CANONICAL

Ubuntu Cloud: Technologies for future-thinking companies

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Executive introduction

Since the earliest days of virtualisation, organisations have been increasing the agility and scalability of their IT environments and improving server utilisation. However, the cloud vision of true computing elasticity, on-demand scalability and total abstraction of services from underlying infrastructure is only today becoming a reality.

As new cloud technologies emerge to deliver this vision, public clouds such as AWS and Rackspace have grown massively, with Ubuntu becoming one of the most popular instances running on them. These clouds have re-defined the economy of IT service delivery, giving businesses access to enormous computing power with no requirement to build costly infrastructure in-house.

By adopting public cloud services, large organisations are benefiting from lower capital expenditure and access to IT resources on demand. At the same time, smaller businesses have access to super-computing resources for the first time. Irrespective of their size, businesses can now engage with the cloud to gain new business intelligence, broaden their online activities, and deliver new, revenue-generating services and applications for their customers.

As well as the rapid growth of public cloud infrastructures, we've also seen a huge number of organisations across all industries building their own private clouds on Ubuntu. By doing this, they are achieving the cost and flexibility benefits of computing and service elasticity behind their corporate firewalls — achieving a great balance between security and low operating costs.

With the rapid evolution of the cloud, we have seen literally hundreds of new cloud technologies emerging, from proprietary cloud platforms to platform-as-a-service offerings and pay-as-you-go billing services. The challenge for businesses today is to choose a cloud infrastructure that integrates well with existing IT environments, providing great functionality and the lowest possible cost of ownership.

This is easier said than done, especially because no open standards have yet been defined for the cloud. Proprietary cloud vendors that used their own distinct APIs have seen disappointing uptake for their clouds due to legitimate concerns about being tied to a single platform.

In this white paper, we take a detailed look at today's cloud opportunities and risks, and explain why building cloud infrastructure on open technologies like Ubuntu is the best decision by far. We also showcase Canonical and Ubuntu's holistic cloud proposition which helps organisations stay in control of their cloud strategy for the long term, and enables them to access all the IT resources they need on demand.

"In the future almost all IT services will be accessed via the open cloud. Ubuntu will be the infrastructure on which the open cloud is built."

Mark Shuttleworth,
Founder, Ubuntu

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Why cloud computing?

Until recently, all datacentres worked on fairly similar principles. They had dedicated hardware running dedicated operating systems and applications, serving a relatively stable number of users. That used to be fine, but not anymore.

In the last decade, companies' processing and storage requirements have increased exponentially and there will be no respite any time soon. With new ways of collecting and using business intelligence, and new multimedia applications coming online daily, datacentre infrastructure is struggling to keep up.

The harsh reality is that traditional ways of working can no longer deliver the capacity or flexibility organisations need. It is just not practical to buy and configure dedicated hardware to support every new application, project or service. And adding new boxes has significant power and physical space implications that even the largest businesses are struggling to justify, either financially or environmentally – or both.

What organisations really need are elastic, dynamic, flexible IT infrastructures that can scale up and down instantly to meet changing technology and business needs. And with IT budgets under more pressure than ever, additional spending on hardware and software isn't an option.

Which is where the cloud comes in.

In the cloud, IT services are separated from the infrastructure that supports them – changing how the datacentre is built and operated. This approach provides far greater flexibility to deploy new services and scale up and down in real time.

KEY CLOUD BENEFITS

Because of the way the cloud works, it is no longer necessary to build dedicated infrastructure to deploy and scale applications. As well as delivering massive capital expenditure savings, organisations can bring new revenue-generating services to market faster and take advantage of emerging commercial opportunities.

Just a few of the benefits of cloud computing are:

- Increased flexibility...
  with the ability to launch and scale new, value-added services in seconds

- IT resources on demand...
  from setting up a new development environment to running analysis on massive datasets

- Increased availability...
  with applications and workloads balanced dynamically across distributed servers

- Hardware savings...
  from increased server usage with the option to burst large workloads to cost-effective public infrastructure

- Taking down services in real time...
  to free server resources for upcoming projects and new services

- Paying-as-you-go IT...
  with integrated metered billing

Perhaps the single most compelling benefit of cloud computing is that it overcomes the scalability and flexibility restrictions of traditional datacentres. As a result, organisations can deploy new applications and services that add genuine business value faster, at the lowest possible cost, and with the least possible risk.

