

SUMMER 2019

< THE SOURCE >

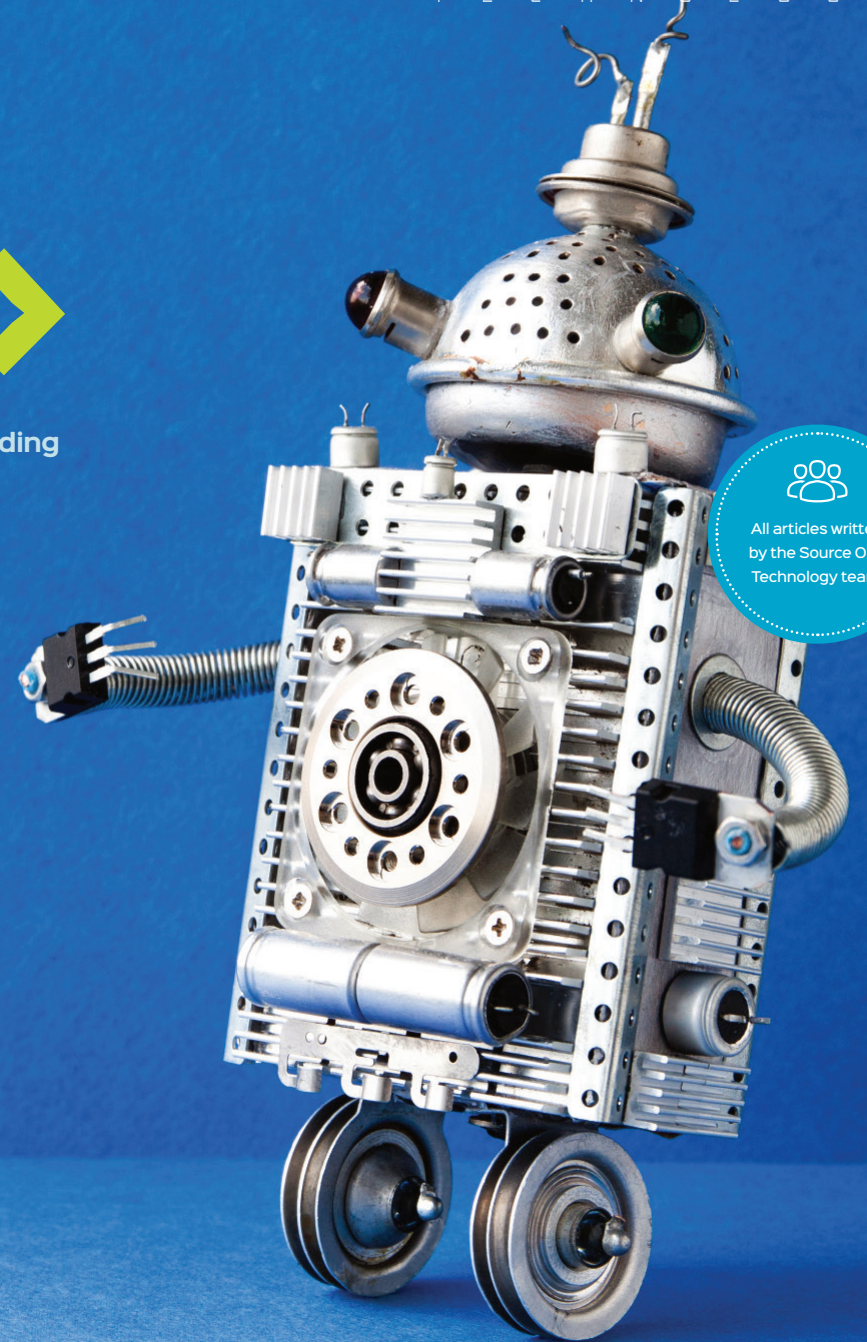
Advice from our team of network engineers who have been providing IT Support and Solutions across Wisconsin for over 10 years.

Rise of the robots.

We look at the automation driving the drugery out of infrastructure and network management.

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- What is DevOps?
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All articles written
by the Source One
Technology team!

Welcome!

