Link Gateway Initial Configuration Manual

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Introduction

The purpose of this document is to show how to perform the initial Link Gateway configuration and follow an invitation to a Link Network. It follows on from the *Link Gateway ISO Installation* manual and should be followed by the *Link Platform* manual.

The Link Gateway Admin UI is a configuration user interface running as a web service on TCP port 443 over HTTPS. HTTP connections are redirected to HTTPS. Once initial configuration has been completed and the machine rebooted, then TCP ports 80 and 443 ingress are blocked by the Link Gateway firewall on the external interface while TCP port 7712 ingress remains open. Thus, further access to the Link Gateway Admin UI can only take place via the external interface over SSH or an SSH tunnel as described in the section *Connecting to Link Gateway admin UI via SSH* below. The Link Gateway Admin UI can still be accessed over HTTPS via the internal interface.

Assumptions

1. A Link Platform has been set up with a Link Network configured.
2. The following egress traffic is not blocked between the Link Gateway and the Link Platform:
    - TCP 443
    - UDP 7718
    - UDP 7719
3. UDP port 7719 egress is not blocked between any of the Link Gateways.

Determine the IP address

Default configuration

The default Link Gateway configuration is as follows:

- External interface enabled and configured to receive its networking configuration via DHCP.
- Internal interface enabled and configured with a static IP address of 192.168.1.1 .
- DHCP service running on the internal interface to assign IP addresses on the 192.168.1.0/24 network.

Connect the external interface into a secure network with a DHCP server and access to the Internet.

Boot the Link Gateway.

There are two options for connecting to the Link Gateway Admin UI:

- Via the external interface - To determine the DHCP-assigned address of the external interface, log in at the console with username **net** and password **password** and run **ip a** . Enter the IP address of the external interface into a web browser of a computer on the same network.

- Via the internal interface - Plug a computer with its network interface configured to receive its networking configuration via DHCP into the internal interface. Enter 192.168.1.1 into the computer's web browser.

Custom configuration

If the internal interface is not available because the ISO image was installed with the internal interface disabled, then the Link Gateway configuration is as follows:

- External interface enabled and configured either manually or to receive its networking configuration via DHCP.
- Internal interface disabled.

Connect the external interface into a secure network with access to the Internet. If the external interface was configured to receive its network configuration via DHCP, then DHCP server is also required on this network.

Boot the Link Gateway.

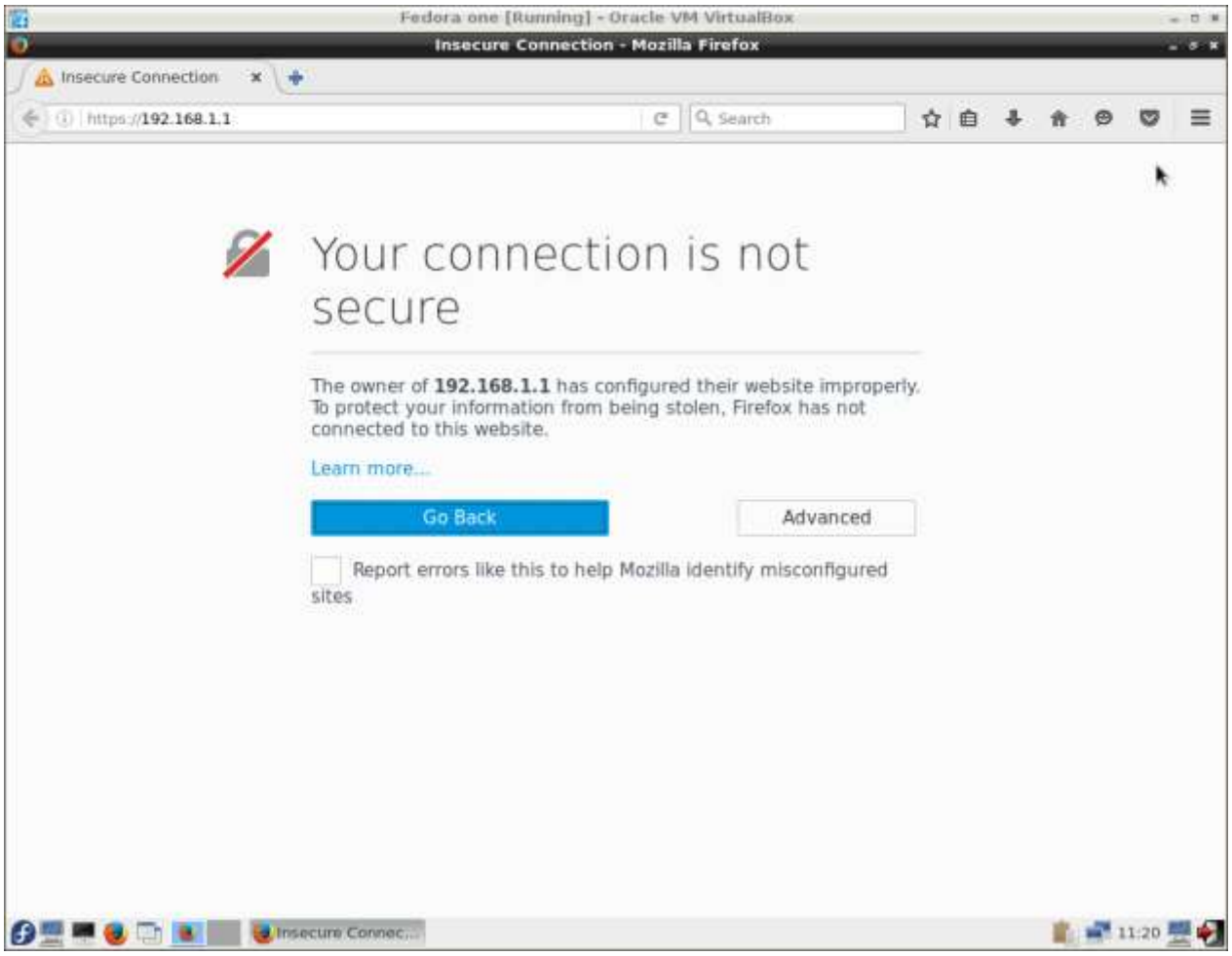
Connect to Link Gateway Admin UI via the external interface:

- If the external interface was manually configured during ISO installation, then use the IP address that was assigned. Otherwise, to determine the DHCP-assigned address of the external interface, log in at the console with username **net** and password **password** and run **ip a** .
- Enter the IP address of the external interface into a web browser of a computer on the same network.

