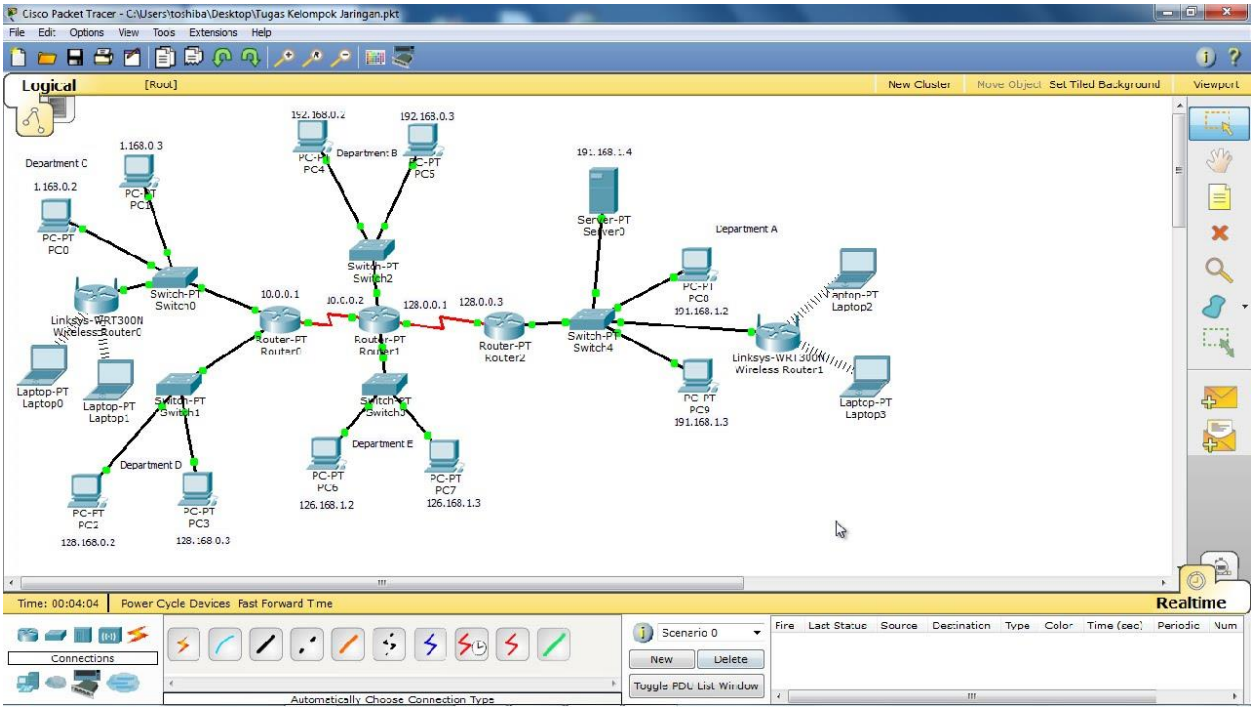
You have multiple choices when studying and testing networks:

1. GNS3
2. Cisco Packet Tracer
3. Cisco VIRL
4. Physical equipment
5. Others

Packet Tracer

Cisco Packet Tracer is an official Cisco product for Cisco Academy students that simulates Cisco networks. It does not emulate Cisco hardware or support real images from Cisco or other vendors.



Advantages:

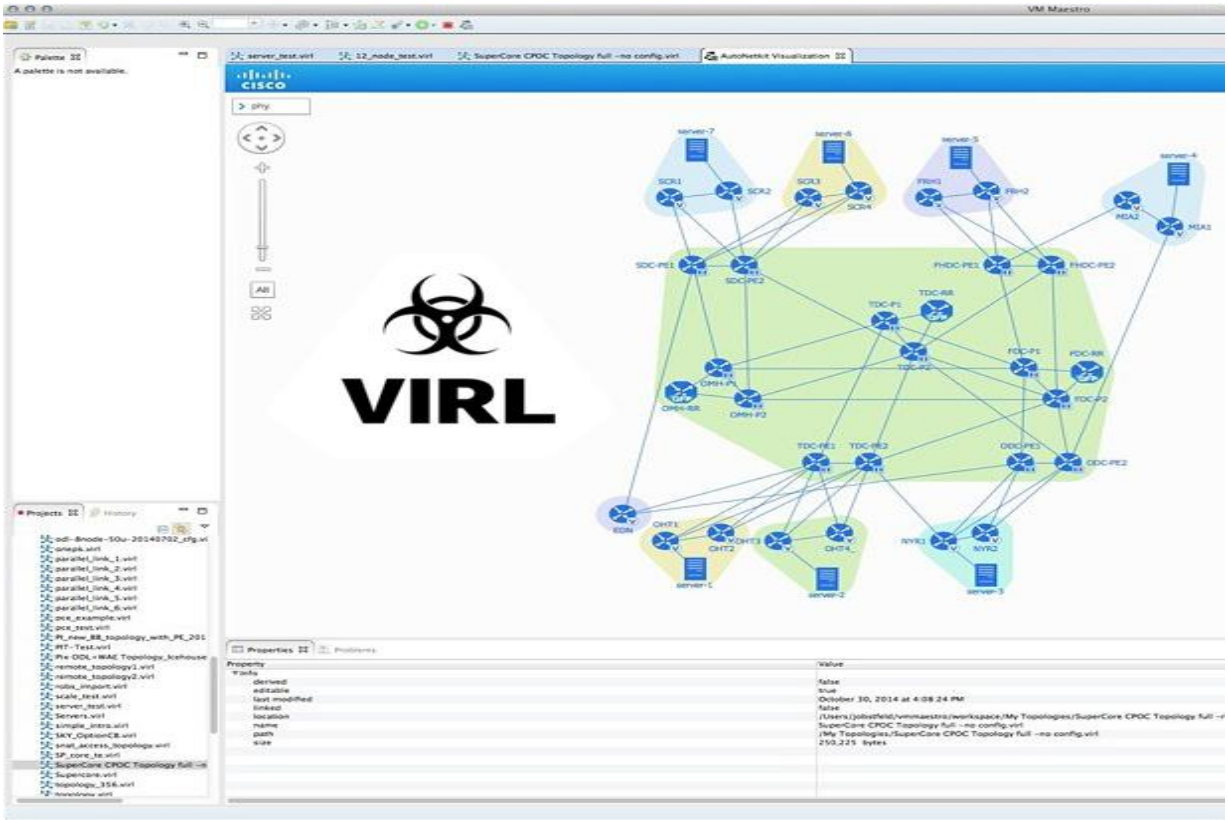
- Easy to setup
- Supports Cisco router, switch and PC simulations
- Good for CCNA studies
- Simulates multiple devices and protocols (routers, switches, wireless, RADIUS, SNMP)

Disadvantages:

- Only available to Cisco Academy Students
- Not free software (you need to join the Cisco Academy)
- Proprietary code - not open source
- Only simulates Cisco devices (Not running true Cisco images, but only a simulation)
- No multivendor support
- Cannot integrate with real physical devices
- No support for Mac OS

Cisco VIRL

Cisco have created another officially supported network simulation platform- Cisco Virtual Internet Routing Lab (VIRL). This is a much more powerful solution when compared to Cisco Packet Tracer and allows not only learning, but simulation of actual networks.



Advantages:

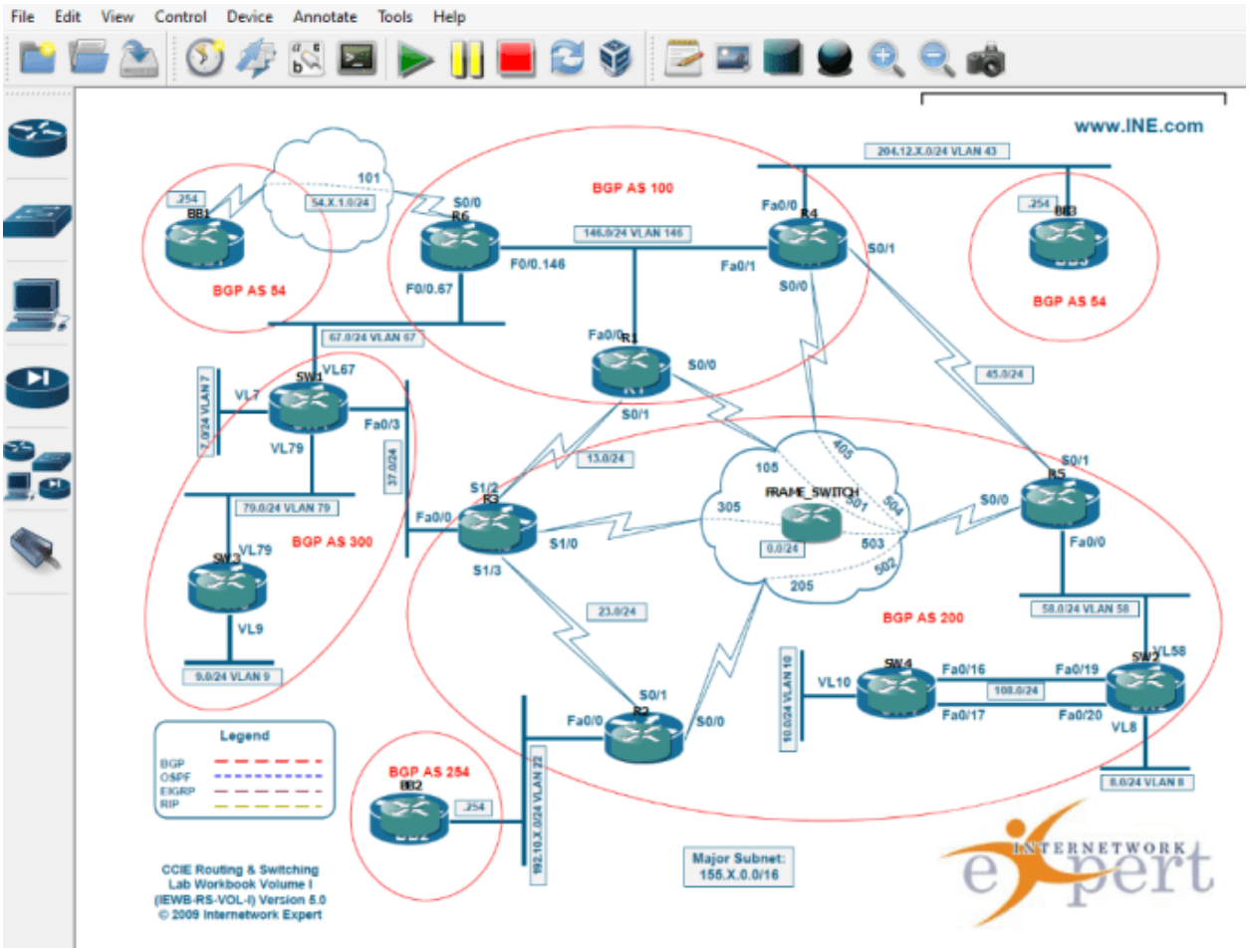
- Supports Cisco router, switch, firewall and PC simulations (IOSv, IOSvL2, ASAv,
- Good for CCNA, CCNP and CCIE studies
- Supports Cisco Firewalls (ASAv)
- Large number of protocols and features supported: RPVST+, Etherchannel, Port Security, MPLS, VRFs and more.
- Latest versions of Cisco IOS supported (15.X)

Disadvantages:

- Not free software. You pay $79.99 to $299.99 per year for a VIRL subscription.
- Limited number of devices supported. With the personal and academic editions ($199.99 and $79.99 per year), you are limited to 20 Cisco nodes.
- VIRL can be complex to setup and configure.
- Resource intensive (requires large amount of RAM and CPU)
- Requires virtualization software (VMware Workstation, Fusion, Player Pro or ESXi)
- Does not support VirtualBox
- No multivendor support - only supports Cisco networking devices

GNS3

GNS3 is an open source software which you can download and use for free. The source code is available on GitHub if you are interested in taking a peek at the code. We hope you find it useful and beneficial, but if you don't like something, or want to add something, why don't you get involved by contributing? Join the community or volunteer to check code or add code recommendations. With over 800,000 community members, we can all learn from each other.



Advantages:

- Free software
- Open Source software
- No monthly or yearly license fees
- No limitation on number of devices supported (only limitation is your hardware: CPU and memory)
- Supports multiple switching options (ESW16 Etherswitch, IOU/IOL Layer 2 images, VIRL IOSvL2):
- Supports all VIRL images (IOSv, IOSvL2, IOS-XRv, CSR1000v, NX-OSv, ASAv)
- Supports multi-vendor environments
- Can be run with or without hypervisors
- Supports both free and paid hypervisors (Virtualbox, VMware workstation, VMware player, ESXi, Fusion)
- Downloadable, free, pre-configured and optimized appliances available to simplify deployment
- Native support for Linux without the need for need for additional virtualization software
- Software from multiple vendors freely available
- Large and active community (800,000+ members)

Disadvantages:

- Cisco images need to be supplied by user (download from Cisco.com, or purchase VIRL license, or copy from physical device).
- Not a self-contained package, but requires a local installation of software (GUI).
- GNS3 can be affected by your PC's setup and limitations because of local installation (firewall and security settings, company laptop policies etc.)