Welcome to the Summer 2019 edition of The Source - hints, tips, tools, and resources for IT novices and experts alike.

In this edition, we look at tools to keep your software up-to-date, we investigate DevOps and why you should care about it, and we look at the benefits of Immutable Infrastructure. We also highlight the most exciting features of Windows Server 2019 and see if Software-Defined Networking really is the future of networking.

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.



Jesse Rink
OWNER
SOURCE ONE TECHNOLOGY.

An experienced network engineer, Jesse has been sharing his expertise and experience with customers in Wisconsin for over 18 years.

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What is Software-Defined Networking?

“Software-defined” is a term that is affecting every part of enterprise data center technology today. The first experience we had with this was virtualizing servers which effectively virtualized server compute. However, today, software-defined storage, and software-defined networking are also changing the landscape of how today’s businesses architect and solve challenging technical problems in creative ways.

In traditional data center environments, the network layer is often one of the most tricky and difficult to automate, provision, and typically requires involvement with the network team and others. In today’s fast paced environments, quick provisioning, configuration, and automation are required for quick agile development environments and supporting the required CI/CD pipelines these environments are built upon.

Software-defined networking (SDN) essentially “decouples” the network layer from the physical network equipment that it flows through. Software-defined is all about abstraction – or not having to rely on or be tied to the

physical infrastructure hosting the resources. The abstraction of software-defined networking from the underlying physical network helps to solve many of the traditional problems associated with physical networking for fast changing environments.

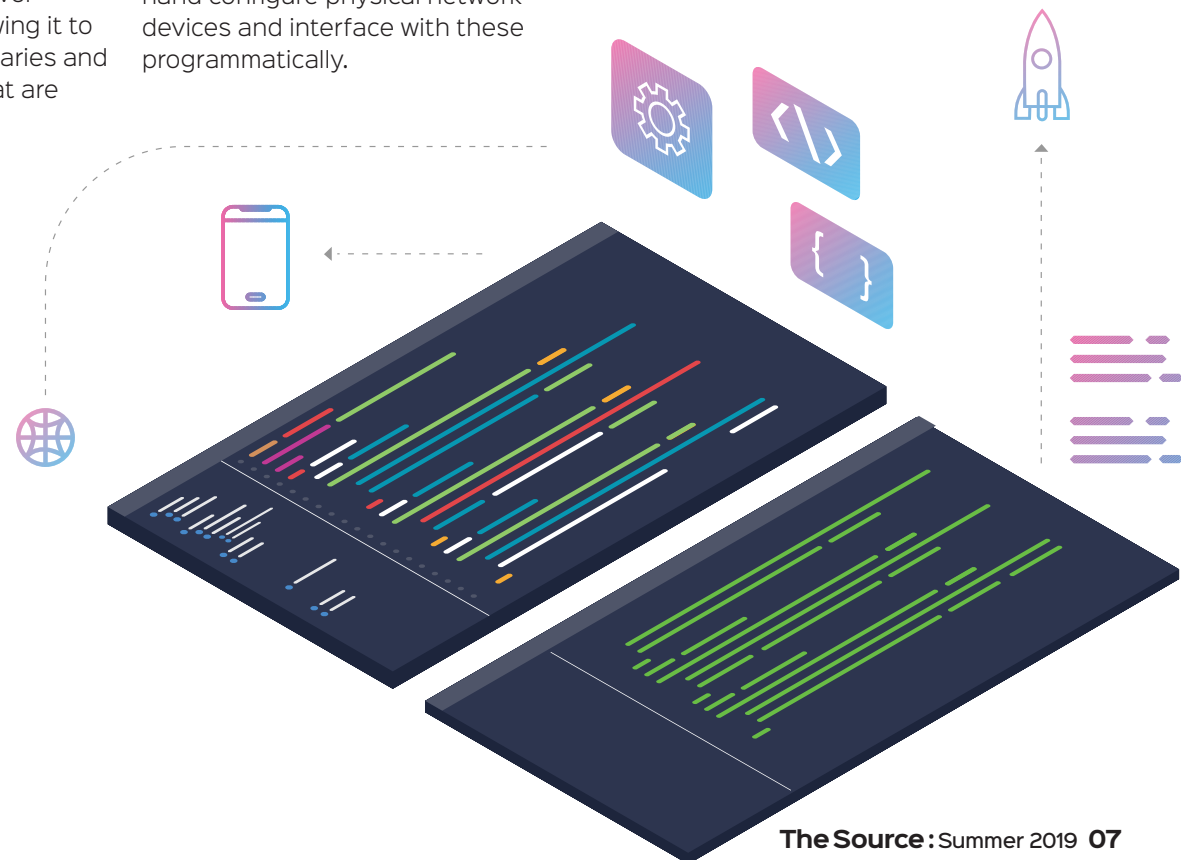
It does this by encapsulating network communication into special packets that allow software-defined communication to traverse over physical networks while allowing it to create virtual network boundaries and utilize firewall capabilities that are enforced in the software-defined network layer. It allows pulling off otherwise complex networking feats such as extending network segments across subnets. Software-defined networking is often called an overlay since it effectively creates a logical network “on top of” your physical network.