Log in via web browser

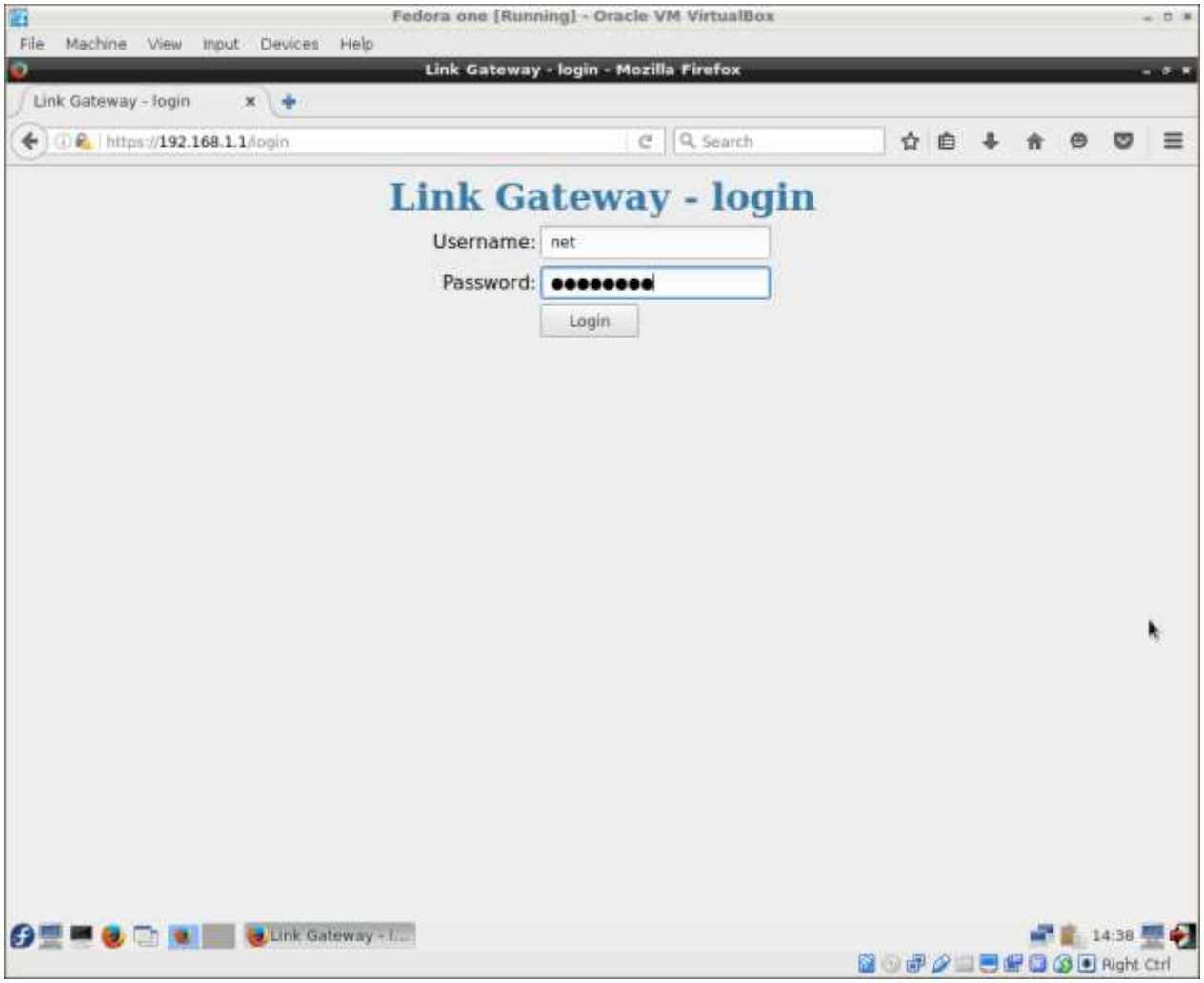
After following one of the two options above, your browser will be redirected to an HTTPS connection on the Link Gateway Admin UI.

Note that the first time you connect, you will be presented with a warning that your connection is not secure or that the website is incorrectly configured. This is because the connection is over HTTPS with a self-signed certificate:



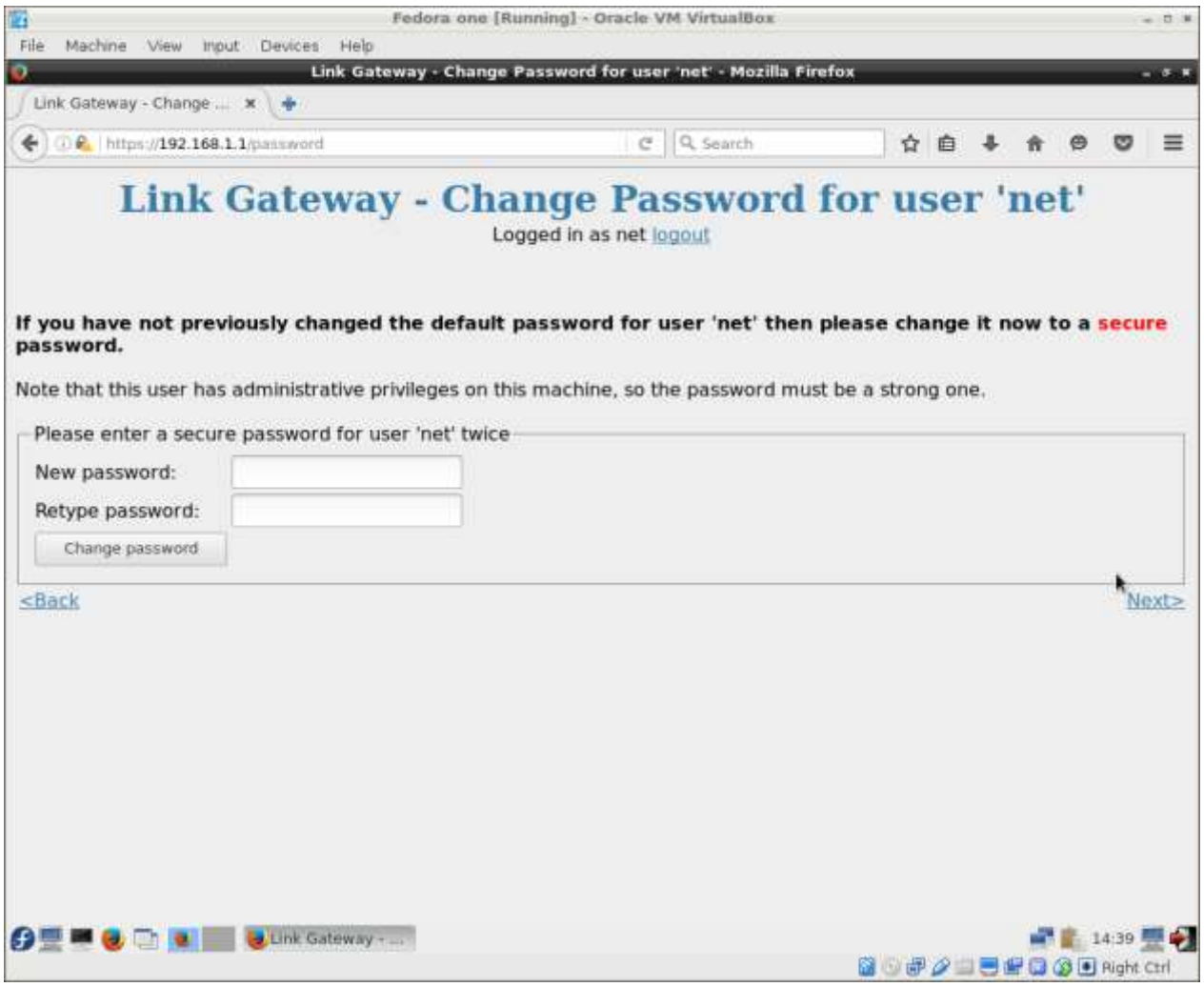
Add a non-permanent security exception to continue (this step is browser-dependent).

