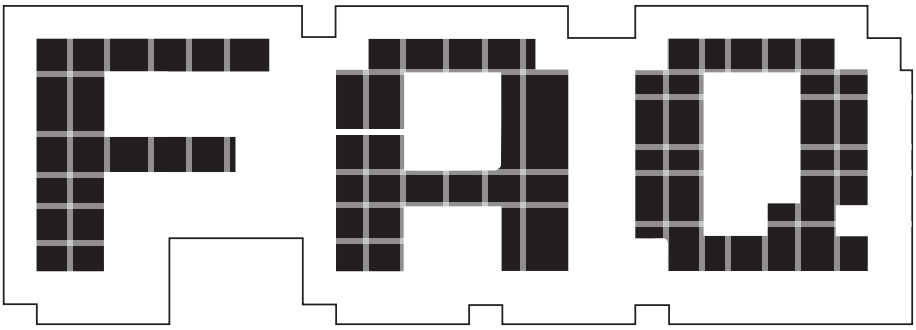


SNAPPY UBUNTU CORE

Just in time for Ubuntu's new phone, we're condensing a new buzzword that embraces both the handheld and the cloud.

GRAHAM MORRISON

Q Oh no! Not another Ubuntu-related catchphrase that will fail to deliver on time!

A While we agree there have been a few, perhaps, hyperbolic Ubuntu-related statements made over the last few years, Canonical is getting better at controlling its enthusiasm. The Ubuntu Phone is imminent, for example, and Snappy Ubuntu Core is already available and doing things. We think it's excellent, and it's no coincidence that it arrives at almost the same time as the long-developed Ubuntu Phone.

Q If this is something genuinely useful, why the weird name?

A The weird name is because this is actually the combination of two things. The sober half is 'Ubuntu Core'. This can be explained in Linux terms you may already be familiar with – it's a tiny Ubuntu image that creates a minimal functional userspace environment from where other packages can be installed. As a compressed boot image, it uses less that 100MB, but size isn't its most important characteristic. It's that the image includes all you need to build your own more complex installation.

Ubuntu Core has been around in various forms for years, and it's designed to be a platform for creating your own distribution, with only those packages installed you need and nothing else, providing nothing more than a platform for package management. As Canonical puts it, "it's an engine, chassis and wheels, no luxuries, just what you need for massively parallel systems."

'Snappy', on the other hand, is less descriptive, and marks a new direction for Ubuntu Core. We'd like to guess that its name is the result of a marketing/PR brainstorming session where delegates were fed a diet of terms like 'Docker', 'Cloud', 'Synergy' and 'Leverage.' For now let's describe Snappy in hugely simplistic terms – it's a package manager for the new Ubuntu Core, but we'll flesh out this answer a little more in a few questions time.

> **"The OpenStack User Survey from 2014 listed Ubuntu as the preferred distro for the cloud."**

Q Does that mean this initiative has something to do with that web of network services known colloquially as 'the cloud'?

A Yes it does. Ubuntu is actually a massively popular cloud operating system. The OpenStack User Survey from 2014, for example, listed Ubuntu as the most preferred distribution for the cloud, followed by RHEL and CentOS. It's also popular on Google's and Amazon's cloud platforms, as well as HP's and even Microsoft's. Unfortunately for Canonical, and despite the incredible growth of cloud-related business, the company receives very little from all those businesses spinning up instances of Ubuntu. We're guessing that Canonical's latest cloud initiatives are an attempt to harness some of that Ubuntu love and put its service provision at the heart of cloud users, perhaps with an option for providing paid-for managed subscriptions at some point.

Q Hasn't Canonical covered this with Ubuntu Server?

A Ubuntu Server has been one of our favourite spins of Ubuntu for some time. It's a full version of Ubuntu without many desktop packages pre-installed. It will even install a LAMP stack (Linux, *Apache*, *MySQL* and PHP) as part of the installer, taking you from bare metal to *WordPress*, for instance, in less than 10 minutes. Add to this the convenience of **apt-get install** for any other packages you need, and the vast amount of support available from any Ubuntu forum, and Ubuntu Server is a brilliant option for low-end boxes, public clouds and VPSs. But that's not the target demographic of Ubuntu Core.

Q What makes Ubuntu Core more suitable for installing on

virtual machines in the cloud than something like Ubuntu Server?

A It's only better in specific circumstances. Ubuntu Server would still be a great choice for your own machines, for example, but the cloud has opened up all kinds of potential uses that could never have been envisaged back in the old server days. Mostly this potential is thanks to scale, because if there's one thing that defines cloud services, it's their ability to scale quickly and transparently. This is primarily what differentiates the cloud from those old server networks, despite there being nothing particularly new in the technology that runs them. The cloud also creates new problems, such as security and automation.