Some of the most outstanding benefits of SDN are in the areas of security and automation. With SDN solutions such as VMware NSX, you can effectively implement a “zero-trust”

or micro-segmentation model. This allows enforcing network security in such a way that end user clients can only communicate with those resources they are allowed to communicate with.

In terms of network automation, SDN allows businesses to place the deployment and provisioning of network resources into software instead of having to hand configure physical network devices and interface with these programmatically.

Overall, software-defined networking is the way of the future for networking and effectively allows implementing very complex new network topologies over existing physical infrastructure. This is all possible without changing physical device configuration but instead, implementing these in a software-defined networking layer.





Windows Server 2019

Microsoft's latest and greatest server operating system has dropped for the masses. Windows Server 2019 represents the most modern, fully-featured, and capable Windows Server operating system to date. Let's take a look at the top features that you should care about that will bring the most benefit to your environment.



Windows Admin Center Integration

Windows Admin Center is the new modern server and HCI management platform for configuring, managing, and monitoring Windows Servers. Windows Server 2019 was built for use with Windows Admin Center. It includes powerful management and monitoring features for technologies like Storage Spaces Direct.

Storage Migration

Have an old legacy file server that you cringe to think about migrating to a newer platform? The Storage Migration feature provides a fully automated "hand holding" experience that allows easily migrating off legacy file servers. It will be a game changer for finally getting these types of servers upgraded to the latest and greatest platform.

Improved Storage Spaces Direct

Microsoft's software-defined storage solution is better than ever in Windows Server 2019. Features introduced like deduplication and compression with ReFS, two-node clusters using a USB witness, Windows Admin Center management, mirror-accelerated parity and drive latency outlier detection are game changers for this release of S2D.



Failover Clustering improvements

Failover Clustering has gotten much more powerful and capable in Windows Server 2019. Now create “cluster-sets” of Windows Failover Clusters, use USB keys as witness resources in supported commodity routers, utilize cluster-aware updating with S2D, and take advantage of non-domain joined failover clusters!

SDN network encryption

A great new feature from a security perspective for software-defined networking in Windows Server 2019 is SDN network encryption. Without any components needing to be installed inside guest virtual machines or other special mechanisms, entire subnets can easily be encrypted with the new networking encryption option.

Run Linux containers on Windows

It has been a long time coming in the Windows container world, but you can now run Linux inside of Windows containers in Windows Server 2019.



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NETWORK SECURITY

Holey Software Batm...

Third-party patching programs.

Hackers are using unpatched third-party applications like Adobe Flash and Firefox to gain access to company networks. While many of these applications update themselves, it's in your companies best interests to make sure they're updated. Here are a few programs you can use to keep your third-party applications up to date.

Ninite Pro is a cloud-managed, agent-based program that can keep the most popular third-party applications updated on your Windows computers. Ninite Pro is managed via a live web-based interface where you can control the deployment of updates and view status in real time.

→ NINITE.COM/PRO

PDQ Deploy is an on-premise application deployment software that includes over 200 prebuilt third-party application. Paring PDQ Deploy with its counterpart, PDQ Inventory, will allow you to automate the process of locating and updating multiple third-party applications in your environment.