You should be presented with the login page of the Link Gateway Admin UI. Enter the username **net** and password **password**:



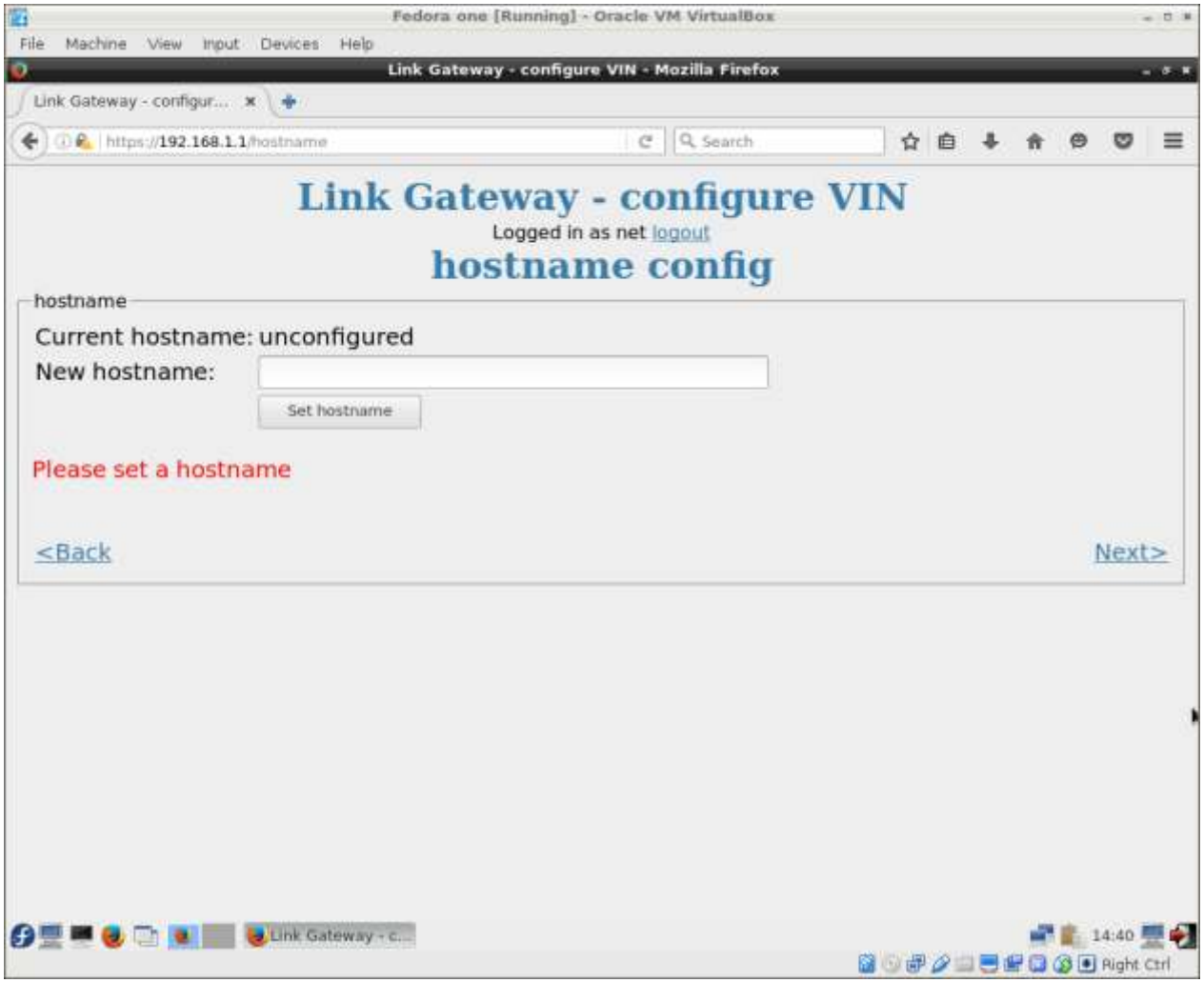
Set password

You will then be prompted to set a secure password for user **net**:

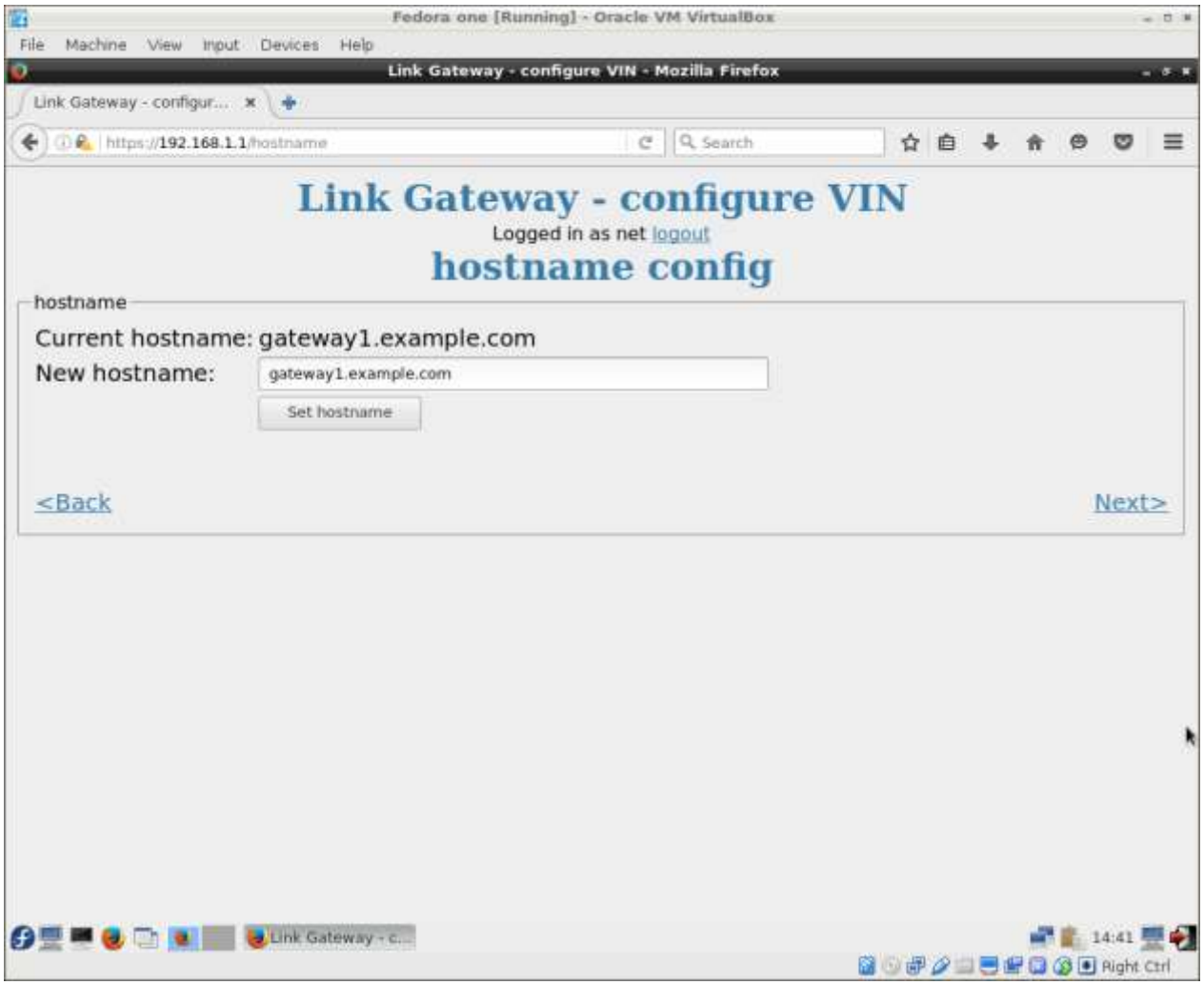


Set hostname

Clicking **Next** will get you to the **hostname config** page:

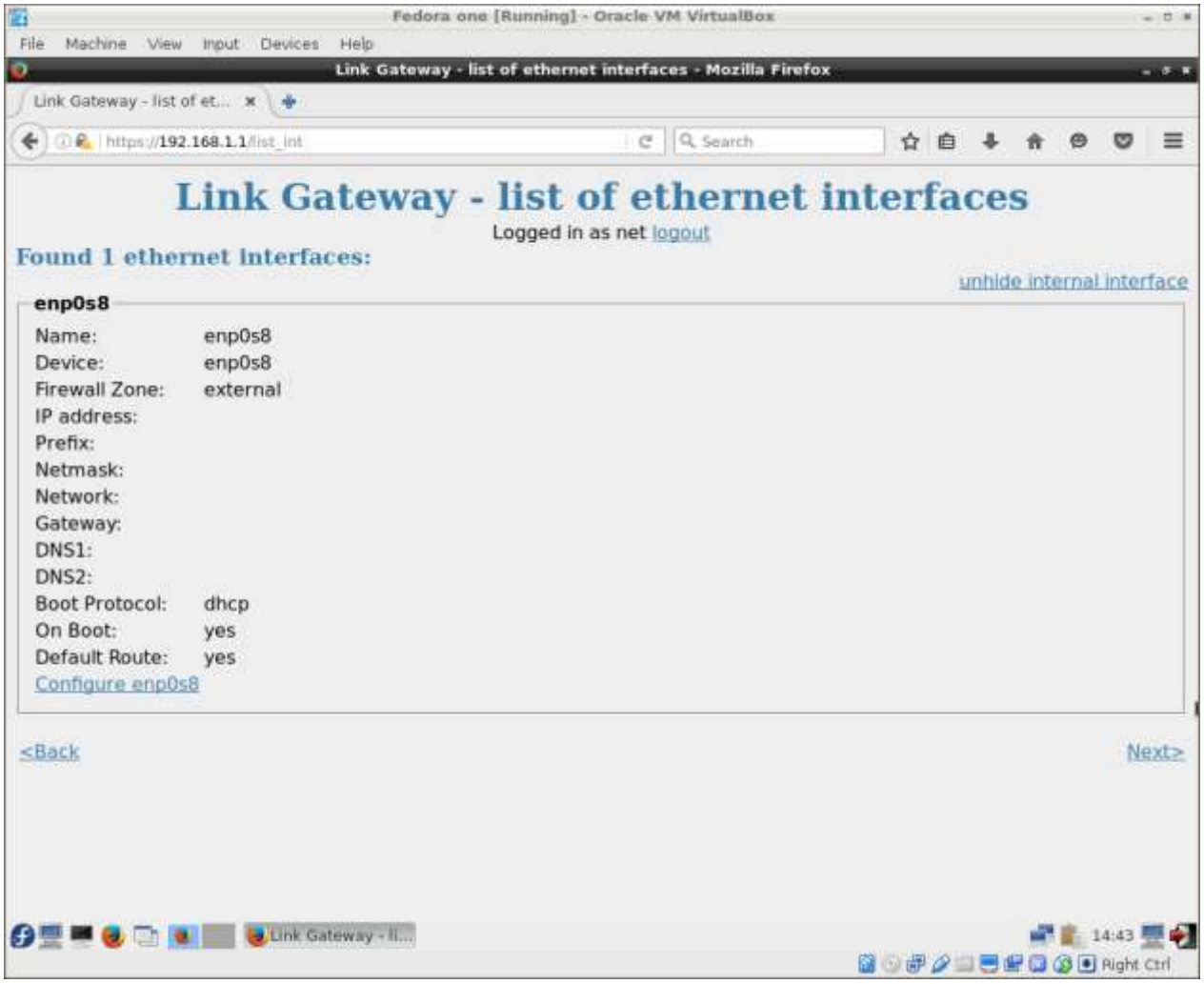


Set a unique, fully qualified hostname and then click **Next**:



Network configuration

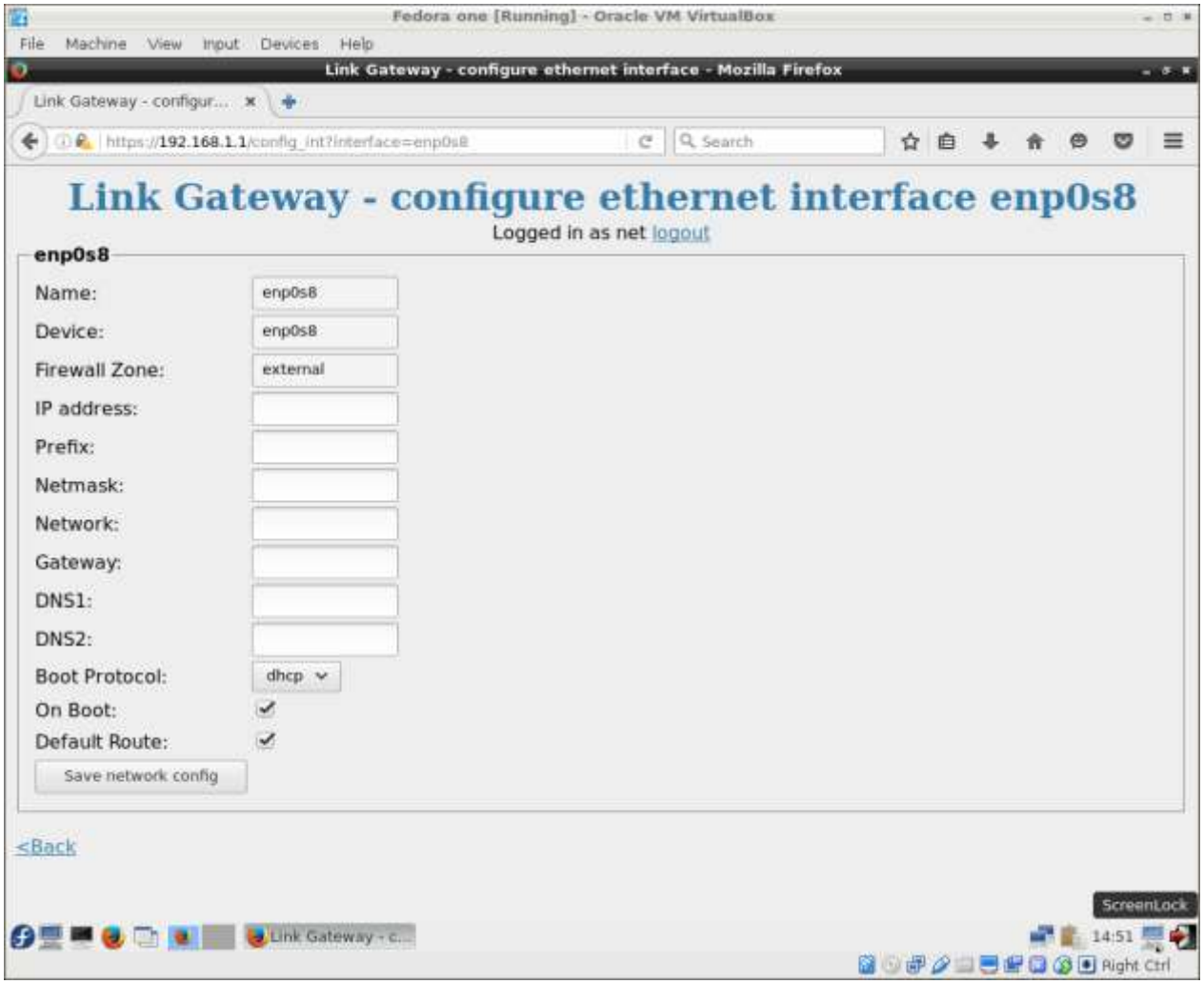
Clicking **Next** will get you to a page listing the external Ethernet interface:



