Learning VMware NSX

Virtualize your network with this step-by-step configuration guide to installing, configuring, and managing VMware NSX

Ranjit Singh Thakurratan

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Learning VMware NSX

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First published: January 2016

Production reference: 1220116

Published by Packt Publishing Ltd.

Livery Place

35 Livery Street

Birmingham B3 2PB, UK.

ISBN 978-1-78588-688-1

www.packtpub.com

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About the Author

Ranjit Singh Thakurratan (RJ) is a VMware vExpert (2014 and 2015) and works as a VMware clou solutions architect, specializing in architecting Enterprise cloud solutions. He works for Rackspace—the #1 managed cloud company and home of Fanatical Support—which is based out of San Antonio, Texas.

RJ holds a master's degree in information technology—infrastructure assurance, an engineering degree in computer science, and has over ten years of hands-on IT experience. He has presented at numerous VMUG UserCon conferences held at Boston, Washington DC, New York, Denver, and Dallas. He also runs a technology blog, www.rjapproves.com, and can be reached via his Twitter handle—`@RJAPPROVES`. Apart from technology, RJ is also interested in astrophysics, animal welfare, and open source projects.

One of his favorite quotes is:

> *"The greatness of a nation and its moral progress can be judged by the way its animals are treated."*
>
> *--Mahatma Gandhi*

I would like to thank my parents, Jagat Singh and Thakur Sindhu Kumari, for making me the man I a today, and my brother, Manjit Singh, for being supportive all along. Lastly, to my lovely dog, Shyla Singh, who loves selflessly and has kept me on the move.

About the Reviewers

Jonathan Frappier is a technology professional focused on working with organizations to understan business operations and requirements and then design, transform, and support technology solutions and teams that leverage modern trends in virtualization, cloud computing, DevOps, and social enterprise collaboration.

He works on a wide range of technology, from firewalls and switches to Windows, Active Directory, Exchange, VMware vSphere, storage, backups, disaster recovery, and support custom-developed software, in both large and small companies where technology is heavily relied upon.

I would like to thank my parents and grandparents, my wife and daughter, and the amazing virtualization community for everything you do every day—without you, opportunities like this wou not exist.

Anthony Spiteri has been working as a hosting and cloud professional since 2002, and in that time, h has been privileged to work at some of the leading service providers in Australia. Anthony has developed a true passion for his work and has worked on products and services that deliver high quality results through leading edge technologies. As a lead architect at ZettaGrid, he has helped pus the boundaries of virtualization and cloud by leading product development and looking into doing great things with a great technology.

As a VMware vExpert and vChampion, Anthony has been able to build on his community work by delivering talks and presentations at various events locally and overseas. He runs the Virtualization i Life! blog at http://anthonyspiteri.net, and he is a contributor to Planet V12n, OneCloud Road, and AussievMafia. He has gained high levels of technical praise for his posts and comments on all things hosting- and cloud-related.

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Preface

Networking is the most critical component of any IT architecture. Architects always want to lay the right foundations of networks and solve networking issues before the computation and storage is looked at. This is why I have always felt the need to have a better understanding of networking and how things work.

Network virtualization technology allowed me to have a behind-the-scenes, hands-on look at how networking works and the concepts that made it happen. The ability to deploy virtual appliances such as switches, load balancers, and routers and examine their functionality was very appealing. The pace at which I learned network virtualization (NSX) gave me the confidence to grow in a field in which I thought I lacked significant knowledge. Through my journey, I understood that network virtualization not only made me think like a network engineer, but also made me apply networking concepts very creatively to a virtualized environment, and this made it all the more appealing. What was complex before, now became extremely simple.

In 2015, I went about giving presentations at multiple VMUG UserCon sessions all around the country. My presentation was on *Getting started with VMware NSX - Basics and Best Practices*. Here my aim was not to talk about what NSX can do but to talk about how easy it was to get started with NSX and also to squash some common misconceptions about it. I wasn't sure whether this was a topic worth talking about and wasn't expecting a large crowd. (My time slot to present was right after lunch which wasn't very encouraging.)

Soon, I was proved wrong. In each and every city where I gave my presentations, all of my sessions had a full audience. People were eager to know how to get started with NSX and in fact, preferred this presentation to any of the other VMware NSX presentations happening at the same conference. I was able to quickly identify the huge knowledge gap and the plethora of common misconceptions about NSX and network virtualization, in general. I also observed that many of the attendees were network administrators with an interest in network virtualization.

This feedback from the tech community gave me a desire to write a book that covers the basics and teaches how to get started with NSX. I want to connect to the day-to-day administrator and the network engineer who is wondering how all the dots connect, and this is something I am passionate about. The book explains the basics and covers the deployment of the various features of network virtualization in simple and clear language and with screenshots that allow you to visualize the workflow as you read. I did have to work around a page restriction set by the publisher, so I focused on the most commonly used or sought-after features in the book even though I covered all of the NSX features and functionality. The audience feedback from various conferences helped me greatly.