Open source: the right choice for the cloud

While the flexibility and cost benefits of cloud computing are clear, the devil – as always – is in the detail. There is a bewildering mix of cloud technologies out there, and it's often difficult to see through the marketing hype and make good, sound deployment decisions.

What is sure is that every proprietary vendor has thought up reasons why their software is best. Some say their solution is more robust, scalable or secure than the competition, or that it's cheaper to support or easier to deploy. What the proprietary vendors never mention, though, is that software from a single vendor can land organisations in serious hot water down the road.

Here are some great reasons to build cloud infrastructure on solid, open foundations.

AVOIDING VENDOR LOCK-IN

Building a cloud on proprietary technology means organisations are stuck with it for the long term – even if there is a good business case for moving on. This is because each vendor uses its own distinct APIs, image formats and storage formats, making their clouds totally incompatible with competing solutions.

The problems will start if the cloud vendor fails to deliver the desired functionality, or increases their prices, or both. The IT team might not like the way the cloud is going, but it will be powerless to do anything about it without re-architecting applications from the ground up.

The other key limitation of proprietary clouds is their inability to interface with a public cloud infrastructure. An organisation might wish to keep all its applications and data in-house today, but it might make good sense to migrate some services to a public cloud in the future. With proprietary software, IT systems and data will be trapped behind the corporate firewall forever.

Open-source technology provides the answer to avoiding this frustrating vendor lock-in. Because the open-source community works to de facto open cloud standards, organisations can easily move workloads between platforms when it makes economic sense to do so. What's more, there will always be the possibility of moving non-critical workloads to public clouds such as Amazon EC2 or Rackspace to exploit the cost benefits on offer.

GETTING BEST-OF-BREED TECHNOLOGY

Proprietary vendors build entire marketing campaigns on a few key technology features. However, no single company, regardless of its size or dominance, can release cloud products that come close to competing with open-source alternatives.

The main reason for this is the worldwide community of commercial organisations and individuals that feed into open-source cloud projects. Tens of thousands of contributors develop new functionality and fix bugs every day, ensuring speed and quality of development that is impossible for any single technology company to match.

The time and resources invested by the open-source community means a huge number of free applications are already cloud-ready – from Hadoop and Cassandra, to MySQL and WordPress. This means organisations can get the best free software which is engineered specifically for the cloud, regularly updated and fully supported.

These are just a few reasons why open-source technology is dominant in, and synonymous with, the cloud – and why new cloud innovations are being built on open-source technology. They are the same reasons why the Internet was built on open standards in the 1980s, and why most major technology innovations almost inevitably have open code at their core.

SCALABILITY WITHOUT RESTRICTIONS

While some proprietary operating system vendors offer specific licensing agreements for cloud environments to help control costs, they all follow one key principle – use more, pay more. As well as incurring additional costs for each server or virtual instance added to the environment, proprietary licensing requires in-depth reporting on server and application usage across the environment, increasing development and software costs exponentially.

By contrast, Ubuntu is free to download and configure, which means organisations can scale their services ad infinitum without onerous licensing requirements. Add 50, 100 or 500 machines to a private cloud or spin up an unlimited number of guest instances on public infrastructure and there will be no increase in operating system costs – which is exactly what is needed to achieve true computing elasticity.

ALIGNING THE CLOUD TO SPECIFIC BUSINESS NEEDS

With proprietary software, functionality is limited to what cloud vendors choose to provide. If there is no way to support a specific service or application on the cloud, there is rarely a way round it. The IT team just has to hope the next release offers a solution.

With open-source technology, however, IT teams get to see and modify all the code, right down to the kernel. Organisations with development capabilities can adapt this code to support specific functions and workflows, and build a cloud that meets the needs of the business.

Introducing Ubuntu Cloud: a unique breadth and depth of cloud capabilities

Moving to a cloud computing model will inevitably impact every major IT decision, including choice of hardware, administration tools and applications. To achieve unlimited computing elasticity, every element of the infrastructure must work together seamlessly – in a fully automated way.

Because everything is so different and complex in a cloud world, it is always best to work with partners with experience across the full range of technologies involved.