If you are content for the external interface to be configured via DHCP, then leave it as it is, otherwise follow the next step.

Manual configuration of external interface (optional)

If you wish to configure the external interface manually, then click on the link **Configure <ethernet_device_name>** (e.g. **Configure enp0s8** as in the screenshot above):



Enter the following:

- **IP address**
- **Prefix**
- **Gateway**
- **DNS1**
- **DNS2** (optional)

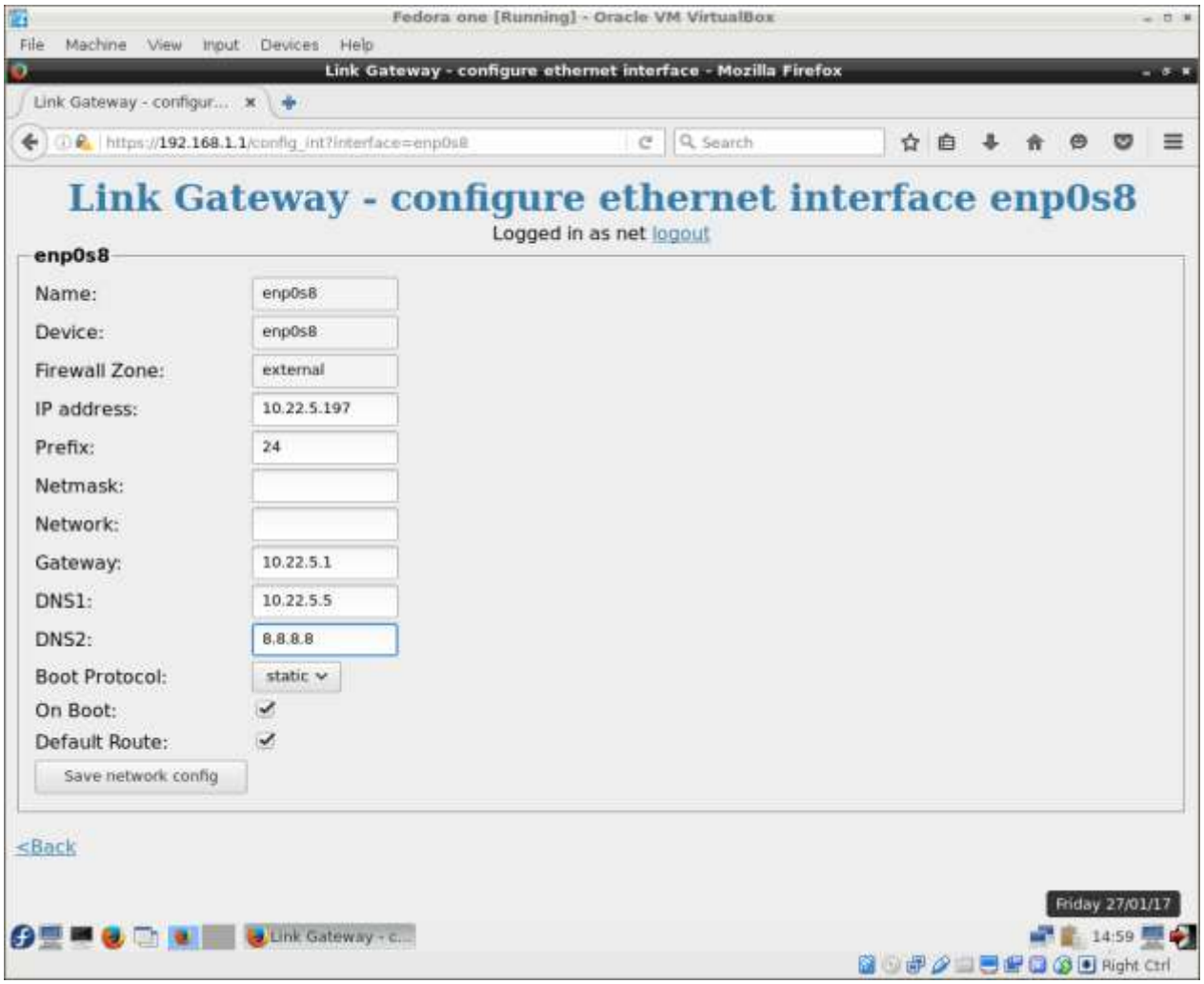
Set **Boot Protocol** to **static**.

Leave **On Boot** checked.

Leave **Default Route** checked.

Note that the DNS must be able to resolve the Platform address.

