

Valibox: Bringing DNSSEC Validation to the Home

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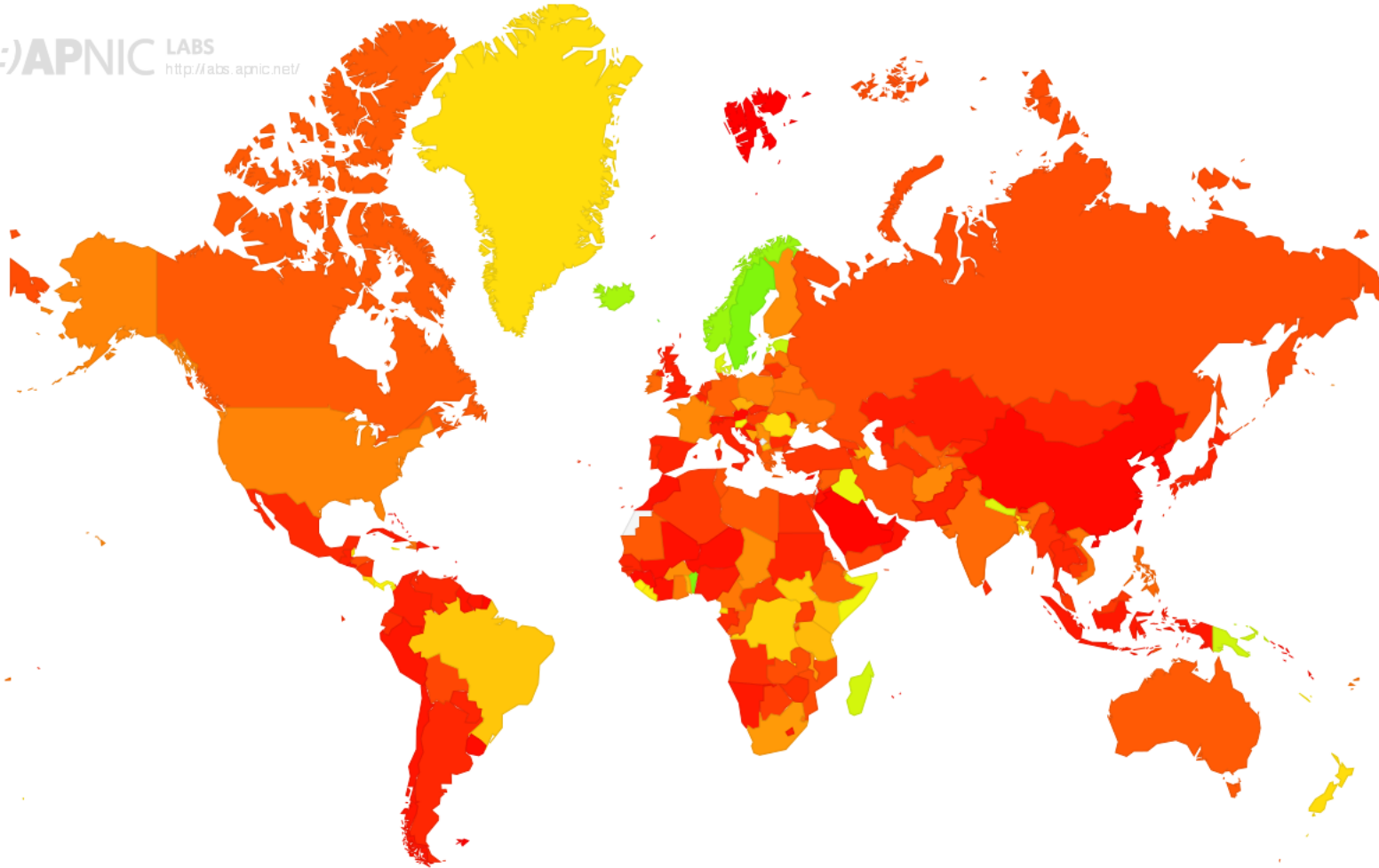
Tech Day, ICANN57, Nov 5, 2016



Validation Rates

DNSSEC Validation Rate by country (%)

(::)APNIC LABS
<http://abs.apnic.net/>



Why is That?