Canonical and Ubuntu offer a unique depth and breadth of cloud capabilities – with a large number of successful deployments delivered worldwide. Our best-of-breed solutions touch every layer of the cloud – from underlying infrastructure to the OS, installation tools, systems admin tools, applications and enterprise support.

Key benefits of our technology include:

• The ability to deploy anywhere…
  whether organisations want to build private or public clouds, or move workloads to a public cloud such as AWS or Rackspace. We use completely open infrastructure that adheres to de facto industry standards (Amazon APIs, etc.), so organisations can move between cloud providers easily in the future and protect investments against vendor lock-in.

• Access to computing resources on demand
  with automated resource provisioning that helps organisations deliver and scale new services quickly and adapt instantly to changing customer and end-user requirements. Our technology also helps to improve server utility by decreasing idle time, helping minimise costs and do more with less.

• Lower total cost of ownership
  with no need to make upfront investments in hardware or software, no licensing restrictions, no infrastructure depreciation, and the ability to maximise utilisation of resources.

• Optimised security
  based on regular updates and rigorous security procedures that are applied to Ubuntu in the same way – irrespective of whether workloads are handled by public or private clouds. Changes to the OS are minimised to avoid unnecessary risk.

The following sections of this paper look in detail at how Ubuntu's holistic cloud capabilities address key challenges across each layer of the cloud, helping achieve true computing elasticity and deliver the best business outcomes.

UBUNTU CLOUD TECHNOLOGIES

Ubuntu Cloud Infrastructure

Our secure, standards-based infrastructure-as-a-service platform integrates the very best cloud technologies including OpenStack

Ubuntu Cloud Guest

Now you can deploy Ubuntu with the most popular cloud providers whether it's a public cloud like Amazon Web Services, or an infrastructure you build yourself using Ubuntu Cloud Infrastructure.

Juju

Ubuntu Cloud is more than just infrastructure. Systems administrators and devops engineers can use Juju's charms to deploy, orchestrate and scale services in the public, private or hybrid cloud

WHY UBUNTU FOR BUILDING CLOUD INFRASTRUCTURE?

Cloud computing environments offer unprecedented flexibility - with access to IT resources and services on demand. To provide this, they need to offer true computing elasticity, automated provisioning and deprovisioning, open APIs and pay-as-you-go metering and billing.

To support this vision of truly "on-demand" IT, clouds must combine a large number of infrastructure components, from hardware, networks and storage, to operating systems and applications. All elements of the infrastructure must be fully integrated and designed from the ground if they are to work well together.

Ubuntu Cloud Infrastructure provides a pre-integrated platform for building public or private clouds on standard, commoditised hardware. It enables IT teams to deploy large numbers of virtual servers quickly and easily, set up scalable storage, and integrate user portals and other features needed to support the cloud.

While proprietary offerings such as Microsoft Azure increase the risk of vendor lock-in, Ubuntu helps organisations retain full control over their cloud infrastructure. This is because our cloud platform runs OpenStack, the leading open-source infrastructure-as-a-service platform developed by NASA and Rackspace.

Just some of the key benefits of Ubuntu Cloud Infrastructure are:

- Compliance with de facto open cloud standards
  including Amazon EC2 and Rackspace APIs. This gives organisations the freedom to move between cloud providers at will, or push workloads out to public clouds in the future.

- Freedom of design choice
  with support for a wide range of hypervisors, network components, storage components, presentation technologies and more.

- Massive scalability
  based on fast, lightweight messaging between cloud components.

- Ultra-high availability
  with features such as node evacuation that keep the cloud running normally if a component fails.

- Backing from a worldwide community
  that incorporates more than 70 leading technology companies and tens of thousands of developers. This community delivers new, value-added features almost on a daily basis and fixes issues fast.

- Native integration with Ubuntu
  with OpenStack using Launchpad and mirroring Ubuntu's development and release processes. Ubuntu is currently the platform of choice for OpenStack.

OPENSTACK AT A GLANCE

Ubuntu Cloud Infrastructure: guaranteed hardware compatibility
OpenStack is a global collaboration of developers and cloud computing technologists producing the ubiquitous open-source cloud computing platform for public and private clouds.

What does OpenStack offer?
The project provides the full range of software components required to build and co-ordinate a scalable private or public cloud infrastructure.

Who created OpenStack?
OpenStack was founded by Rackspace Hosting and NASA.