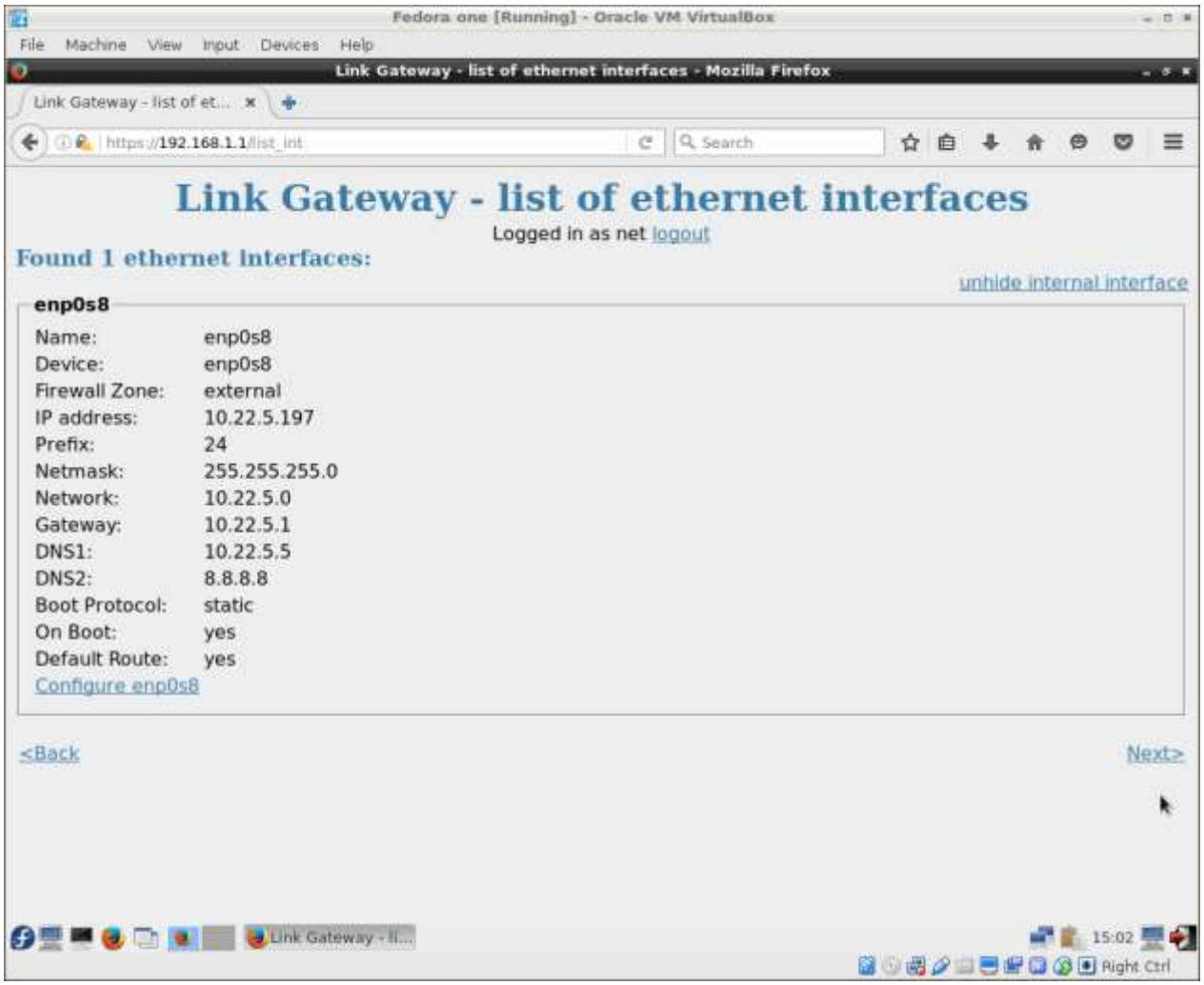
Here is an example manual configuration of the external interface:



Note that there is no need to set **Netmask** and **Network** - these are automatically calculated from **IP address** and **Prefix**.

Click **Save network config**.

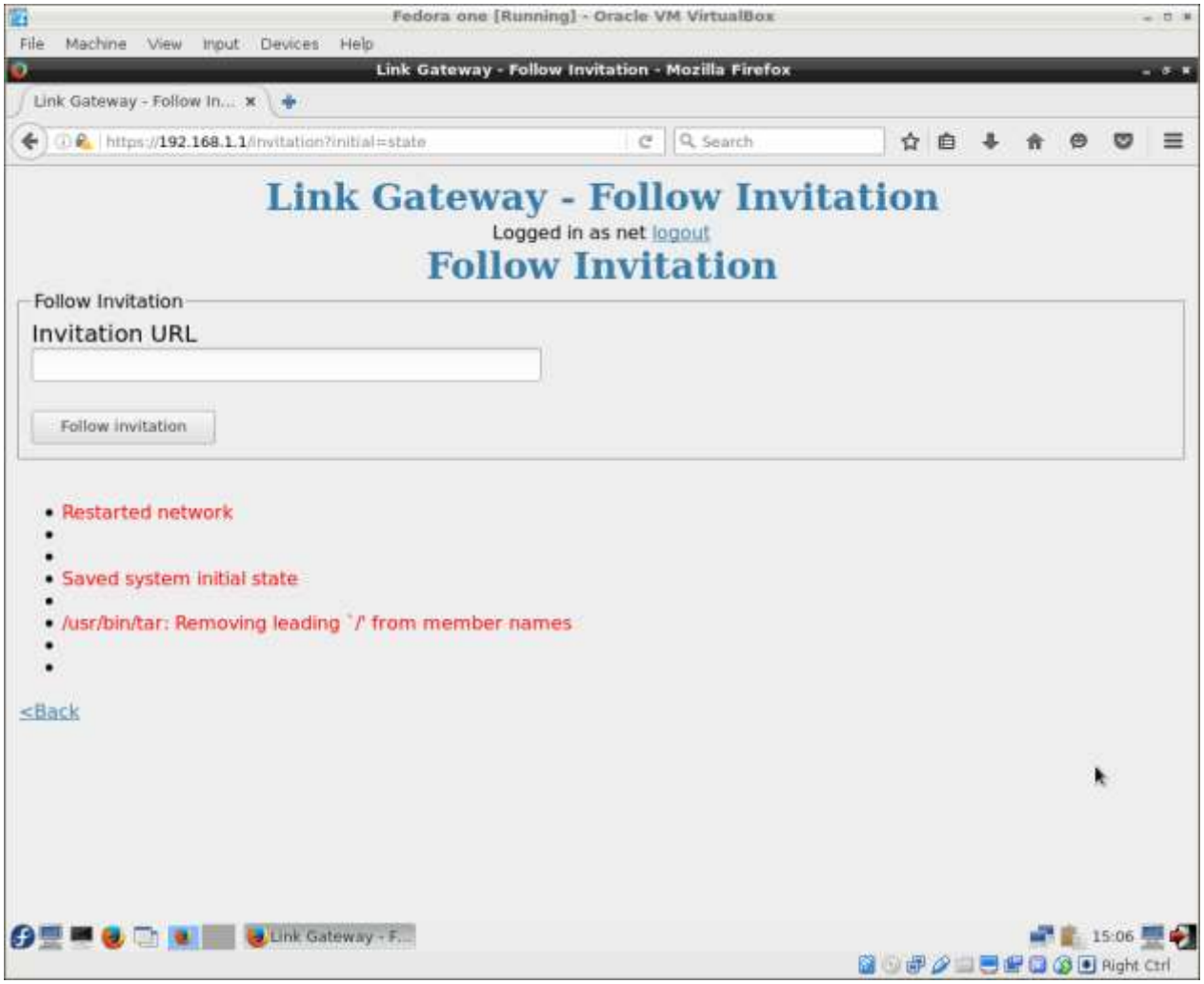
Check that the configuration is correct:



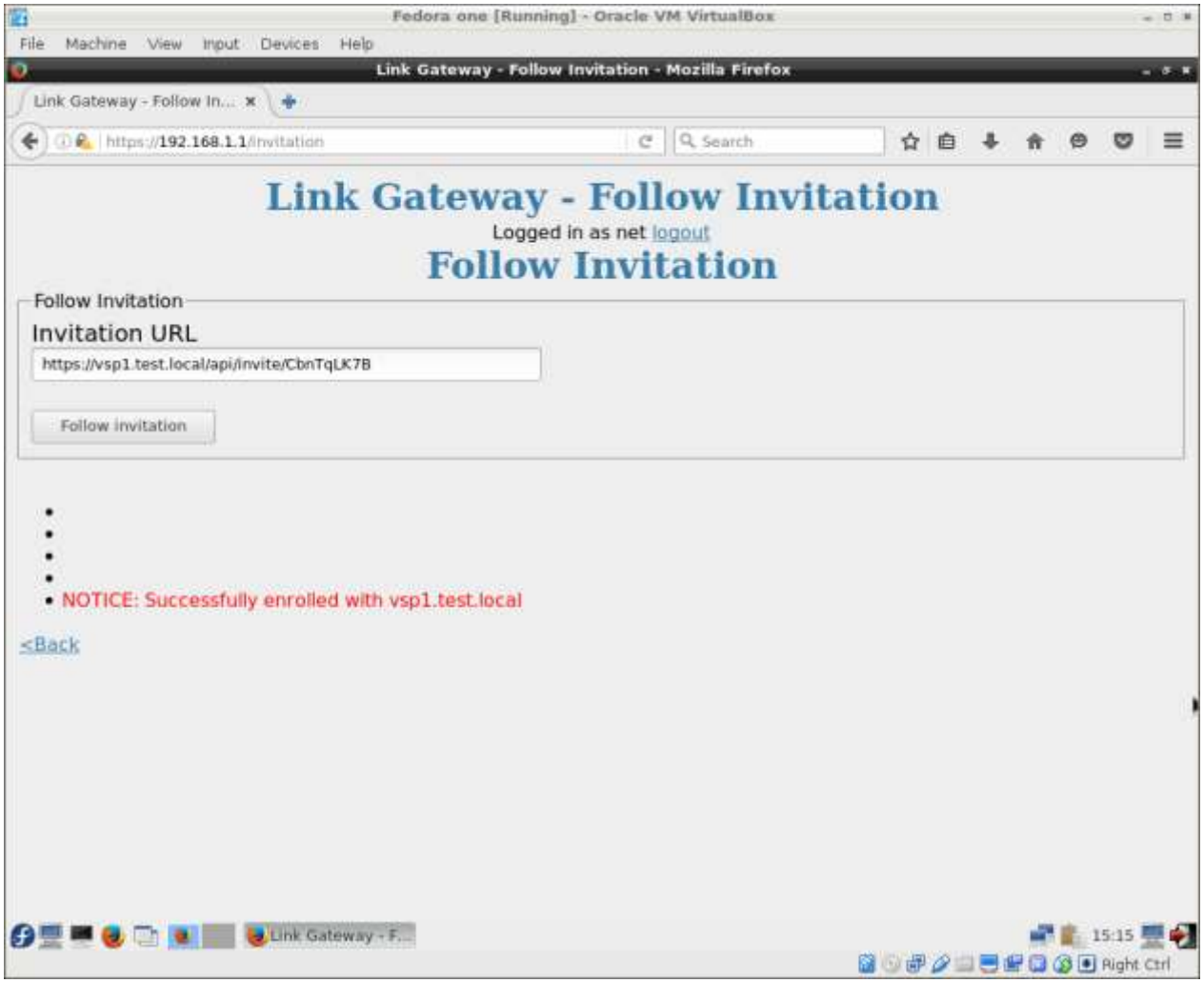
Follow invitation

Click Next to apply the network configuration. Note that the network service is restarted at this point and the system initial state is saved - this process takes several seconds.

The next page that should appear is the **Follow Invitation** page:



Enter the invitation URL (refer to Link Platform documentation for setting up a Link Network) and click **Follow invitation**:



After several seconds, you should see a message such as:

NOTICE: Successfully enrolled with platform.example.com

Configure via Platform

Once the Link Gateway has successfully enrolled with the Platform, all subsequent configuration of the Link Gateway is done from the Platform. Please refer the *Link Platform* manual to complete the Link Gateway configuration.

Appendix A

Connecting to Link Gateway admin UI via SSH

Once a 2-NIC Link Gateway has been configured and rebooted, TCP ports 80 and 443 ingress will be blocked on the external interface by the Link Gateway firewall. TCP ports 80 and 443 will still be open on the internal interface, so it is easy to connect to the Link Gateway Admin UI from the internal network via HTTPS.

There are two ways to access the Link Gateway Admin UI via SSH on the external interface:

1. SSH tunnel to your local machine.
2. Text browser via SSH.

SSH tunnel to your local machine

Linux / Unix / MacOS

An SSH tunnel can be established from the command line as follows:

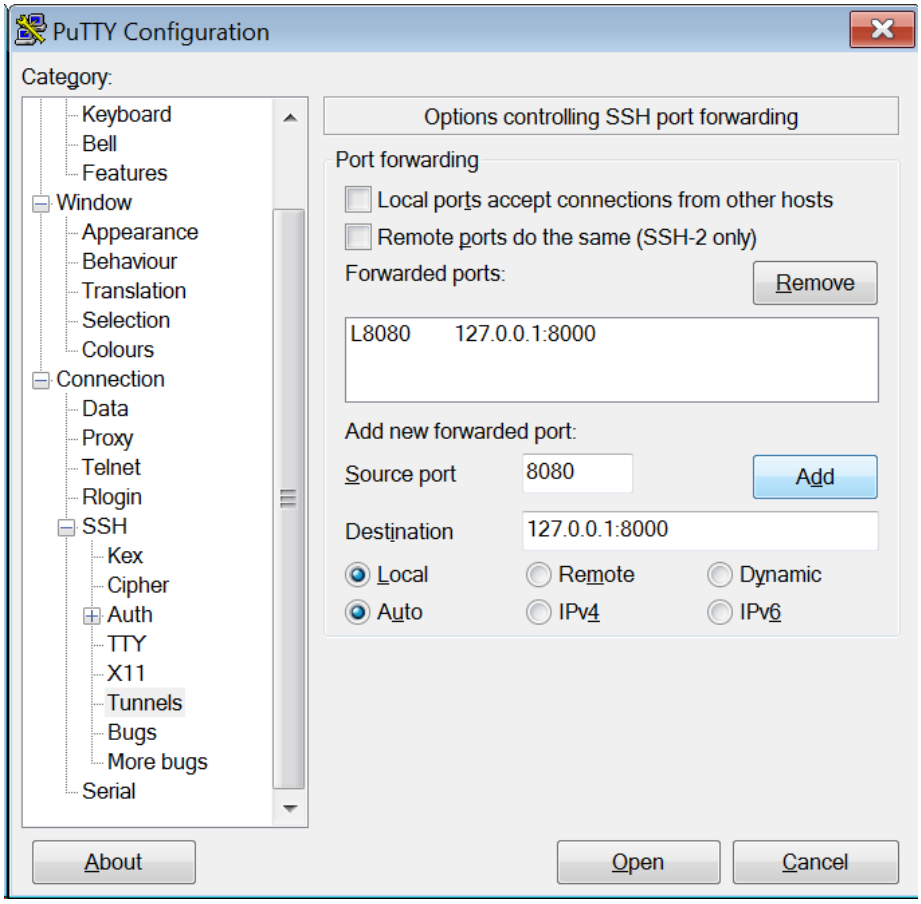
```
ssh -p 7712 -f net@link.gateway.address -L 8080:localhost:8000 -N
```

where **link.gateway.address** resolves to either the internal or external IP address of the Link Gateway.

