
Setting up and using virtual private servers

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Falling data storage costs and increasing bandwidth have now made it possible for companies to offer “virtual private servers” in the cloud. Here, users can set up hardware-free online computing environments, using a range of different operating systems, different applications, and different software versions, and operate and access any or all of these simultaneously using any computer (or tablet) connected to the internet. This article looks at the ideas behind virtual private servers, describes some of the products on offer, and reviews the steps required to set up virtual private servers using the global provider Amazon and a Sydney-based company, Mammoth.

A PARADOX?

By now most people are familiar with the idea of cloud-based applications – software that runs on someone else’s computer while you control it from, and view the results on, your own device. There are advantages to this on both sides of the transaction. From the software supplier’s point of view, it is cheaper and more efficient to have just one central copy of their software to debug, upgrade and maintain. From the user’s point of view, it is convenient to have access to software that other people can share, and which they can access from any device anywhere that has an internet connection.

A smaller number of people have also found a use for virtualised computing – setting up a software “box” on the user’s own computer in which they can run a complete operating system like Windows or Linux as if it was located in its own set of hardware, allowing them to move back and forth between the “real” operating system and one or more virtual systems at will. I use virtualisation on a Linux PC, for instance, to run a copy of Windows XP, which in turn I use to run applications that are not yet available for Linux.

But few of us have yet had to wrap our heads around what happens when we put these two ideas together, and on first hearing it seems like a paradox. Why would you want to set up a virtualised operating system, not on your own PC, but online, where you can only reach it with a desktop computer anyway? Why go to the trouble of constructing a whole pretend PC on the web when there are already thousands of prebuilt services out there?

But there is method in this madness, and many larger organisations are already taking advantage of virtual private server (VPS) hosting. It may never be a household term, but for tasks that involve large-scale data-crunching, or control, duplication and customisation of access to software packages, it is proving extremely useful.

BENEFITS AND DRAWBACKS OF VIRTUAL PRIVATE SERVERS

Let us look at the small-scale benefits first. Remember the hours you spent working on your last computer so that all the settings were correct, all the files were in the right places, all the icons and menu shortcuts were where you wanted them, and the Startup menu started up the right things at the right time? And how frustrating it was when you got a new computer and had to set them up all over again? With steadily falling prices for hardware and software, change-over time has now become a major component in the cost of installing computer technology. But once a VPS is set up on a host, it can stay that way forever. Upgrades at the host’s end can be done seamlessly, without the user even noticing; the only result they are likely to see is that their applications run a little faster. And upgrades at the user’s end are no longer necessary, provided their internet connection is fast enough.

From an employer’s perspective, instead of providing different types of computers to different grades of staff, and upgrading them all piecemeal as their requirements change, an employer can

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All webpages cited were viewed September 2012.

supply the same computers to everyone; all they have to be able to do is access an appropriate VPS on the web. When hardware breaks or becomes obsolete, it can be repaired or disposed of with no loss of data and no interruptions to working time. Fire, flood and earthquake? No problem; employees can be back at work on the same VPSs as soon as they have a place to sit and a fast internet connection.

VPS can also prevent personal files from building up on work computers. This may be harmless, like baby pictures, or potentially actionable, like pornography or pirated software. Either way, employers are happier if it is not there. Any VPS can be easily recreated from a clean original, or “snapshot”, so – after employees have been warned to back up their data – non-approved content can instantly be wiped.

VPS also makes it easy to expand a computer network. New employees or temporary transfers can have their own VPSs created with all the settings and rules already in place, right down to the company colours on the desktop, and removed again instantly when they move on.

Life for IT staff in large organisations becomes much easier, with only one type of computer to maintain and the VPS hosting company taking care of most of the backup, installation and maintenance tasks that were formerly done in-house. In fact, the IT department’s biggest problem with VPS is going to be finding ways to look busy enough to avoid the sack.

