

FALL 2016

◀ THE SOURCE ▶

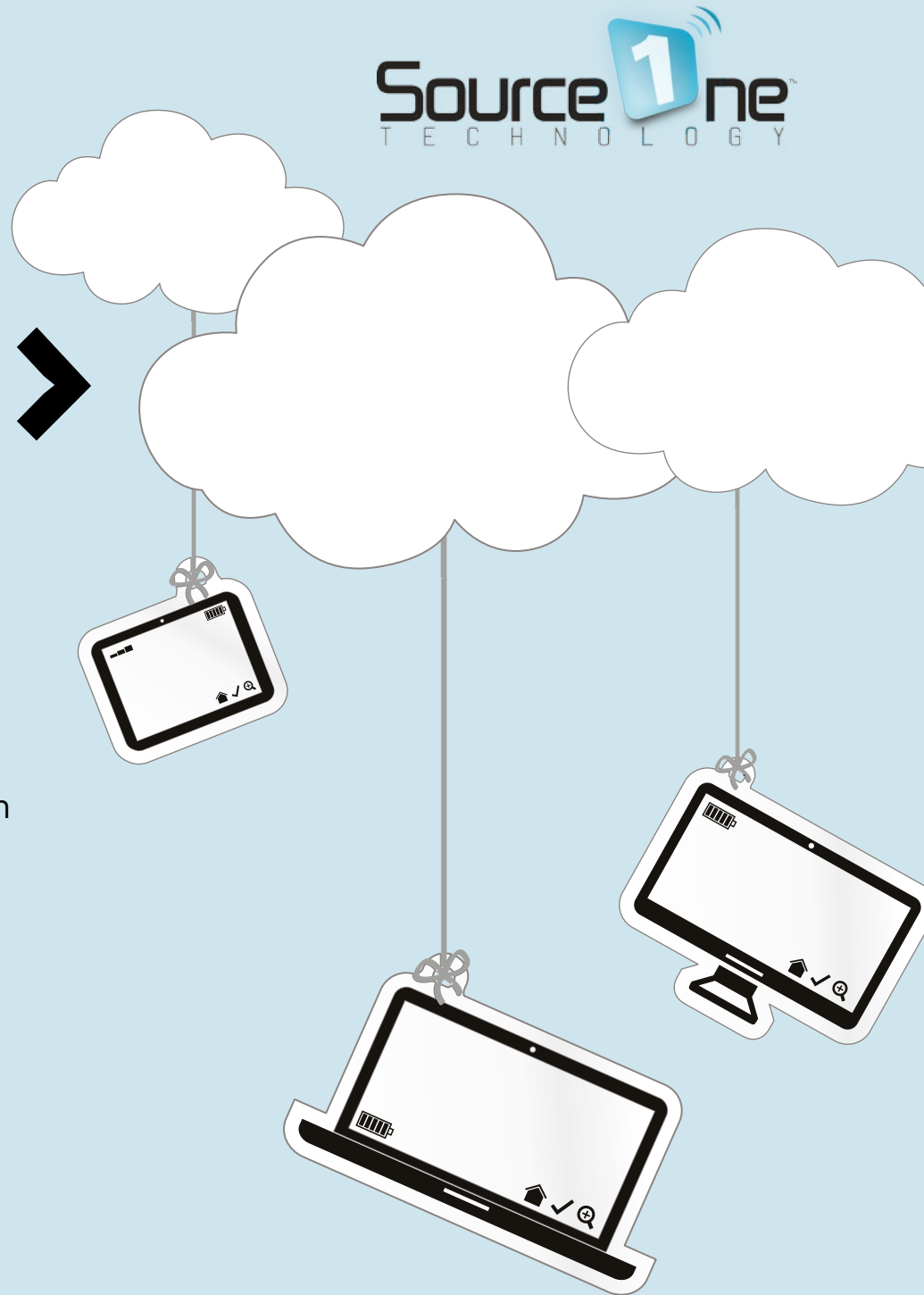
Hints, tips, tools and resources from real IT geeks.