What is OpenStack's mission?
OpenStack's mission is to enable any organisation to create and deliver cloud computing services using standard hardware.

Who can use OpenStack?
Any organisation that wants to build a private or public cloud can use OpenStack, from small businesses to the largest service providers and global datacentres.

How is OpenStack open?
All OpenStack's code is freely available under the Apache 2.0 licence, so anyone can run it, build on it, or submit changes back to the project. This open development model will foster badly-needed cloud standards and remove the fear of proprietary lock-in for cloud customers.

Ubuntu Cloud: guaranteed hardware compatibility

One of the key benefits of cloud computing is that it uses low-cost, commoditised hardware. To maximise the savings on offer and broaden procurement choice, organisations should choose cloud technologies that are optimised to run on hardware from all major vendors.

Canonical guarantees Ubuntu Cloud Infrastructure for certified hardware that supports new virtualisation features in all recent x86 CPU servers. From the release of Ubuntu 11.10 in October 2011 Ubuntu Cloud Infrastructures will be available to run on ARM-based servers. This will provide additional power consumption and space-saving options for private and public cloud builders alike.

HARDWARE PARTNERSHIPS THAT MAKE THE CLOUD GREENER

As more and more companies consume cloud-based resources, datacentres are growing exponentially. With 30% of operating expenses typically spent on power alone, there is a massive and growing demand for new, energy-efficient, environmentally sound technologies.

Canonical and Ubuntu are working in partnership with ARM and other innovative technology providers to create the green cloud infrastructure of the future.

ARM-based chipsets, which are predominantly deployed as mobile device platforms today, will soon be available for deployment in the datacentre. Ubuntu is working closely with ARM to enable effective virtualisation on the platform, which will bring ARM-based clouds a vital step closer to deployment.

Finally, a range of Ubuntu-developed technologies are helping to reduce power costs and carbon emissions in the datacentre. One of these – Ubuntu PowerNap – is a kind of screen saver for servers. It enables devices to power down when there is no work to be done and wake up when they are needed, minimising energy consumption and delivering big cost and environmental benefits.

SECURITY AND THE CLOUD

Ubuntu Cloud inherits Ubuntu's unblemished security record. Our technology supports mission-critical applications at hundreds of organisations worldwide, and our users typically enjoy a totally virus-free computing experience.

Regular security updates
Canonical delivers regular security updates for Ubuntu instances running on both private and public clouds. This helps organisations protect systems and data wherever they are.

Security without vendor lock-in
Ubuntu uses the same security images for public and private cloud deployments, letting organisations choose where to put their data and move workloads between clouds at will.

Securing the entire technology stack
Ubuntu security updates protect every level of the technology infrastructure, from the cloud to the desktop – helping to protect against viruses and other threats.

Ubuntu Cloud: support for the best cloud apps

Today, many organisations are using public or private clouds in some capacity. For some, their very business depends on the cloud's elastic computing properties, while others are still evaluating the potential benefits.

Whichever way companies choose to adopt cloud computing, it is critical to identify and deploy applications that deliver maximum business value. However, not all applications and services are well suited to the cloud – which can jeopardise the success of an organisation's cloud strategy.

Ubuntu and Canonical can help organisations maximise returns from the cloud, both by supporting the best cloud-based apps and by helping make the best deployment decisions. We also provide the industry's most advanced set of developer tools for the cloud – a key reason why so many new cloud applications are built and run on Ubuntu.

It is unlikely that large corporate ERP systems and financial databases will ever find their home in the cloud. However, there are plenty of cloud-based analytics and business intelligence applications that can deliver business value today. With Canonical and Ubuntu, organisations can take full advantage of them.

THE BEST DEVELOPMENT ENVIRONMENT FOR THE CLOUD

With its innovative functionality and six-month release cycle, Ubuntu has become a firm favourite for developers working in the cloud space. With the advent of platform-as-a-service environments such as VMware's Cloud Foundry, our popularity as a cloud development platform is growing all the time.

By enabling developers to build applications for the cloud in the cloud, Ubuntu is contributing to a new generation of value-added applications. These are optimised for elastic computing environments, highly scalable, and easy to deploy in production. In summary, Ubuntu brings the best cloud applications to users first.