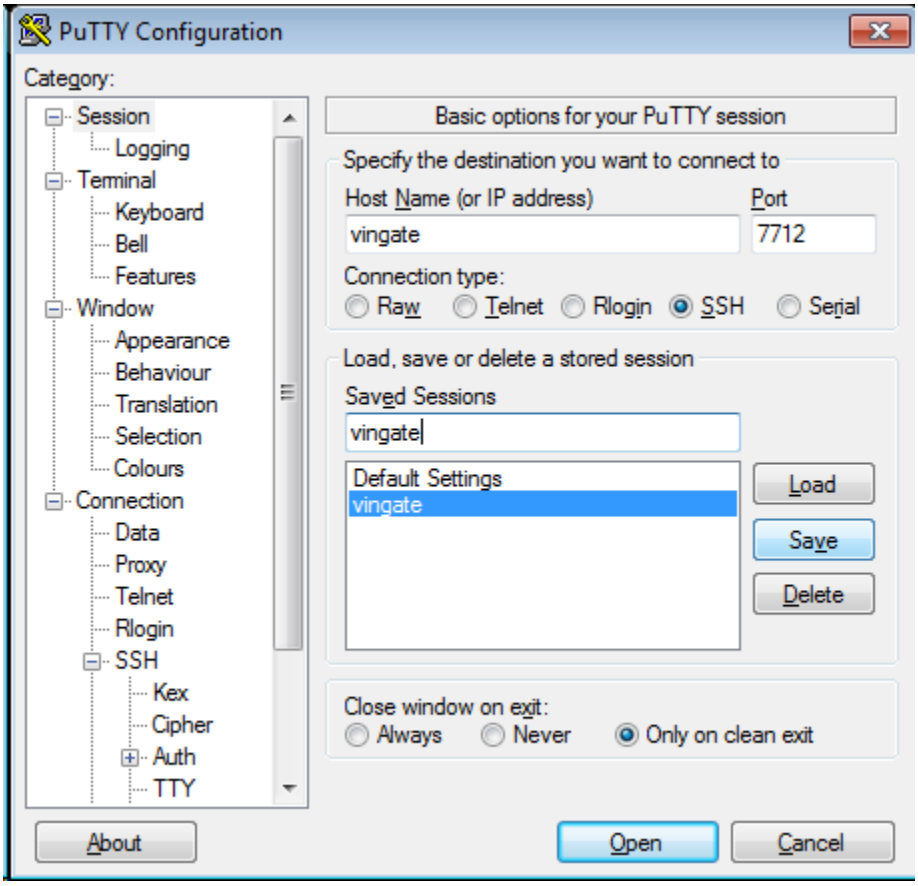
Windows

On Windows you will need to install an external tool called "putty". It is available for free. Once opened you will need to configure the ssh options for controlling port forwarding.

1. Open PuTTY
2. Navigate to Connection -> SSH -> Tunnels
3. Configure the Source port to be 8080
4. Configure the Destination to be 127.0.0.1:8000



5. Click the Add button
6. Navigate to Session
7. Configure the Host Name to be the IP address or host name of the Link Gateway and the Port to be 7712



8. If you wish you can save this configuration by typing in a session name into Saved Sessions and Clicking Save
9. Click Open and authenticate yourself

Using the tunnel

You can then securely access the Link Gateway Admin UI by entering the following URL in your web browser: http://localhost:8080

Text browser via SSH

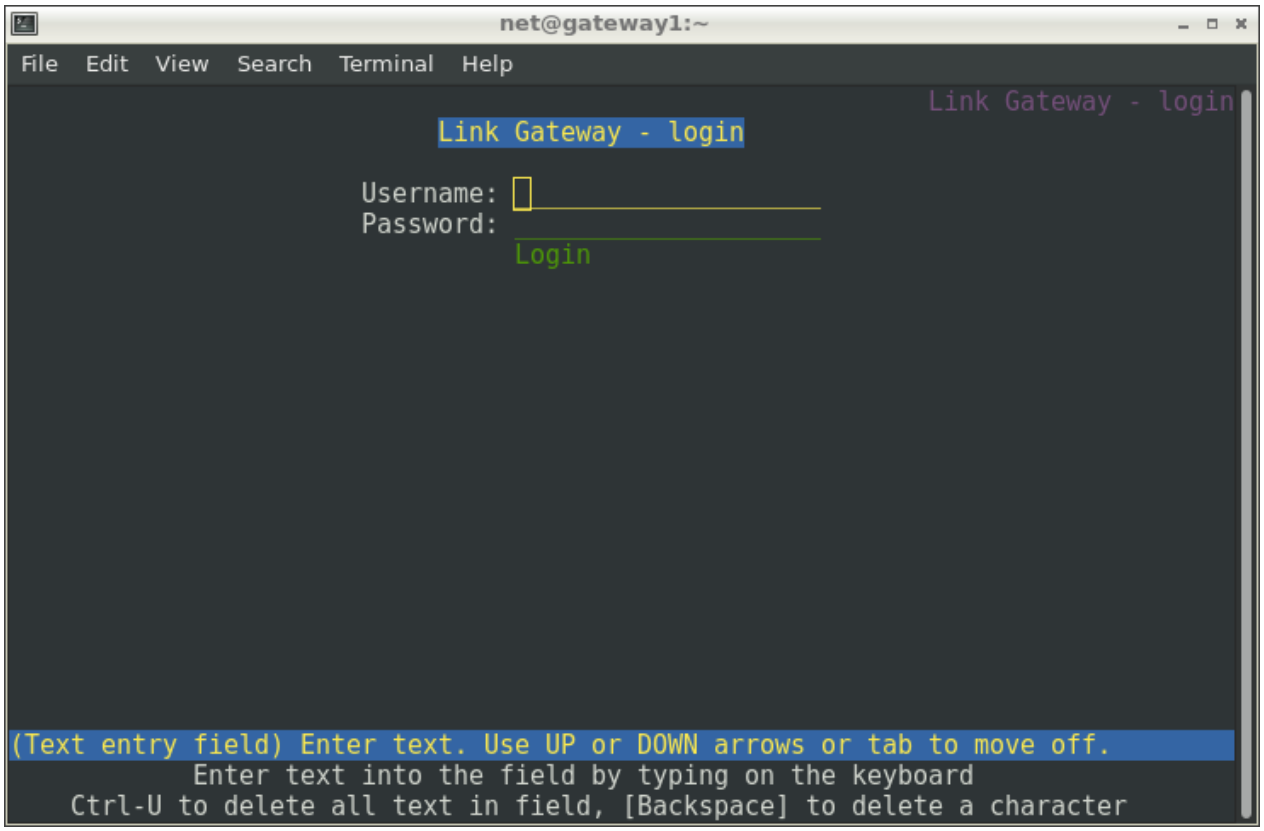
A text browser, Lynx, is installed on the Link Gateway, so you can SSH into the Link Gateway (or access the console directly) and configure it as follows:

```
ssh -p 7712 net@link.gateway.address
```

Once logged in, run:

```
lynx localhost:8000
```

and you will end up in the Link Gateway Admin UI in Lynx:



Use up and down arrows to move between fields and right-arrow to follow a link or 'click' a button. Use Enter to change the state of a checkbox. Type 'q' to quit.

Connecting to Link Gateway console via serial cable

It is possible to connect to the Link Gateway console via serial cable on the first COM port (the one closest to the power button on the Shuttle DS57U).

The serial communications parameters are 115200 baud, 8 data bits, no parity bit, one stop bit, software flow control.