CSG 1105 - Applied Communications

Week 3 Tutorial

Objectives

- Build on knowledge from Week 2 for Logical & Physical Network Topology
- Know how to pull important information from a description to translate into a topology
- Make a start on Assignment 1

By the end of this workshop you should be able to

- Create a more complex Logical & Physical Network Topology
- Have the tools required to complete your first assignment

Required Tools & Documents

- Word or Visio; you must submit your topology in one of these formats, or PDF
- Network Topology Icons found in Week 3's workshop downloads
  - You will find a Visio Stencil sheet and also a ZIP folder; you can download the ZIP folder to find out the names of the icons in the Visio Stencil that you need
- Week 2 Updated Documentation - this has instructions on building topologies.
- You can download the accompanying recording of this tutorial shortly after they have been completed.
  - This will be useful as there may be questions asked which could help you.
- You can download a full size PDF of my example Topology for Part 1 Scenario from Blackboard

Part 1 - Scenario

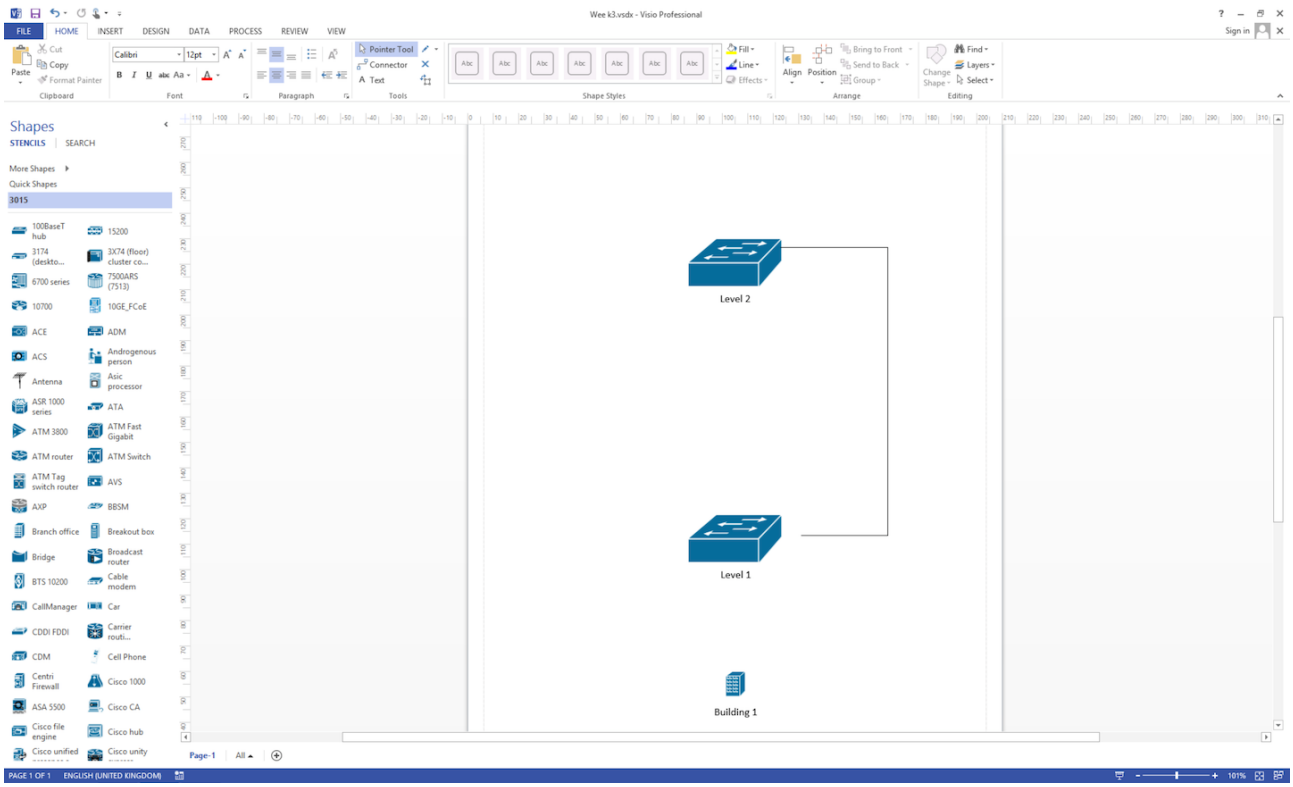
Wendigo Engineering has seen a lot of growth and success in the past few months and their existing network which has been added to piece-by-piece is no longer sufficient. They are providing you with a list of requirements for their new office building network implementation. You are required to create a topology showing how you plan to implement this network.