CLOUD APPLICATIONS WITHOUT RESTRICTIONS

Proprietary applications and some open-source applications are not well suited to the cloud. Microsoft requires additional licences as the number of server instances increases, and RedHat requires permissions before it can be scaled up in the cloud.

Because Ubuntu can be deployed to support apps on any number of servers at no additional cost, it is by far the best choice for the cloud. It is precisely why our software is used by VMware's Cloud Foundry and other key platform-as-a-service offerings, which developers use to spin up new server instances without technical or financial restrictions.

UBUNTU – THE BEST FOUNDATION FOR BIG DATA APPS

In the last few years, online giants like Google and Facebook have been busy generating truly giant datasets. The problem is that even the largest corporate datacentres lacked the tools to distribute databases and filesystems across massive, and massively distributed, datacentres – functions that are required to turn this data into meaningful business intelligence.

A number of very exciting open-source solutions have emerged to solve this problem. These are optimised to support the large-scale deployments that typically exist in the cloud. Like all applications that work well in the cloud, big data analytics tools must be designed to scale well, and deliver results fast.

In the cloud, organisations can deploy big data applications and spin up hundreds of servers to manage processing and storage in seconds. They can upload data and run complex analytics – paying for only the resources actually used and taking servers and services offline instantly when the results are in.

Ubuntu is one of the leading operating systems for supporting big data applications on dedicated hardware or in the cloud. Unlike proprietary software, ours can be deployed on any number of servers with no additional licensing costs. What's more, our innovative configuration management and service orchestration tools help organisations deploy and scale big data services in near-real time, minimising administrative costs and helping get results faster.

The worldwide Ubuntu developer community has optimised a large number of big data applications, including Cassandra and Hadoop and many more, to run in the cloud. With new releases every six months, Ubuntu offers all the latest developer tools in this fast-moving market – ensuring we remain the platform of choice for big data development.

Why build and manage your cloud with Ubuntu?

In the past, deploying and managing datacentre infrastructure was slow and expensive. Software was installed on servers manually using CDs or memory sticks, and configuration management was handled server by server.

Today, this way of working no longer scales. Clouds, by definition, incorporate multiple servers – and sometimes hundreds or even thousands of machines. By taking people out of the deployment and administration equation, organisations can deploy and scale services dynamically for the first time, and make big financial and time savings.

Ubuntu has developed a number of technology tools for deploying cloud environments in the datacentre. These help organisations stay in control of their cloud strategies, as well as making it fast and easy to deploy and manage new, elastic computing services.

Ubuntu uses the same tools for management in public and private cloud environments. That means that wherever the cloud resides, administration is fast, simple and risk-free.

DEPLOY CLOUD INFRASTRUCTURE FASTER

Ubuntu enables organisations to quickly deploy a working cloud infrastructure in the datacentre. Instead of manually setting up a complex network installation environment, IT teams can use Ubuntu to rapidly deploy new servers in production using the best open-source tools. The process is standardised and fully automated, minimising manual intervention and ensuring consistency.

Once servers are installed on the network, Ubuntu uses an open-source service orchestration tool called Juju to deploy, scale and control service applications - such as OpenStack or Hadoop - across the environment. Using other leading tools, Ubuntu also monitors server activity centrally and provisions new server resources rapidly as and when they are needed. In short, Ubuntu allows organisations to provision an Ubuntu Cloud Infrastructure on hardware in minutes, and manage and maintain it using leading tools.

JUJU: LAUNCH SCALABLE CLOUD SERVICES IN MINUTES

Juju is a ground-breaking technology in the cloud that lets systems administrators deploy applications and services in just a few minutes on a cloud environment. It manages the setup and scaling of services automatically, making it much faster and easier for systems administrators and DevOps to deploy a huge variety of services in a matter of minutes.

Using Juju, a systems administrator can choose, for instance, how many back-end databases, web servers and application servers they need to support a new service. They can then deploy their service in the live environment using simple, pre-written charms. For the user it's as simple as running a command, such as <ensemble deploy hadoop> to deploy across the cloud. For those familiar with "apt-get", this is the equivalent – but it's built for the cloud rather than a single system.

