23.1 Trouble at Trouble Inc.

> In order to complete this unit, you will have to download and import the GNS3 project provided along with this exercise sheet. After importing the project into GNS3 you can safely delete the downloaded file.

> **Important:** Before you start the unit, make sure you created the Cloud node providing Internet access to the project network and connected it to `SW`.

> **Important:** When starting up the components of the lab make sure you start `gw-internal` and `gw-external` first. Once the gateways have started (i.e. you can access their consoles) you can start the rest of the lab.

After your rather successful venture in the world of startups you decide the startup business just isn't for you. So you put out your resume and, surely enough, you're hired by a small company called *Trouble Inc.*

Lately they have been experiencing quite a lot of issues surrounding their network infrastructure. The resident network engineer has been sick for a while now, and people are really desperate to get things running smoothly again.

Once you arrive at the scene they hand you a bunch of trouble tickets and give you access to all of their network in the hopes that you can solve their problems once and for all.

For each of the following problem descriptions try to find the cause of the problem and fix it.

Make sure that for every task you can

- explain what the actual problem is.
- explain what is the cause of the problem.
- explain how to fix it.

> For easier inspection of firewall rules, the scripts used to initially set up the firewalls can be found in the home directory on the gateways (`nano ~/firewall.sh`).

23.1.1 Phil

Phil called the helpdesk this morning. For some reason his machine doesn't seem to be able to connect to the Internet. He claims he urgently needs to do research on some competitor's products, but you just know he urgently wants to check the latest posts on his Facebook timeline (usually there's a reason for people to be moved from one department to another every few months).

Gritting your teeth you set out to solve Phil's problem, so you can turn your attention to more important things again.

23.1.2 Server Down!

The Sales department is loosing it. You've already been called three times about the same issue. All of them complain that the company web site is down and customers can't put in any orders. Your monitoring tool thinks differently though. There have been no alerts for the web server whatsoever. Because of the sheer number of calls you get the feeling that something might not be operating perfectly though. You decide to investigate further and see what's really going on with the web site and point your browser to *http://www.trouble-inc.local*.

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23.1.3 Access all Areas

One of the server technicians interrupts your coffee break. He is verbosely complaining about the network, especially the part he has to spend most of his time with, the server VLAN. Especially the local web server serving the intranet site is his topic of choice.

After listening to a number of random rants about IP networking in general, you finally get him to tell you what seems to be the problem: He tries to update the intranet server, but is unable to download anything from the Internet.

Since you are already finished with your coffee break and you have nothing else to do, you decide to take a look right away and see if you can find out what the problem is.

23.1.4 The new Hire

James, another new hire for the Marketing department, sure is a nice guy. However he doesn't seem to be able to do anything useful with his machine. He can't access the Internet, but also cannot access anything else inside the company network, such as the intranet site (*http://intranet.trouble-inc.local*).

You've heard stories about the helpdesk guys randomly using any network ports they can find when connecting new workstations. Since Accounting is sharing the office with another department, you already have a feeling what could be the problem. . .

23.1.5 Debby

Debby from accounting has submitted a problem to the helpdesk. She is complaining that the printer isn't working and of course this is happening just when she urgently needs to close the yearly accounts.

The helpdesk already paid her a visit and judged the printer to be working fine. However something else peaks your interest. For some weird reason you can see some packets *directed to the printer* show up *at the subnet gateway*. Curious . . .

Even though it is not technically an issue you decide to investigate this further.