrastructure—compute, network, and storage—and exposes it to applications through a set of APIs. IT staff and application developers can use these APIs to automate cloud administrative and management processes.

OpenStack supports highly automated software development and deployment and can make the IT department’s work faster, easier, and more scalable. This capability is especially important for large web applications, where developers are building, testing, and deploying new features around the clock. The OpenStack APIs also extend cloud services to end users and make these services more easily consumable.

Developers using OpenStack can expect the following benefits:

- Accelerated innovation and business agility
- Standard, open source components that are well documented and regularly improved, and that help avoid vendor lock-in
- Significant cost savings compared to other cloud computing options because there are no licensing fees

You can find out more about OpenStack at [www.openstack.org](http://www.openstack.org).

Mirantis OpenStack and Mirantis OpenStack Express are pure-play OpenStack distributions. Find out more at [www.mirantis.com](http://www.mirantis.com).
OpenStack Express includes a wide range of ready-to-launch VM images, including major Linux* distributions, popular software stacks, and so on. As a result, developers do not have to prepare an image library unless they have particular requirements. To spin up a VM, they can simply choose an appropriate image and click the Launch button on the dashboard.

**Application Catalog**

OpenStack Express includes the Murano/Application Catalog. This catalog gives developers access to more than 1,500 apps and environments available on Docker Hub*, resulting in enhanced developer productivity and accelerated solutions. Developers can launch these apps and environments individually or in combination, enabling them to build complex environments without needing to know all the back-end details. For example, a developer could quickly deploy an Ubuntu* high-capacity web server environment running Nginx, PHP, and SQL. More advanced uses of the catalog include exposing apps to end users to facilitate self-service and lower administrative costs.

**Choose from Three Editions**

Being able to choose from three editions of OpenStack Express means that there’s an ideal solution for large enterprises, teams, and solo OpenStack developers, learners, and evaluators. All editions offer access to standard OpenStack APIs and the command-line interface and are backed by Mirantis support.

**Developer Edition**

Provides a virtualized OpenStack tenant with 2 vCPUs and 4 GB of RAM. The VMs run on Intel® Xeon® processor E7-4850 nodes (2 GHz, 10 cores). This edition is ideal for individual developers who want to quickly spin up an OpenStack environment and start developing their applications. A cloud environment can be available in as few as 60 seconds.

**Team Edition**

Uses preselected Intel® Xeon® processor-based hardware (two-server bare metal cluster). This edition is ideal for development, quality assurance, and preproduction environments and is the best choice for developers who want to build cloud-scale applications. Similar to the Developer Edition, a cloud environment can be available in less than a minute.

**Enterprise Edition**

Enables customers to choose and customize hardware based on the four-core Intel® Xeon® processor X5570 (three-server bare metal cluster). Other features include geolocation, à la carte engineering, and managed services. For example, customers can enhance security by asking Mirantis to engineer Intel® Trusted Execution Environment® and Trusted Platform Module into the cloud environment (see sidebar). This edition is ideal for enterprise workloads and large development teams. A cloud environment can be available in one to two days.

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1 No computer system can provide absolute security under all conditions. Intel® Trusted Execution Technology (Intel® TXT), an extension to the Intel® Xeon® processor, is designed to harden platforms against attacks to the hypervisor and BIOS, malicious rootkit installations, and other firmware and software attacks. Intel TXT establishes a root of trust, a hardware-based security foundation that is used to verify the integrity of other system components, such as the hypervisor.

Intel TXT helps protect virtualized server environments through isolation and attestation. At startup, Intel TXT measures the hash value of the hypervisor and compares it with a known good value. If the measurements do not match, indicating that the hypervisor may have been compromised, a policy could be set to block the launch. This enables the cloud service provider—or the private cloud—to establish pools of compute resources with proven integrity of server infrastructure on which tenant virtual machines run.

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1 No computer system can provide absolute security under all conditions. Intel® Trusted Execution Technology (Intel® TXT) requires a computer with Intel® Virtualization Technology, an Intel TXT-enabled processor, chipset, BIOS, Authenticated Code Modules, and an Intel TXT-compatible measured launched environment (MLE). Intel TXT also requires the system to contain a TPM v1.s. For more information, visit Enhanced Data Protection with Hardware-Assisted Security.