Juju community members are stepping up to the plate, working on new charms for deploying cloud services. These include Hadoop, Jenkins, Rails, Varnish and many, many more applications and combinations of applications. These pre-written charms condense the skills of highly experienced DevOps specialists – making a wealth of knowledge and experience available to everyone. As the list of charms grows, it's getting faster and easier to deploy all kinds of services in the cloud. You can contribute to this revolution by contacting Canonical.

Juju provides a range of benefits for businesses deploying services in the cloud, including:

- New services in seconds
  with pre-written charms for deploying services in the cloud.

- Automated scaling
  to eliminate manual intervention and support true computing elasticity.

- Improved control
  with the ability to monitor, scale and adjust deployment parameters in real time.

- Collaboration
  based on Juju charms that are created, shared and modified by the Juju community.

To experience the power of Juju first hand, visit: juju.ubuntu.com

Why Ubuntu and Canonical for supporting the cloud?

End users are unlikely to care whether their IT services are hosted in a traditional datacentre or a private or public cloud. However, they will care if their applications are slow or unreliable.

To provide the best possible experience for users and customers now and in the future, organisations need cloud infrastructure that is fully supported from end to end.

Canonical is a cloud-computing pioneer with the technical expertise that can make the journey into the cloud easy and efficient.

We can help deploy private clouds, providing onsite training, technical support, a certified hardware service, and onsite systems management. We can also help minimise risk for cloud projects, maximise security, and ensure a smooth transition for end users.

EXPLOIT NEW CLOUD OPPORTUNITIES

As well as providing end-to-end support for cloud environments through the Ubuntu Advantage service, Canonical consultants can help organisations exploit new cloud opportunities.

Specifically, we can identify applications that can be migrated easily to a public cloud – helping reduce in-house infrastructure and administration costs. At the same time, we can suggest which applications and services should remain behind the corporate firewall – rationalising the environment and laying the foundations for a private cloud if that is the best way to go.

Canonical's service division also adds tremendous value to an organisation's cloud strategy through our technical know-how. We can avoid moving applications to the cloud if they are unlikely to scale or virtualise well. By steering cloud deployment decisions in this way, we can help maximise returns on cloud investments.

GET COMPREHENSIVE, ONGOING SUPPORT

Once a cloud is up and running, Canonical can provide comprehensive ongoing support through our Ubuntu Advantage service. This delivers efficient systems administration, fast problem resolution and access to the Ubuntu experts whenever it's needed. We can also support thin-client desktops that consume services hosted in the cloud if required.

Ubuntu Advantage Cloud offers all the services available with the server support package – including access to our Knowledge Base, legal assurance and the Landscape systems management and monitoring tool – plus all the extra coverage needed for cloud infrastructure.

All cloud support from Canonical includes access to the Canonical support web portal, live phone and online access to cloud support engineers, and free Ubuntu upgrades and security releases.

Key benefits of these service features include:

- **The Landscape systems monitoring and management tool**
  that allows systems administrators to manage Ubuntu-based public and private cloud instances as easily as physical machines via a central, intuitive interface.

- **Direct access to support engineers**
  with the right skills and experience to resolve issues first time.

- **Online support tools**
  that help users log requests and queries quickly and easily.

- **Real-time tracking**
  of issues from initial report to resolution in our online support portal.

- **Availability**
  of support during local business hours or 24-hours a day for mission-critical services.

- **Unlimited cases**
  managed through to resolution.

CANONICAL CLOUD SUPPORT OPTIONS

Canonical's support service, Ubuntu Advantage, comes in two cloud flavours: Infrastructure and Guest. This gives customers the option to choose a support package that is closely aligned to the needs of their business.

Ubuntu Advantage Cloud Infrastructure covers the deployment of your own Infrastructure-as-a-Service cloud and is offered with two levels of support:

- **Standard cloud support**
  Standard cloud support is ideal for organisations that are considering cloud computing, or those who have just started to deploy a cloud platform. Standard cloud support provides business-hours support for a small base of machines. It offers support per physical machine and an unlimited number of additional Ubuntu machine images.

- **Advanced cloud support**
  Advanced cloud support provides 24-hour support for critical IT environments. It provides complete and comprehensive coverage of the Ubuntu Cloud Infrastructure platform – including all physical machines and an unlimited number of additional Ubuntu machine images. Customers get direct support from Canonical's cloud experts – ensuring critical applications and services are constantly available.

