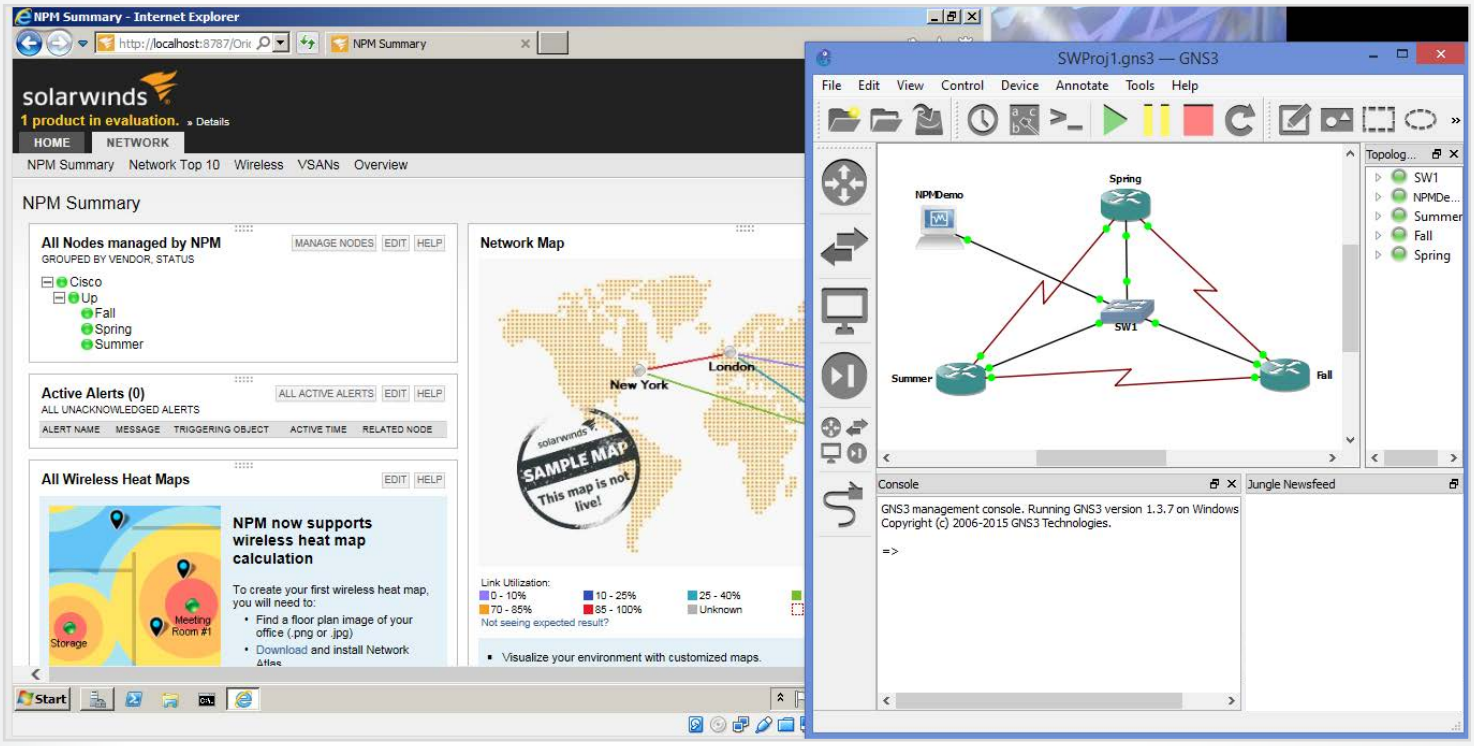
HOW-TO GUIDE

INSTALLING AND INTEGRATING GNS3 AND NPM



IT'S ALL IN YOUR MIND (OR ON YOUR LAPTOP)

Using GNS3 and SolarWinds® to create a completely virtualized monitoring environment.

This guide provides detailed step-by-step instructions for setting up GNS3, creating a network, and then setting up a virtual machine running the SolarWinds Network Performance Monitoring solution.