2 For more information, see the Intel white paper “Improving OpenStack® Hybrid Cloud Security.”
Hybrid Cloud Empowered by Mirantis OpenStack® Express

Enterprises can take advantage of OpenStack Express to build a hybrid cloud. They can rent an OpenStack Express cloud and integrate it with a Mirantis OpenStack on-premises cloud. This approach achieves burstable capacity and scalability in the rented portion while preserving peace of mind and complete control. Because OpenStack Express is a hosted private cloud, security is strong even in the rented portion. Enterprises can manage on-premises and hosted clouds as separate regions using a single, premises-based UI.

OpenStack Express includes a VPNaaS (VPN-as-a-service) networking feature, which makes it easy to establish secure, encrypted, and tunneled IPsec (Internet Protocol Security) VPNs between multiple tenant projects on the same cloud, between projects on separate OpenStack Express clouds, and between an OpenStack Express cloud and a Mirantis OpenStack on-premises cloud with the same functionality. It takes only about five minutes to create a multiregion hybrid cloud if the networks are configured conventionally.

Fuel, Mirantis’s automated configuration and deployment engine, is also available in both Mirantis OpenStack and in certain editions of OpenStack Express. Because Fuel is available in both the hosted and on-premises portions of a hybrid cloud, enterprises can quickly architect, configure, and deploy their cloud whether on local or rented hardware. They can also easily add and remove capacity, reconfigure nodes, and perform in-place upgrades to Mirantis OpenStack and OpenStack Express.

Because OpenStack Express and Mirantis OpenStack are based on the same open source OpenStack core, same-generation OpenStack Express hosted clouds and Mirantis OpenStack on-premises clouds can share volume and instance snapshots, images, orchestration templates, DevOps scripts, and other assets.

Opportunity Exists - Accelerate Time to Value Now

OpenStack Express features enterprise-level high availability and powerful Intel architecture-based hardware. Strong partnerships with industry players such as IBM Cloud and with leading virtualization experts, database companies, and Apache Hadoop® distributors lend depth and breadth to the solution. Developers who want agility and performance in a secure, private-cloud-as-a-service can get everything they need with OpenStack Express. Discounts are available at startup. For example, the Developer Edition offers a free 12-month trial, and the Team Edition is currently featuring a seven-day free trial and a reduced rate for the first six months of use.³ Contact a Mirantis sales representative today.

³ Pricing subject to change without notice.

Other Mirantis Products and Services

Mirantis OpenStack®, based on the latest stable release of OpenStack, is an OpenStack distribution. It remains close-to-community while achieving stability and performance through hardening; largely automated deployment (through Fuel®) in proven cloud configurations (including high-availability configurations), and by including tested versions of plug-ins, drivers, and other tools for broad compatibility. Mirantis OpenStack is backed by world-class Mirantis support with guaranteed service-level agreements, plus extended support agreements from select Mirantis partners such as Canonical (Ubuntu®), Cisco, Oracle, and VMware. Bottom line: Mirantis OpenStack offers users the benefits of broadly supported, production-ready OpenStack, while keeping things open and avoiding lock-in.

Mirantis Services comprise a full portfolio of offerings for custom deployment and solutions engineering. Experience across scores of deployments ensures that Mirantis customers get OpenStack running quickly and that cloud projects deliver a continuous return on investment. Services include VMware and AWS migration, design and integration of IT-as-a-service and self-service solutions, Continuous Integration and Continuous Deployment (CI/CD), and consulting in OpenStack operations and DevOps.

Mirantis Training has helped hundreds of organizations become more self-sufficient and effective in deploying, managing, and adding value to OpenStack. Mirantis offers vendor-agnostic training in a wide range of formats, from brief courses to comprehensive, multiday boot camps, and offers two levels of certification examination for OpenStack Administrators (MCA100 - Associate and MCA200 - Professional).

For more information on Mirantis OpenStack Express®, visit express.mirantis.com

For more information on Intel® Trusted Execution Technology, visit www.intel.com/tx

For more information on Intel’s cloud computing initiatives, visit www.intel.com/cloud