→ PDQ.COM

Don't want to deal with any of this third-party updating? Then utilizing a Managed Service Desktop solution, like the ones Source One Technology can provide, may be the solution for you. For a monthly per desktop fee, this service performs OS and third-party application updating saving you time for other essential tasks.



Immoootable Infrastructure

Traditional servers in most enterprise environments are like “pets”. We pet, feed, and nurse them when they get sick! We have all been in environments where we have that beloved old SQL Server that no one wants to touch to keep from breaking it or that web server that has an unorthodox configuration that breaks when any changes are made.

In this traditional environment of infrastructure management, a server is upgraded “in place” meaning software updates are applied, new versions of applications are installed, and the server continues to fulfill the original role.

There is a new approach driven by the rise of automation – **immutable infrastructure**.

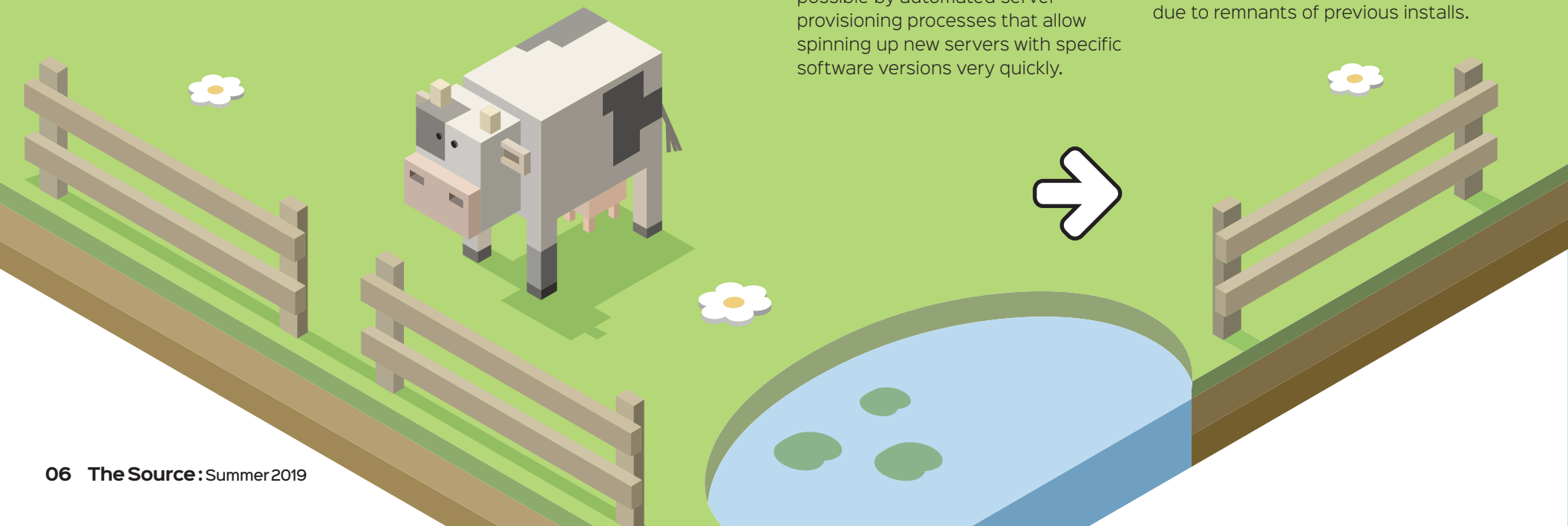
Immutable infrastructure is making it possible to have “**cattle**” servers instead of “pets”. Following this analogy, cattle serve a purpose. When that purpose is over, they are sold or perhaps go to the meat market. With immutable servers, once a new version of software or update is released, the old server is decommissioned and a completely new server takes its place.

Immutable infrastructure is made possible by automated server provisioning processes that allow spinning up new servers with specific software versions very quickly.

What are its advantages?

- Consistency
- Reliability
- Servers are always fresh installs
- No upgrades
- Free of configuration drift

By shifting to an immutable infrastructure architecture, you can effectively eliminate the so-called “snowflake” servers that require tedious updates, application installs, and troubleshooting failed updates due to remnants of previous installs.