Assigned Network: 192.168.0.0
Assigned Subnet Mask: 255.255.255.0

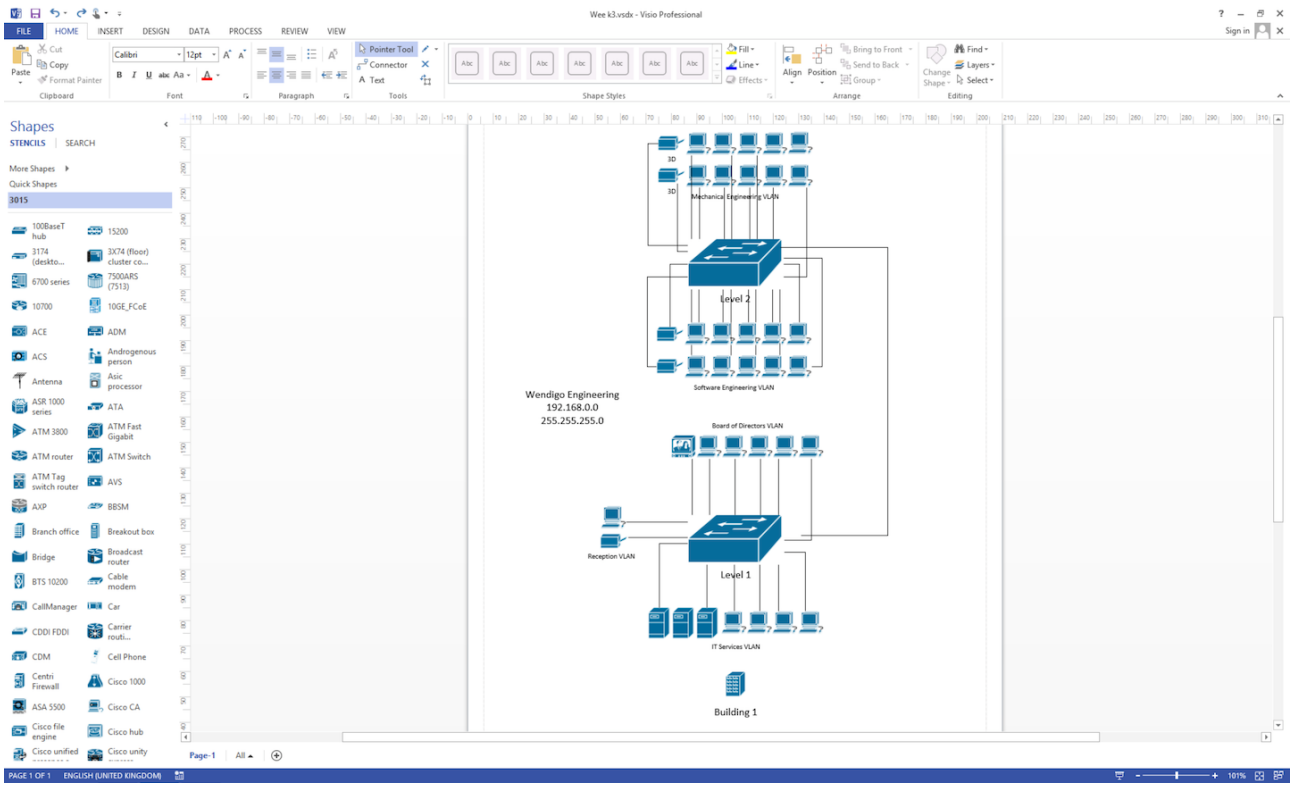
- Building 1
  - Level 1
    - Reception
      - 1 workstation
      - 1 printer
    - Board of Directors
      - 5 workstations
      - 1 teleconferencing room
    - IT Services
      - 4 workstations
      - 3 servers
  - Level 2
    - Software Engineering
      - 10 workstations
      - 2 printers
    - Mechanical Engineering
      - 10 workstations
      - 2 3D printers