UBUNTU ADVANTAGE CLOUD GUEST

Until recently, there was no support available for Ubuntu instances running in the public cloud. With Ubuntu Advantage Guest, organisations can get the same level of support for their public cloud deployments that has always been available for in-house projects. Whether the cloud environment incorporates 10 virtual instances of Ubuntu running on Amazon, or a thousand on Rackspace or another cloud, we can provide access to all the consultancy, technical support, online resources, and management tools needed to ensure success.

Canonical consultancy: Enabling the hybrid cloud

Already, some companies use a mix of private and public clouds – which could technically be called a hybrid environment. However, the true hybrid cloud is all about bursting workloads to the web automatically when in-house resources get maxed out.

The issue is that dynamic migration of workloads between private and public clouds is pretty hard to achieve. There is certainly no way of doing this right now without heavy manual intervention, and downtime for end users.

While there's no out-of-the-box solution, Canonical can provide the consultancy and design experience organisations need to make the vision of the hybrid cloud a reality. Contact us to see how our bespoke cloud setup service helps turn science fiction into business fact.

BACKING FROM THE UBUNTU CLOUD PARTNERS AND CLOUD COMMUNITY

Ubuntu Cloud is evolving more rapidly than any competing proprietary offering and provides some of the most advanced features available today. A large part of this is due to the amount of expertise Ubuntu has inherited from the open-source world, where corporations, professional developers and highly skilled contributors work together to make the best infrastructure and tools available to everyone. The key driver for this community is to maximise the business value of a shared, fully open platform.

In many cases, Ubuntu is the reference operating system for new development, and it is also the most popular guest operating system in the public cloud. This gives Ubuntu a huge network advantage over other open-source or proprietary infrastructure solutions. Rackspace, GoGrid, Amazon EC2, VMware Cloud Foundry, IBM and Dell all have Ubuntu at the core of their cloud strategies. What's more, there is a vast and growing uptake of Ubuntu within their user bases.

With access to the worldwide Ubuntu community, organisations can find a wealth of online resources, get fast answers to Ubuntu questions and stay up to date with all the latest Ubuntu developments. As an added bonus, your systems administrators and DevOps practitioners can feed back into Ubuntu Cloud, reporting issues, requesting fixes and contributing to new development projects. In doing so, they play an active part in the evolution of this unique open-source environment, and help to steer the direction of future releases.

Your systems admins and DevOps engineers can interact with the Ubuntu cloud community through a number of mailing lists, forums, chat spaces and social networks. For more information on how the Ubuntu community can help you realise the benefits of cloud computing, and what you can give back, visit: http://cloud.ubuntu.com/community/interact/

Conclusion

Canonical and Ubuntu are at the forefront of cloud innovation. Our technology and services touch all layers of the infrastructure, from hardware and systems management, to service orchestration and support, helping organisations realise the benefits of truly elastic, on-demand IT.

By choosing Ubuntu Cloud, businesses can stay firmly in control of their cloud strategies. While proprietary technologies promote vendor lock-in, Ubuntu is totally open – which means organisations can move applications and workloads between private and public clouds in the future, and quickly change cloud technologies without re-architecting applications and services.

With automated provisioning and scaling, Ubuntu helps organisations launch cloud-based services faster and deliver the best possible experience for end users. It also maximises utilisation of existing infrastructure to keep hardware and energy costs to an absolute minimum.

Perhaps most importantly, Ubuntu is the ideal foundation for building clouds without limits. While proprietary software and even some open-source vendors charge on a per-use basis, Ubuntu enables organisations to spin up hundreds or even thousands of virtual machines at no extra cost. Our technology, like the cloud itself, is truly elastic, dynamic and infinitely scalable.

Ubuntu's holistic cloud solutions minimise risk as more and more organisations move to this new way of working. We can help deploy the best cloud infrastructure from the hardware up – ensuring that all elements of the cloud work seamlessly together. Ubuntu provides a single point of contact for the entire technology stack – which provides true peace of mind and ensures all issues are resolved quickly and effectively.

As well as providing the best technology foundations for the cloud, we can provide all the knowledge and skills needed to build, deploy and support the cloud in the future.

For more information on why Ubuntu is the best choice for your cloud, or to discuss any of the issues raised in this paper, please contact Canonical at https://forms.canonical.com/sales/