

# ANYCon 2017 Talk – VLAN Hopping, ARP Poisoning and Man-In-The-Middle Attacks in Virtualized Environments

---

## New Publication: International Journal of Communication Networks and Distributed Systems

I recently have had a new article published in the [International Journal of Communication Networks and Distributed Systems](#). The article was submitted to the journal about a year and a half ago, and was released in a [Special Issue on Software Defined Networks and Infrastructures, Network Function Virtualisation, Autonomous Systems and Network Management](#). You can find a copy of the final draft of the article on my [publications](#) page.

---

# [DEF CON 24 Talk Resources – VLAN Hopping, ARP Poisoning and Man-in-the-Middle Attacks in Virtualized Environments](#)

We are aware that our presentation slides and white paper somehow went missing from the DEF CON 24 CD. They have been submitted for inclusion on the Media Server, but until then you can find the talk information, white paper, and slides at the following links:

[Talk Abstract & Speaker Bios](#)

[White Paper](#)

[Presentation Slides](#)

Also note that all of the demo videos are below. Scroll down for detailed explanations of each test scenario, and links to all of the fully narrated YouTube videos.

Enjoy, and if you have any questions, or are looking for someone to assist in evaluating your environment against these attacks feel free to use the [contact form](#) to reach me.

Edit:

The materials are now available on the DEFCON media server:

[White Paper](#)

[Presentation Slides](#)

---

# DEF CON 24 DEMO: Double Tagging VLAN Hopping Attack Against the Microsoft Server 2012 Hyper-V Cisco Nexus 1000v Virtual Network Using One Physical Switch

This post demonstrates the effects of using a double tagging VLAN hopping attack to send an ICMP packet to a virtual machine located on a separate VLAN than the physical attacking system. In this scenario the attacker is using a physical Kali 2.0 system connected to a native vlan access port on a Cisco 2950 switch and targeting a virtual machine located on a separate VLAN within the Microsoft Server 2012 Hyper-V hypervisor environment using the Cisco Nexus 1000v virtual network switch.

This experiment was performed on seven different hypervisor/virtual network configurations in order to perform a systematic evaluation of the effects across all of the major enterprise level virtualization platforms. The following network diagram illustrates the configuration used for each of the experiments:



The following video walks through the attack process and results.

---

# DEF CON 24 DEMO: Double Tagging VLAN Hopping Attack Between Two Virtual Networks With a Cisco 2950 Switch in the Middle

This post demonstrates the effects of using a double tagging vlan hopping attack to send an ICMP packet from a virtual machine located in one hypervisor environment to another virtual machine located in a separate hypervisor environment connected to the same physical switch. In this scenario the attacker is using a virtual Kali 2.0 system located within the Citrix XenServer hypervisor environment and targeting a virtual machine located on a separate VLAN within the ProxMox hypervisor environment.

This experiment was performed on seven different hypervisor/virtual network configurations in order to perform a systematic evaluation of the effects across all of the major enterprise level virtualization platforms. The following network diagram illustrates the configuration used for each of the experiments:

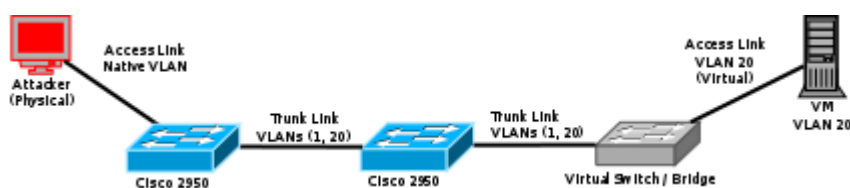


The following video walks through the attack process and results.

---

# DEF CON 24 DEMO: Double Tagging VLAN Hopping Attack Against the Proxmox Virtual Network Using Two Physical Switches

This post demonstrates the effects of running a Double Tagging VLAN Hopping attack against the ProxMox hypervisor environment. In this scenario there are two Cisco 2950 switches in between the attacker and the virtual network. The experiment was performed on seven different hypervisor/virtual network configurations in order to perform a systematic evaluation of the effects across all of the major enterprise level virtualization platforms. The following network diagram illustrates the configuration used for each of the experiments:



The following video walks through the attack process and results against a virtual machine hosted within the ProxMox hypervisor environment.

---

# DEF CON 24 DEMO: Switch Spoofing Attack Against a Cisco 2950 Switch from the VMWare ESXi 6.0 Hypervisor Environment

This post includes a demo video which illustrates the effects of a Switch Spoofing attack launched from within a virtualized networking environment. The experiment was performed on seven different hypervisor/virtual network configurations in order to perform a systematic evaluation of the effects across all of the major enterprise level virtualization platforms. The following network diagram illustrates the configuration used for each of the experiments:



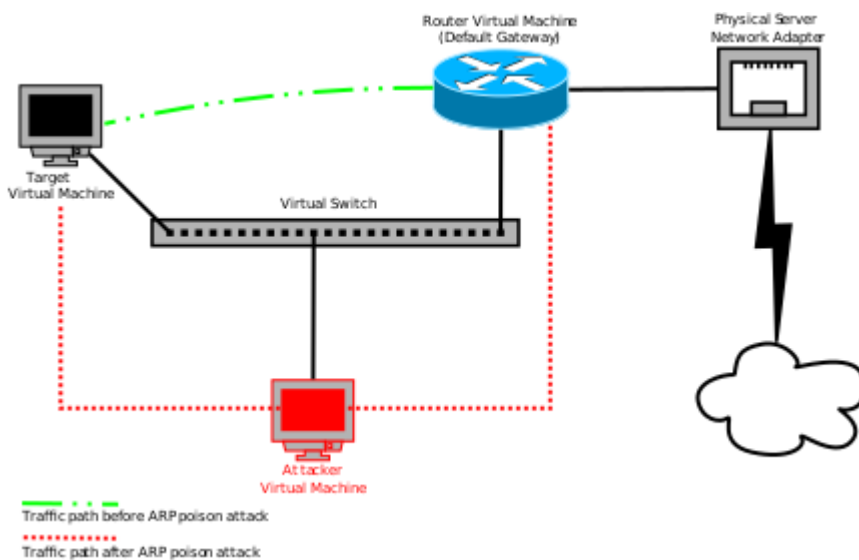
The following video walks through the attack and results under VMWare ESXi 6.0 using the standard ESXi virtual switch.

---

DEF CON 24 DEMO: ARP

# Poisoning Attacks in Virtual Networks

This post includes demo videos which illustrate the effects of an ARP poisoning Man-in-the-Middle attack within a virtualized networking environment. The experiment was performed on seven different hypervisor/virtual network configurations in order to perform a systematic evaluation of the effects across all of the major enterprise level virtualization platforms. The following network diagram illustrates the configuration used for each of the experiments:



The following videos walk through the attack and results under VMWare ESXi 6.0 using the standard ESXi virtual switch as well as Microsoft Server 2012 HyperV using the Cisco Nexus 1000v virtual switch.