S-38.3192
ITGuru Exercise (1: Building the Access Networks)

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Task Description

This is the first part of the exercise. In this part, you will have to create and configure the access networks for the different sites of the company.

First, create a new project and a scenario. Name the scenario '1_access_networks'. In the Startup Wizard: initial topology, select 'Create Empty Scenario'. In Startup Wizard: network scale, select 'choose from maps'. There are plenty of map options, select the map of Europe. Click the Object Palette and select 'Internet Toolbox'. Add five subnet symbols to the cities shown in Figure 1.
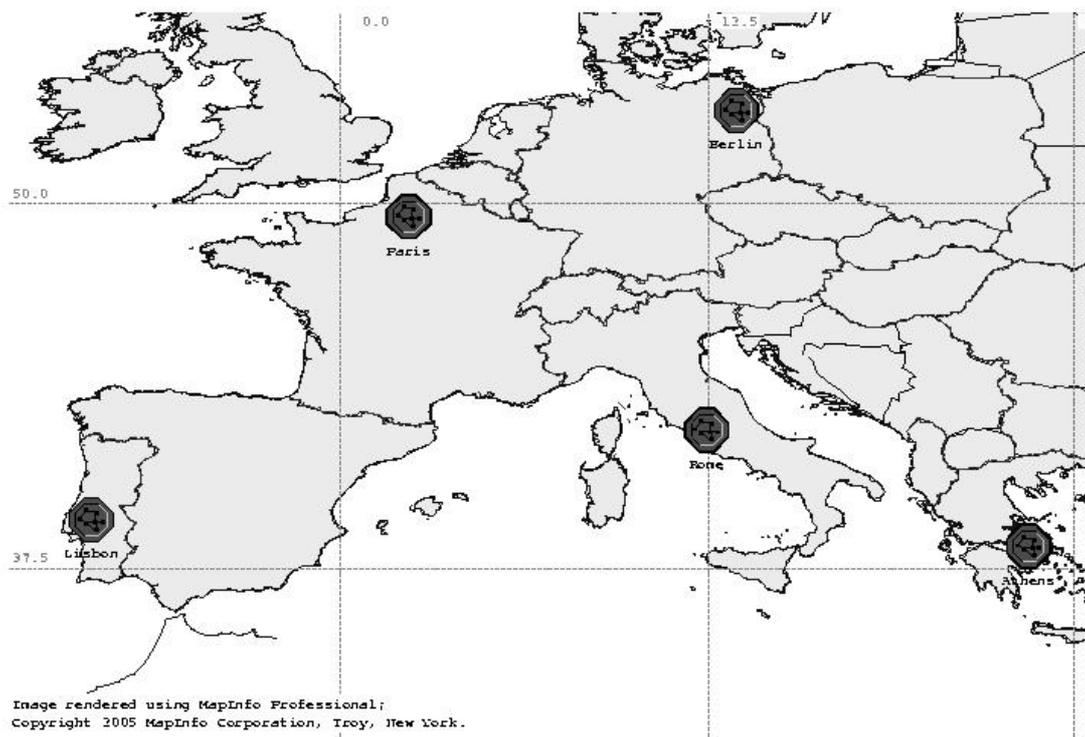
Figure 1 Locations of the companies

Now that you have created the subnets, you can build the access networks by clicking the subnet symbols one at a time and adding the appropriate devices. Change the size of each access network to 1x1 km. At this stage, you only have to add the workstations, servers and other devices required for the access network. Add access (CE) routers, too.

The following numbers of workstations have to be added in the sites:

- **Site1 (Berlin):** 100 workstations and one server. Access technology is Ethernet.

- **Site2 (Athens):** 40 workstations and one server. Access technology is ADSL.

- **Site3 (Lisbon):** 40 workstations and one server. Access technology is Ethernet.

- **Site4 (Rome):** 20 workstations and one server. Access technology is Ethernet.

- **Site5 (Paris):** 20 workstations and one server. Access technology is ADSL.

Select Ethernet or xDSL from the object palette, depending on which access technology you are using. When considering what type of nodes or links should be created, it is helpful to right-click the symbols of the devices in the object palette and read the detailed node/link description specifying the number and type of ports supported and the exact link speeds. You may also investigate and run example scenarios of xDSL and Ethernet in the */p/opnet/11.5A/models/std/example_networks* directory. However, keep in mind that these are only examples and not necessarily appropriate solutions for the exercise. So, don't copy them directly. In the ITGuru manual there is some description of how ADSL and Ethernet should be configured. Notice especially the right configuring order of ADSL uplinks and downlinks. As the access networks are ready, verify separately for each access network by using the 'Topology->Verify Links' command that the links you have selected are feasible.

Add an *ethernet4_slip8_gtwy* node as an endpoint for the IP VPN-tunnel to the subnets using ADSL. This is needed because ITGuru does not seem to allow the users to gather IP VPN results from firewalls or ADSL-modems.

Note that a LAN object models a server and *x* number of clients. This means that you don't have to add a separate server object (nor workstations) to the subnets.

Exercise Sessions

The exercise session for this task will be arranged on 26th January at 14 o'clock in computer class Maari-A.

Handout Requirements

The exercise should be returned before the beginning of the next exercise session (2nd February, 14 o'clock). Send the exercise package as an e-mail attachment to Juha Järvinen (Juha.Jarvinen@netlab.tkk.fi) provided that the size of the attachment is reasonable. You have to pack the files with the command:

"tar -cf - -C ~ op_models | gzip > 1_access_networks.tar.gz"