Process

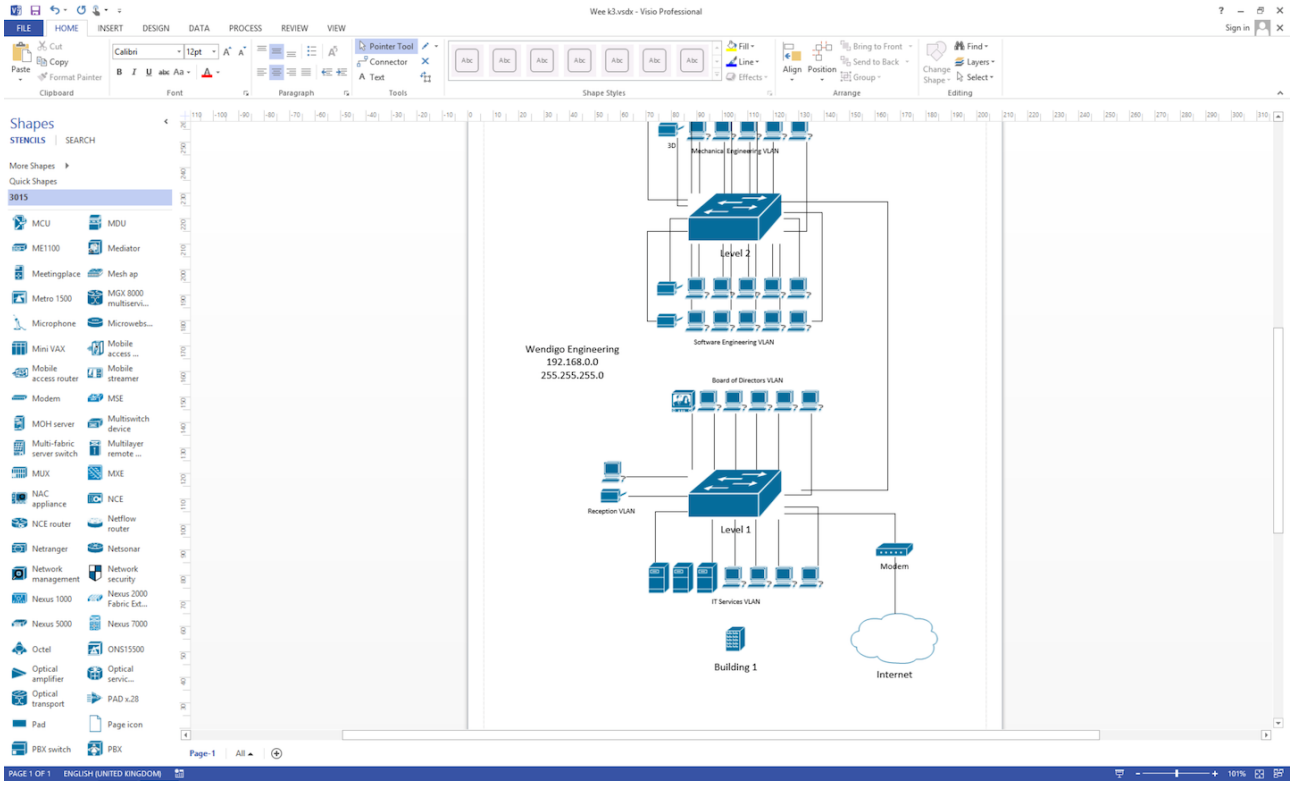
1. When creating a network topology be sure not to leave out any devices; it is crucial to have every device required included so that in future you can correctly create VLANs and Subnet appropriately. For now though, we will only be focussing on the absolute basics of VLAN and Subnetting. Because of this, you can safely assume you are required to place every device in your assignment into your finished topology. When creating these topologies, due to the number of devices on the network do not give every device a name
2. The best practice when creating a physical topology is to separate each floor visually on your topology and label them - similar to last weeks workshop. See the example below:



3. To implement the logical aspect (VLANs) you will want to separate each of those visually within their physical location. See the example on the next page.
4. To represent the IP Address Range and Subnet you will simply label somewhere on the topology the overall aspect - just like in Week 2 (updated document). See the example on the next page.



5. We also need to show that the network will have a connection to the internet. See below for how to do that:



6. Remember - keep your network as neat and organised as possible; Visio is the best for this as it has alignment tools, but Word will work just fine; now to build on Wendigo's network even more, see Part 2 below.

Part 2 - Scenario
Wendigo Engineering is merging with another company, Hello Studios. They will be working very closely together in the future and as such need to have their networks combined. Luckily, Hello Studios is located just next door, however they don't have an IT Department and as such your department will be running the whole show. Below is a list of what computing requirements they have. You are required to create their part of the network topology, just like in Part 1.

Assigned Network: 172.16.0.0
Assigned Subnet Mask: 255.255.255.0

- Building 2
  - Level 1
    - Reception
      - 1 workstation
      - 1 printer
    - Marketing
      - 5 workstations
      - 2 printers
    - Relations
      - 3 wireless workstations
      - 3 tablets
  - Level 2
    - Product Design
      - 6 workstations
      - 4 wireless workstations
      - 10 tablets
      - 2 printers
    - Management
      - 3 workstations
      - 3 tablets
      - 1 teleconferencing room

To connect the two networks, use a Router between the Buildings' first level switches. You'll notice that the networks have different IP Ranges available. Without this router they would not be able to communicate. A router works on Layer 3 and it's job is to do as it's name suggest, route, it does so by having an IP Table where it knows the location of the connected networks. You will not need to know how to configure this for your first assignment.

This aspect of the tutorial will not have any guidelines as it is practice for your assignment. You can simply begin work on your assignment should you wish to skip this. When doing this part, if you are on campus, you can ask your tutor about any aspect of what to do.

Hints and tips:
- Visio will automatically add extra pages to any direction (up, down, left or right) to allow more work space
- When using Word, don't be afraid to zoom in and work at a smaller scale to fit everything on one page
- You can rescale the icons as necessary so they fit properly and neatly (as I have done in my example)