I hope you enjoy working with this book and that it helps you to learn to use and understand NSX and network virtualization.

What this book covers

Chapter 1, *An Introduction to Network Virtualization*, gets you started with an introduction to networ virtualization and an overview of its concepts. You will briefly learn about some of NSX's features and capabilities. We also have a NSX limits table to help you understand NSX's capabilities.

Chapter 2, *NSX Core Components*, talks about all the different components of NSX and how they all work together. You will also learn about VXLAN architecture that is the backbone of overlay or virtual networking. We will also briefly talk about transport zones that define the scope of a virtual network. You will learn about NSX Edge services and the distributed firewall as well.

Chapter 3, *NSX Installation and Configuration*, is where we will start deploying and configuring NSX We will go over the installation process step by step and then configure our NSX deployment with a vCenter server. You will learn how to manage NSX using the vSphere web client and build your control and data planes.

Chapter 4, *NSX Functional Services*, discusses the deployment and configuration of different NSX services, such as logical switching, L2 bridging, and Edge gateway services. We will go over the configuration of transport zones and logical switching step by step. This will be an interesting chapte where you will also learn the deployment of Edge appliances and set up L2 bridging, which allows yo to extend a layer 2 network into NSX.

Chapter 5, *Edge Services Gateway*, discusses the NSX Edge gateway, which offers a lot of features ar capabilities. We will go deeper into the services offered by the Edge gateway and look at how to deploy and configure them. We will look at how to configure routing and load balancing. You will also spend some time learning to set up DHCP and DNS services.

Chapter 6, *Data Security*, discusses one of the most important capabilities of NSX, its security, and also discusses the different NSX security offerings. We will discuss and learn how to set up security groups and configure them by mapping a security group to a specific policy. You will also learn briefly about the network extensibility feature of NSX.

Chapter 7, *Monitoring*, looks at how to enable monitoring for our environment using NSX. Activity monitoring is one of the features of NSX that is a boon for network and system administrators. You will learn how to configure it along with generating a virtual machine activity report. You will also learn about flow monitoring and Traceflow, which can simulate and allow you to test the network.

Chapter 8, *Managing NSX*, talks about NSX administrative tasks such as backup and restore and NSX Manager settings. We will revisit NSX Manager and explore all the different settings that can be set. We will look at setting up syslog, time, and DNS settings. We will also look at taking controller snapshots as well. We will also have a look at the setup of our NSX Manager with CA signed certificates along with configuring NSX with a domain.

Chapter 9, *Conclusion*, is the concluding chapter that includes important information and links

What you need for this book

Although you can dive right into this book, I recommend setting up a modest home lab of three servers running VMware's ESXi and vCenter. You are also encouraged to spend some time exploring the **hands on labs** offered for free by VMware. The specific NSX labs that will help you greatly are **HOL-SDC-1603** and **HOL-SDC-1625**. These labs will help you get started with NSX without having to worry about the intricacies of having to set it up.

You can get to "hands on labs" by going to http://labs.hol.vmware.com and searching for the two labs mentioned earlier.

Who this book is for

This book is for those who want to learn how to install, manage, and configure the VMware NSX Network Virtualization platform. If you want to explore, understand, or deploy VMware NSX in your environment, this book is for you. Also, this book can assist you in preparing for VMware NSX certification. Knowledge of the basic networking concepts and VMware components such as vCenter and vSphere is required.

Conventions

In this book, you will find a number of text styles that distinguish between different kinds of information. Here are some examples of these styles and an explanation of their meaning.

Code words in text, database table names, folder names, filenames, file extensions, pathnames, dummy URLs, user input, and Twitter handles are shown as follows: "We can include other contexts through the use of the `include` directive."

A block of code is set as follows:

```
[root@host:~] esxcli software vib list | grepesx
esx-vsip6.0.0-0.0.2732470    VMware  VMwareCertified   2015-05-29
esx-vxlan6.0.0-0.0.2732470    VMware  VMwareCertified   2015-05-29
```

When we wish to draw your attention to a particular part of a code block, the relevant lines or items are set in bold:

```
[root@host:~] esxcli software vib list | grepesx
esx-vsip6.0.0-0.0.2732470    VMware  VMwareCertified   2015-05-29
esx-vxlan6.0.0-0.0.2732470    VMware  VMwareCertified   2015-05-29
```

New terms and **important words** are shown in bold. Words that you see on the screen, for example, in menus or dialog boxes, appear in the text like this: "Click on **Change** in the **Syslog servers** row."

Note

Warnings or important notes appear in a box like this.

Tip

Tips and tricks appear like this.

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