INTRODUCTION

About GNS3

GNS3 is a tool that lets you create virtual network devices that act like real network devices. Why would you want to do this? Well, for years, GNS3 has been the go-to solution for people who wanted to pass their network certification exams (without having to drop thousands of dollars on actual network gear), and creative-but-frugal network professionals who wanted to mock up and test their network designs before rolling them out in a real production environment.

About SolarWinds Network Performance Monitor (NPM)

NPM is the flagship product from SolarWinds, Inc. It monitors devices for availability (up/down), performance, capacity, and more using agentless techniques, including SNMP and WMI. Devices which can be monitored include servers running Windows®, Linux®, UNIX®, and MacOS® network devices like routers, switches, and wireless access points, and any device with an IP address.

GNS3 + SolarWinds = Awesome

With a relatively recent update, GNS3's support of virtual PCs (and servers) via Oracle® and their open source VirtualBox® tool, a whole new class of IT pro has a reason to be really excited. Monitoring engineers who want to test new software and/or versions can now set up an entire "fake" network, which could include servers, routers, switches, and more, and perform test monitoring against that network.

ABOUT THIS GUIDE

Monitoring engineers might be unfamiliar with setting up networks (in GNS3 or otherwise). Also, GNS3 users might be unfamiliar with the conventions of monitoring solutions like SolarWinds NPM.

Which is where this guide comes in.

This document provides step-by-step, command-by-command, show-me-with-pictures instructions for installing GNS3, setting up a network, installing NPM, and adding the GNS3 network devices to NPM for monitoring. This guide assumes (almost) nothing about the reader's background and expertise and provides detailed instructions for all processes.

So, if you are a GNS3 guru and can set up a hybrid OSFP-BGP-EIGRP-RIP network before your morning coffee, you can probably skip ahead to the NPM part. And if you are a veteran SolarWinds expert who has installed NPM so many times that you have the screens memorized, you can probably stop reading once you get your network installed.

For those of you who likely fall somewhere in the middle, I hope this guide helps you to get to the part that's actually useful—testing your network and/or monitoring changes in a safe environment before rolling them out to your production environment.

Let's get started:

Here's an overview of what we're going to do:

1. Download everything.
2. Install PuTTY™.
3. Install VirtualBox®.
4. Intall GNS3.
5. Configure GNS3.
6. Set up a simple network.
7. Add a virtual server to the network.
8. Install Windows® on the virtual server.
9. Install NPM on the virtual server.
10. Configure NPM to monitor the devices.

Before you start, verify your hardware

You may be wondering, "What am I installing all this stuff on?"

The answer is "whatever you want, really." But, of course, we all know there are a few requirements:

- You should have at least a quad-core processor on the machine because you will be running at least one virtual machine along with a few virtual network devices—not to mention your host operating system.
- You should probably have over 4GB of RAM. You can run with 4, but things are going to be pretty slow for the same reasons as the CPU requirement above.
- Disk space is less of an issue, given today's standards. GNS3 needs only about 100MB, but you also need to allow for the network device images, plus at least one Windows virtual machine running SolarWinds NPM. So you should figure your disk needs to have 200GB to 300GB free.