WORK UNCHAINED

Free yourself from the shackles of the office with advice from our experts.

IN THIS EDITION

- NextCloud
 - Switch Configuration
 - Cybersecurity
 - MS Server 2016 Licensing
 - Containers
-



Welcome to the Fall edition of The Source - hints, tips, tools, and resources for IT novices and experts alike.

In this edition we look at free tools giving you access to your work files even when you're away from the office, we examine emerging technologies to streamline application deployment, we go shopping online for cables and we try to simplify Windows Server licensing.

I hope you find the magazine useful and if you have any other questions check out our blog, connect with us online or give us a call.

Sincerely, Jesse.

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Source One Technology provides IT support to businesses, schools and nonprofits across South Eastern Wisconsin.

Jesse Rink
OWNER, SOURCE ONE TECHNOLOGY.

An experienced network engineer, Jesse has been sharing his expertise and experience with schools, non-profits and businesses in South Eastern Wisconsin for over 17 years.



YOUR DATA YOUR RULES

Take control of your data with NextCloud.

REMOTE FILE ACCESS TOOLS LIKE DROPBOX, BOX, ONEDRIVE, AND ICLOUD ARE GREAT BUT WHAT IF YOU DON'T WANT TO BE LOCKED INTO A PLATFORM AND SUBSCRIPTION PACKAGE, OR WORRY ABOUT RELINQUISHING CONTROL OF YOUR DATA? GO OPEN SOURCE!

We've always been fascinated by the Open Source community and the products they deliver. From Linux/BSD operating system distros, to enterprise-ready applications (ERP, CMS, etc.), it's always impressed us how cutting edge and mature Open Source projects have become.

One particular product we've become very familiar with over the last few years is **NextCloud**, a recent fork of the ownCloud project.

NextCloud is a fully featured Dropbox like self-hosted cloud application with several plugins which lets you customize how it integrates into your network.

NextCloud allows you to:

- Access network shares from anywhere (via App, Client, or any web browser)
- Access your home drives from anywhere
- File Revision Control (retain file changes incrementally)
- Synchronize files across all devices (Windows, Mac, Linux, iOS, Android)
- Perform LDAP Authentication (utilize security groups and user accounts from Active Directory)

If you need it, there's also the option of an Enterprise Support subscription.

Recently, we had the opportunity to integrate NextCloud for a client to provide an easy way for end-users to access Windows file shares and their home directory files from any iOS, Android, Mac, and Windows device.

Using NextCloud's LDAP and SMB plugins, it provides the front-end interface to open files from anywhere. If that doesn't appeal to you, NextCloud can always be setup as a simple Dropbox-like storage server

for your organization – complete with a sharing API and several add-on features.

Demo
[DEMO.NEXTCLOUD.COM](http://demo.nextcloud.com)

Download
[NEXTCLOUD.COM/INSTALL](http://nextcloud.com/install)



Cross-platform switch configuration.

Do you ever find yourself working across different platforms and multi-vendor networks such as HP, Cisco or Comware, while doing various switch configurations?

Most engineers typically specialize and have expertise in working with one particular vendor, so it's easy to remember the CLI commands that you regularly use. However, there may be times when you have to jump to a different platform or vendor that you aren't as familiar with.

In those cases, figuring out the appropriate CLI command to perform Basic or Advanced configuration steps can be a struggle and rather frustrating, especially when there's a difference in terminology between the vendors. For example VLAN terminology and Port Aggregation terminology are two notable ones when working with Cisco or HP switches.

The good news is, you don't have to be an expert at memorizing a particular vendor's CLI commands and terminology, especially if you have a solid foundation of networking experience while working in multi-vendor environments.

All you need is a guide, and the one we recommend and use ourselves is one from HP which you can download from the link below.



ARUBA HPE NETWORKING & CISCO CLI GUIDE



sourceonetechnology.com/essential-documents

So, the next time you're standing in front of an unfamiliar switch and pulling your hair out trying to understand how to configure VLANs on switch ports, Port Mirroring, or MAC-based RADIUS authentication, reach for the guide.