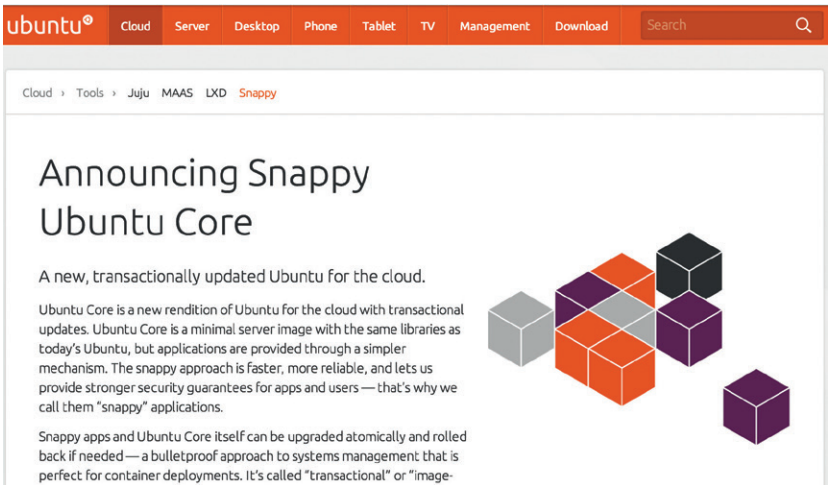
Q You mean when you're creating hundreds of new servers with a click of a button, you need some way of keeping them updated and secure?

A Exactly. Ubuntu Core is a good foundation for this because it's such a minimal distribution. As Mark Shuttleworth puts it, "It's completely extensible to all forms of container or service." But the minimalism also makes it much easier to secure and lock down. What's missing from the original Ubuntu Core is an equally scaleable and secure ability to update and install packages for these new environments, rather than through the traditional **apt-get** package management, and that's where the partnership with Snappy comes in.

Q Does that mean Snappy is the bit designed for the cloud?

A Not quite, although Canonical must have realised its potential for the cloud early on. Snappy was originally designed for its smartphone platform because Canonical needed to ensure carrier-grade secure updates and a way of separating the operating system from the applications that people will want to install. It's one thing if updating from Ubuntu 14.10 to 15.04 breaks your desktop, forcing you to re-install. It's quite another if an update breaks your Ubuntu Phone, and that's why Canonical has had to be so careful.

Snappy does this by keeping the operating system and the application files completely separate, and more importantly, both sets of files are 'read-only'. That makes it far easier for Canonical/carriers/cloud providers/administrators/you to validate the integrity of an installation. At run-time, the permissions are handled by AppArmor, the access control system that's been a part of Ubuntu for years (and is also the basis for the new phone application security). In that way, applications can be run within isolated containers where the OS is shared, but not the space where other applications may be running.



Canonical's announcement includes instructions on trying out Snappy for yourself.

Q How does Snappy manage installation if the operating system is read-only?

A To make this work, Snappy borrows a concept from 'Docker', the software abstraction container that's being used to deploy applications (collections of pre-configured packages) to the cloud. Installation and updates are applied as atomic, indivisible transactions that also allow you to roll forward and backwards through updates in the same way you might with a modern filesystem like btrfs. It accomplishes this trick by installing updates and applications as 'deltas' containing only the differences between the base installation or the previous package and the update.

Q Applications like *LibreOffice*, you mean?

A No. As we're in the cloud, we're talking about distributed networking applications. That's why the Docker framework is so important, because it opens Ubuntu Core to Docker applications immediately. Some of the most popular at the Docker hub include configurations running node.js, *WordPress* and databases, but equally, many people create their own bespoke setups to provide specific configurations and services for themselves or for their customers. Docker is becoming something of a standard for "shrink wrapping your applications and shipping them to the cloud", to paraphrase Mark Shuttleworth in his Snappy announcement. Ubuntu is popular among the Docker community, so it makes sense migrating the tested formula from phones and into the cloud, even if they're on opposite sides of the CPU scale.

Q As all of this is so cloud-based, how do us mortals get to play with the technology?

A At its most basic, you can try running Snappy on your local machine using **qemu-kvm** and a pre-made image downloadable from **ubuntu.com**. Instructions are also included for running an instance on Microsoft's Azure (one of the first platforms to declare its support for Canonical's new venture), as well as Google's Compute and Amazon's EC2. When everything is up and running, typing **sudo snappy install docker** will install the Docker package, for example, and you can search and update packages in exactly the same way you would with **apt-get**, with the addition of being able to roll back to previous versions. To try out Snappy Ubuntu Core, point your browser at: **www.ubuntu.com/cloud/tools/snappy**.