But the “killer app” for VPS right now is web hosting. Any company with a website can move that website into a virtualised server with a firewall of its own. Taking a snapshot provides a convenient duplicate of the whole image within seconds, and sites that get hacked or corrupted can be back on line within minutes. Planning a product launch that will attract millions of hits? It is a matter of a few seconds to upgrade your site, and to wind it down again when demand falls away.

VPS now incorporates “virtualised” hardware configurations too, so software providers can use VPSs to test their applications and drivers across a wide range of PC configurations without having to buy or rent the physical products.

And finally, for the hosting company, virtualisation provides a convenient way to balance supply and demand for storage and access. VPSs can be given extra resources and more space when required, then relegated to the background when demand drops away again.

What is happening, in effect, is that computing power is becoming a commodity; you can now have as much as you want, of any kind that you want, at any time. The old barriers between different hardware and different operating systems are dissolving, and computing – a substantial part of it – is taking place in the fluid world of cyberspace, where any system can impersonate any other. In fact, the chances are that some of the websites you use every day are already hosted on VPSs – you just do not know it.

VIRTUAL CLOUD-HOSTING SERVICES

As with any new service, especially one aimed at IT specialists, it is not that easy for a novice to work out what is on offer and how much it will cost. Many cloud-hosting companies seem to use it as a way of monetising spare storage capacity while they run other business elsewhere, but there are a growing number of specialist virtual hosts, both in Australia and overseas.

The best-known supplier of services to the public is Amazon, with what it calls, rather awkwardly, the Elastic Compute Cloud.¹ Another international provider is RackSpace, which specialises in virtualised web hosting and has an Australian website.² Intervolve³ offers hosting in Adelaide, Brisbane and Melbourne, and provides for a variety of pre-installed Linux or Windows operating systems. Adding a non-free operating system like Windows incurs extra costs – in this case, an extra \$20 per month. Mammoth VPS⁴ operates out of Sydney but offers their services Australia-wide. It has

¹ “Amazon Elastic Compute Cloud (Amazon EC2)”, <http://aws.amazon.com/ec2>.

² “Rackspace Australia & New Zealand – Cloud Computing & Managed Dedicated Server Hosting”, <http://www.rackspace.com.au>.

³ “VPS Hosting Australia”, <http://www.intervolve.com.au/vps>.

⁴ “Mammoth VPS – Australian Linux or Windows VPS (Virtual Private Server) Hosting with Xen | .NET Hosting | PHP Hosting

a simple plan structure starting at \$9.95 per month, and adds only \$10 per month extra for Windows. Similar plans are available through Crucial Paradigm.⁵ A cheery video outlining the benefits of a VPS service can be found on the UK-based NTC Hosting site – though it is a shame that they cannot spell “guarantees”.

A longer list of Australian hosts can be found at the VPS AU⁶ site, although this may not be up to date.

Setting up VPS 1: Amazon

GLENDOWER: I can call spirits from the vasty deep.

HOTSPUR: Why, so can I, or so can any man; But will they come when you do call for them?⁷

I chose Amazon for my first trial VPS, since they offer a pay-as-you-go system and I already had an Amazon account. Despite this, I still had to supply my details to Amazon Web Services⁸ (AWS) and respond to an automated phone call in order to register. They also put an authorisation charge of \$1 on my credit card to verify it was valid. Having done this, I received email confirmation of my account a few seconds later.

I logged on to the AWS Console and was offered a range of services including a Glacier and an Elastic Beanstalk. I reluctantly postponed exploring these and opted instead for “EC2 – Virtual Servers in the Cloud”. The website told me that AWS was currently operational and prompted me to “Launch an instance”, which I did via several steps using a “Classic Wizard”. Amazon has clearly put a lot of effort into making the process as easy and non-threatening for novices as possible, and should be commended for this, though their gee-whiz approach may be a little off-putting for grownups.