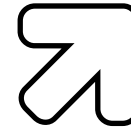
Chances are, it will save you countless headaches or tech support calls, and also help improve your skill sets as an engineer!



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Free cybersecurity tools and services.

Cybersecurity has become a hot buzzword lately, and for good reason. With the number of breaches, exploits and vulnerabilities in the headlines, it might be a good time to check up on your security posture. There are an endless number of tools and services out there to use, some of which are free. Here are some of our favorites:

TENABLE NESSUS

Nessus is the 'de facto' standard when it comes to vulnerability assessments. Nessus is available in a few different flavors and deployment options—you can run it from your laptop, from the cloud or a server on your network. Professional and Home feeds are available; the Home feed is free for home/personal use only.

TENABLE.COM

RAPID7 METASPLOIT

Metasploit is a widely known and renowned product used by network penetration testers worldwide. It contains quite a few easy-to-use options to test devices on your network. Metasploit offers a Professional version for pros, as well as a Community version for individuals.

METASPLOIT.COM

KALI LINUX

Kali Linux is a widely used and respected Linux distribution that you can install on your laptop, as a VM or run from a live USB/DVD. It's by far the most advanced option for security and penetration testing, but if you know Linux and are comfortable getting your hands dirty, it's a collection of incredibly powerful tools used by both the good guys and bad guys around the world.

KALI.ORG

DEPT. OF HOMELAND SECURITY

DHS? Yes! The Department of Homeland Security's National Cybersecurity and Assessment Technical Services (NCATS) program offers free Cyber Hygiene and Penetration Testing services to the public sector as well as private sector enterprises and small businesses alike. The services are free to you in exchange for non-attributable statistics used to evaluate the cybersecurity posture of the nation's critical infrastructure.

Email ncats_info@hq.dhs.gov for information.

US-CERT.GOV

Patch Work

Whether you're color coding or restructuring your existing cabling, wiring new closets, or just need a few spares, **we compared the price** of pre-made patch cable from four online stores.

Sample comparison as of October 2016 for a 1' CAT6 24AWG UTP patch cable:

Monoprice:

\$0.77

Newegg:

\$0.99

Amazon:

\$2.22

CDW:

\$3.99

Monoprice is the place to go for affordable and reliable pre-made patch cables. We've found that on average they have the best pricing and in some cases, undercut competitors' pricing by over 200%!

→ RECOMMENDATIONS

Monoprice carries a wide selection of fiber optic and bulk copper products.

The bigger your project, the more quickly your savings will add up!

CORE

SOFTWARE LICENSING

Licensing Windows Server 2016.

Microsoft has changed the licensing model from per-processor to per-core for Windows Server 2016. With today's high-horsepower, multi-core systems, you might be wondering how this will affect your licensing going forward...we sure did!

First of all, it's important to know that Microsoft only requires that you license physical cores. If you have an Intel processor that supports Hyper-Threading, you don't need to license those extra logical processors!

You only need to license the actual physical cores on the die.

It's also important to note that Microsoft requires you license a minimum of 16 cores per server. The good news is, if you have 16 cores or less, you'll still pay roughly the same as you would for Windows Server 2012 on the same system. As you start to reach beyond 16 cores, your costs may start to increase.

Microsoft sells its licensing in 2-core packs. If you're going to license just one physical server, to figure how many 2-core pack licenses you'll need, simply divide the total number of cores in your system by 2.

For example, a 16-core system (16/2) will require a quantity of 8 2-core packs. A 32-core system (32/2) will require a quantity of 16 2-core packs, and so on.

Now, if you're licensing virtual machines, it gets slightly more complicated. For Windows Server 2016 Standard, Microsoft allows you to license two virtual machines with the equivalent of a single license, similar to Windows Server 2012 and earlier. However, you still have to license by core. To determine how many license packs you'll need, below is a simple formula:

$$[(V * C) / 2] / 2$$

where V = Quantity of Virtual Machines, C = Physical Cores on Host.