WHAT IS DEVOPS?

We live in an age of buzzwords. An ever-popular buzzword floating around the IT community today is DevOps. What is DevOps, and why should you care about it?

DevOps helps to define and describe what it entails – “Infrastructure as Code”. DevOps engineers are successfully blending IT operations and development together by using the powerful programmatic interfaces and controls found in today’s modern infrastructure.

Public cloud has driven the move to the DevOps approach to IT operations with programmatically accessible APIs being presented in all aspects of public cloud environments. IT operations/DevOps engineers can now effectively write code or scripts to interact with, control, manage, and monitor all aspects of these public cloud environments.

Even in small environments effectively, quickly, and efficiently provisioning infrastructure demands a new way of thinking compared to the old days of building servers. Traditionally, it may have taken “days” to build a server. In contrast, today, using powerful automation tools such as Terraform, DevOps engineers can use JSON templates to feed a Terraform provisioner to **automatically deploy a single, tens, or hundreds of servers quickly.**

Even in on-premises environments, the DevOps operational process allows IT operations to effectively provision new server resources in common enterprise technologies such as VMware, Hyper-V, and others. By eliminating mundane tasks, streamlining processes, and removing provisioning mistakes, DevOps is driving IT operations efficiency.

→ DEVOPS TOOLS

Terraform:
[TERRAFORM.IO](https://terraform.io)

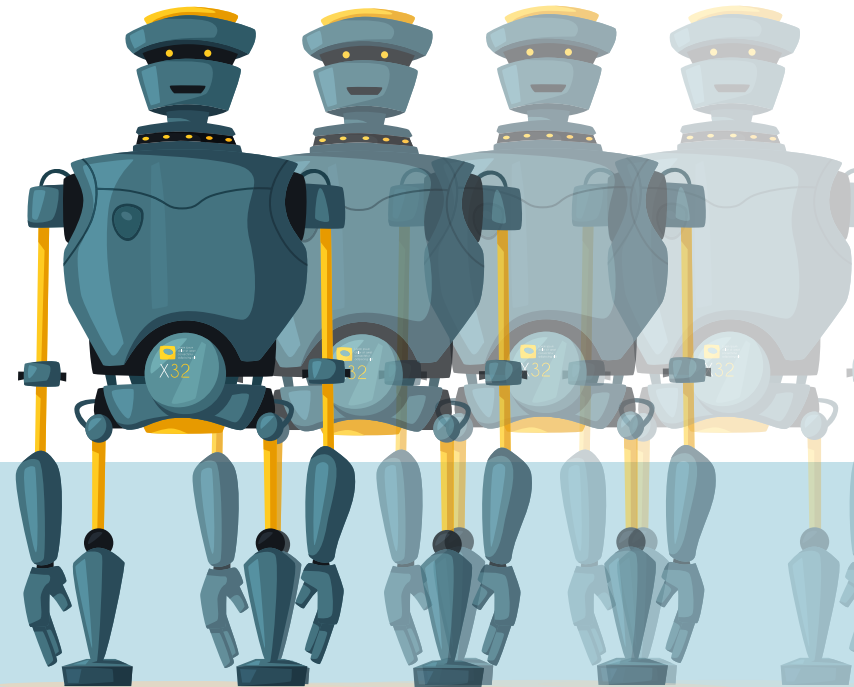
Chef:
[CHEF.IO/CHEF](https://chef.io)

Puppet:
[PUPPET.COM](https://puppet.com)

Ansible:
[ANSIBLE.COM](https://ansible.com)

JuJu:
[JUJUCHARMS.COM](https://jujucharms.com)

Docker:
[DOCKER.COM](https://docker.com)



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I just wanted to drop a line and let you know how much I appreciate the partnership with Source One Technology. It's been one of the best decisions I have made and has really advanced our organization and the ability for my team to work on items that have been on a to-do list for a long time. You really do go above and beyond.

Laura Schmitz

**DIRECTOR OF IT & SYSTEMS ADVANCEMENT
OPPORTUNITIES, INC.**

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