The next step involved choosing an operating system. Options include Ubuntu, Red Hat, SUSE and various flavours of Windows 2008, plus Amazon’s own version of Linux. I selected the 32-bit Ubuntu 11.10 system, as one with which I am familiar, and a free “Micro” installation with only 613Mb of memory. I then had to specify a kernel version, a hard-disk size, and provide some metadata to distinguish this particular VPS from all the others I might one day be managing. Finally, I selected some optional firewall configuration details – which can be applied to one VPS or a whole group – and a few seconds later my new VPS had emerged from the vasty deep and was up and running, at least according to the management console.

The Amazon VPS interface is very slick and professional, and I was able to start and stop the VPS easily. Once a VPS is running, it can supposedly be accessed from the web by a PC running an SSH (Secure SHell) protocol application, but despite several attempts I was unable to do this, so there my Amazon adventure ended – and judging from comments on the web, many other users are in the same position. It is a pity that Amazon’s handholding stops short at the point when it would be most useful.

Setting up VPS 2: Mammoth

I signed in to Mammoth, provided a few details and a credit card number, and within 15 minutes was given an account and the IP number of a working Ubuntu-based VPS. A control panel allows users to reboot the VPS in case something goes wrong, and an SSH connection from my PC through the free Putty program worked first time and remained unproblematic. I had command-line control! I then followed the instructions to install a GNOME graphical interface on the VPS, and was able to view and use this via a page on the Mammoth website called Recovery Console.

At this point I was almost fully operational – the only thing I could not do on my new VPS was to work the mouse. With a few keyboard-based instructions I installed software on the VPS that would allow me to log in via a remote viewer, and then I was able to bypass the Mammoth website altogether, and connect directly via VNC (Virtual Network Computing), mouse and all.

¹ Mono Hosting”, <http://www.mammothvps.com.au>.

⁵ “Reliable Australian Web Hosting | Crucial Paradigm Australia”, <http://www.crucial.com.au>.

⁶ “VPS AU | Virtual Private/Dedicated Server Hosting in Australia”, <http://www.vpsau.com/>.

⁷ Shakespeare W, *Henry IV*, Pt 1, Act III.

⁸ “Amazon Web Services”, <http://aws.amazon.com>.

I was now communicating with the VPS using my home system. At this point I could set up my virtual PC to become a web server, a games hub, an online backup drive, or anything else that imagination could conceive and software could bring about. As a final exercise, I installed the LAMP (Linux -- Apache -- MySQL -- PHP) set of web-hosting applications, which now gives me (and everyone else) IP number-based access to my server via the web. Just as with a "real" web server, I could then have purchased a domain name and attached it to that IP number to obtain a functioning URL.

Software installation on the VPS was fairly fast, and just for fun I ran some benchmark software, which came up with impressive results: the VPS built on software, with just 147Mb of memory, was operating as fast as an Intel Xeon 2.40Gb processor. Hey presto -- a new, fully functioning, website, with 5Gb of storage space and 20Gb of data capacity, at a cost to me of only \$10 per month. For an extra \$10 per month, Mammoth will triple the disk capacity and data bandwidth but, even as it is, this system should be able to handle a medium-sized blog or small business website without difficulty.

IS THERE A VPS IN YOUR FUTURE?

Now that most people have a computer and a broadband connection, putting the bulk of computing online removes the need for regular hardware upgrades just to keep up. The achievement of VPS is to provide just as much computing power as needed, when it is needed, in the most appropriate form.

Having access to a VPS is still not quite like working on a real computer. You do not hear sounds, for instance, and for the moment the screen resolution is limited to 800 x 600 pixels, so real-time shoot-em-up games are still out of the question. The connection through VNC is slow in itself, and so adds delay to any process that requires back-and-forth communication with the operator. But for private or public web hosting, or anything else that primarily involves automatically shifting data back and forth through cyberspace, the VPS approach is quick, simple -- when it works -- and easily scalable. As existing hardware ages and becomes more expensive to fix and maintain, and as software and storage costs continue to fall, it will make increasing sense to take the "hard" out of "hardware" by using VPS wherever possible.