Example 1

To license Windows Server 2016 Standard on 10 virtual machines on a 16 core host system:

$$10 * 16 = 160$$

VMs (V) cores (C) cores to license

Sold as 2 core SKUs, so $160 / 2 = 80$
Two VM allowance, so $80 / 2 = 40$

You need: 40 2-core packs

Example 2

To license Windows Server 2016 Standard on 10 virtual machines on a 32 core host system:

$$10 * 32 = 320$$

VMs (V) cores (C) cores to license

Sold as 2 core SKUs, so $320 / 2 = 160$
Two VM allowance, so $160 / 2 = 80$

You need: 80 2-core packs

Some situations are unique, so if you're ever in doubt, give us a call! We're an authorized Microsoft partner and will be happy to work with you on your specific licensing situations.

Keep it together

EMERGING TECHNOLOGY

Docker Containers and Windows.

If you want your software to run the same, regardless of its environment (and who doesn't?) then take note. With the release of Windows Server 2016, Microsoft has introduced support for Docker's container based virtualization.

Docker is different from traditional virtual machines. A Docker container uses fewer resources than a full virtual machine as it shares many processes, files, and libraries with the host OS. The container's operating environment is isolated to avoid impacting the host. Each container is a portable, consistent environment that can be deployed quickly. The consistent deployment makes testing and development easier.

It is typically possible to run 2-3 times more applications using containers since there is no hardware virtualization and they aren't running a full instance of the guest operating system.

The small containers share a lot with their host operating system which means there are a few things we need to consider. Docker containers have some ties back to the host OS, and there are security settings and permissions that you need to review. If you're looking to run multiple instances of the same or similar applications, then Docker containers might be a great fit. For many different applications, full virtual machines may be the better option for now.

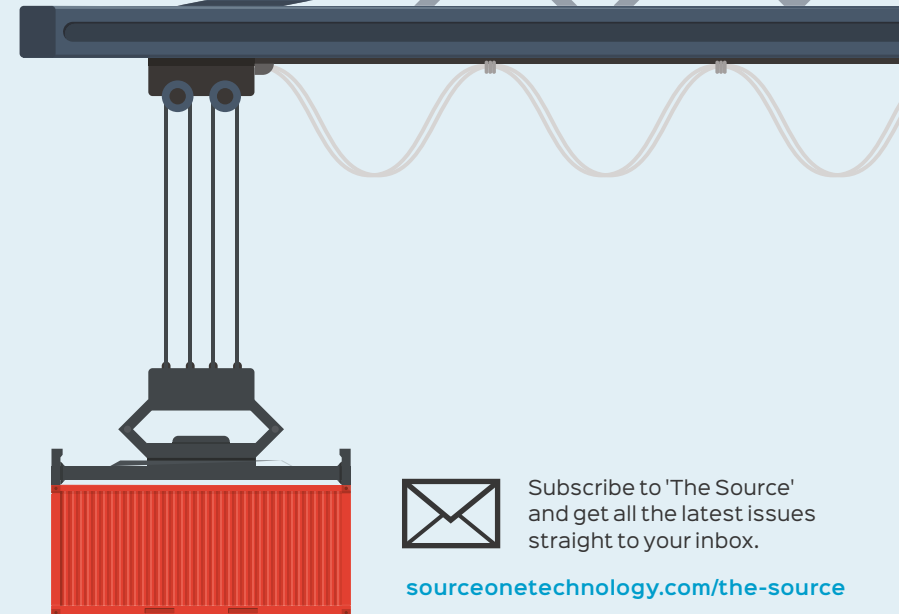
There's a lot more to containers, and they most certainly aren't going to be replacing virtual machines anytime soon. However, we're excited to watch the technology as it matures. Both Virtual Machines and Docker Containers are going to have their place in our infrastructure in the future.

To get more information check out Docker's website www.docker.com or get in touch with us to discuss how Docker could be a fit for you.

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I have relied on Source One Technology for years. They do outstanding work, are fair, thorough and very responsive. They have always anticipated our IT needs and developed solutions and plans that make sense.

William Hughes
CHIEF ACADEMIC OFFICER
SETON CATHOLIC SCHOOLS

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