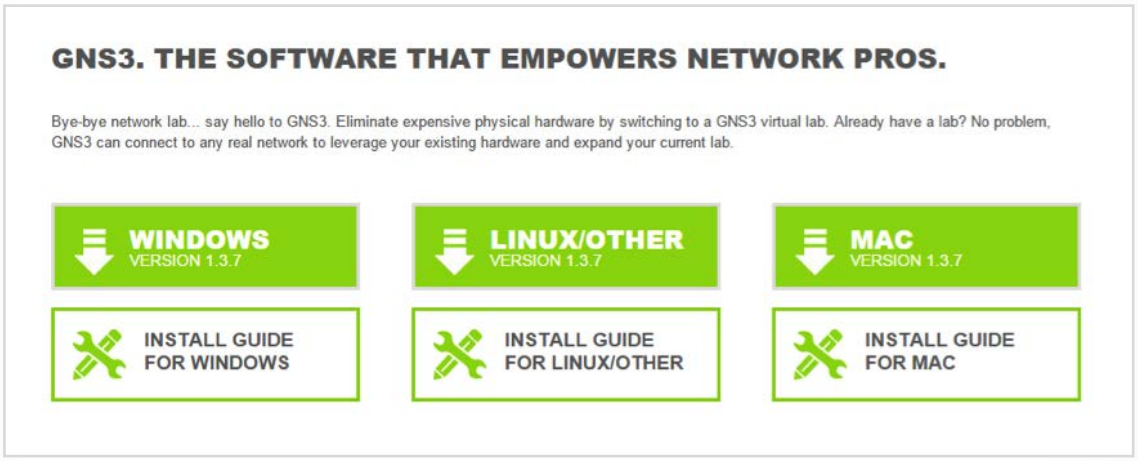
Step 1: Download everything

NOTE: You'll need to create an account for the GNS3 community before the download link will work. This is a Very Good Thing™ and I strongly recommend you do that anyway. (See instructions below.)

- GNS3: https://community.gns3.com/community/software/download/
- PuTTY: http://www.chiark.greenend.org.uk/~sgtatham/putty/download.html
- VirtualBox: https://www.virtualbox.org/wiki/Downloads

- NPM: http://www.solarwinds.com/network-performance-monitor.aspx
- A copy of Windows
- The "images" of the network device operating system (Cisco® IOS® or other)

1. Create an account at GNS3, and download the package from here: https://community.gns3.com/community/software/download/



Next, grab a copy of VirtualBox: https://www.virtualbox.org/wiki/Downloads. On that same page, you can download the extensions. While you don't have to have them, they're good to help normalize the hardware interactions, which is worth the extra 10-second download.

Of course, you'll need the 30-day demo of SolarWinds NPM: http://www.solarwinds.com/network-performance-monitor.aspx

Finally, to make your life easier, make sure you have PuTTY (or a similar telnet/ssh utility) installed: http://www.chiark.greenend.org.uk/~sgtatham/putty/download.html

Another item you need to have handy is a copy of Windows. SolarWinds NPM will install on any version of Windows from Win7 up (although, server versions are better, and 64-bit server versions are best) so make sure you have that ready to go.

You'll also need IOS images to create routers and switches within GNS3. For my example, I'm limiting myself to using an image for a Cisco® 3600 router, using the image "c3640-ik9s-mz.124-25b.image."

Before you get on my back about NOT providing a link here, I would like to point you to this section of the GNS3 For Windows Getting Started Guide:

> **Step 3 - Defining Cisco IOS files**
>
> *As mentioned earlier, due to licensing issues, you must provide your own Cisco IOS and license for IOU to use with GNS3.*
>
> GNS3 is meant to be used in a lab environment for testing and learning. Once you have obtained your own copy of a Cisco IOS for one of the supported platforms, you are ready to continue. Supported platforms are Cisco 7200, 3600 series (3620, 3640, and 3660), 3700 series (3725 and 3745), and 2600 series (2610 to 2650XM and 2691).

What this means is if you have a Cisco support contract, you can download images from the Cisco.com website. There are probably other sources for IOS images on the Internet. However, that is beyond the scope of this document and is left to the resourcefulness and ethics of the reader.

Step 2: Install PuTTY

And by "install," I mean unzip the package and put the executables someplace in your path.

Step 3: Install VirtualBox (and extensions)

I'm going to start by installing VirtualBox so GNS3 can detect it when I install it next. But I'm not going to set up the NPM server just yet.

There's really nothing special about the VirtualBox install. Follow the prompts, accept the defaults, and let it rip.

Once the main installer finishes, start VirtualBox, and install the extension pack (you DID download the extension pack, right?).

1. Go to File, Preferences, Extensions, and click the Add new package button (the blue box with the yellow arrow on the right).
2. Select the extension pack, and click Open.
3. Accept the license agreement.
4. Follow the prompts until everything is installed.

Step 4: Install GNS3

1. Double-click the GNS3 installer.
2. If you have User Access Control on, confirm that you REALLY want to start the GNS3 installer.
3. Click Next on the splash screen.

4. Accept the license agreement.