- ISPs think it is hard
- Zone administrator failure results in support call
- “Site X works with competitor Y but not you!”
- Negative trust anchors centrally maintained at validating resolver (if at all)



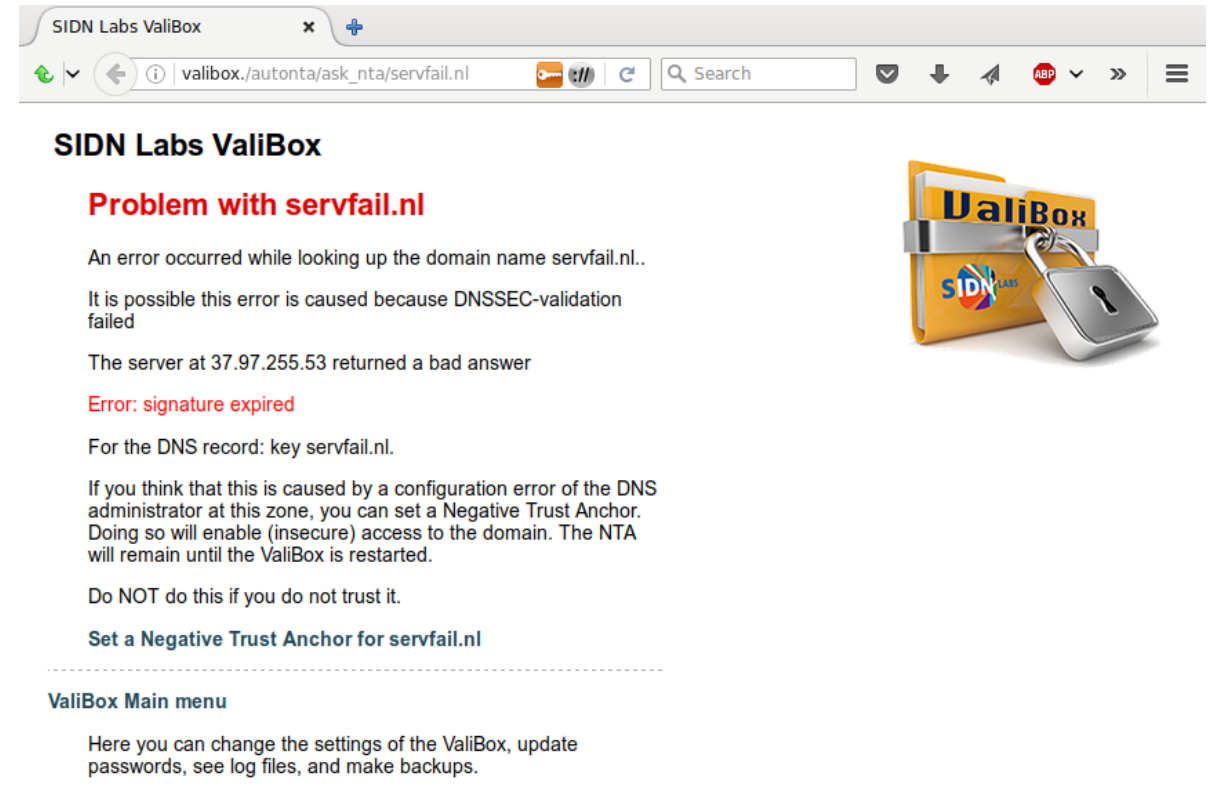
Introducing the Valibox



- Goal: plug-and-play DNSSEC validation for cheap home routers and other CPEs
- Valibox = installable software image for OpenWRT devices with Unbound and our extensions
- Showcased on GL-Inet devices, providing local wireless network with DNSSEC validation

But Wait, There's More!

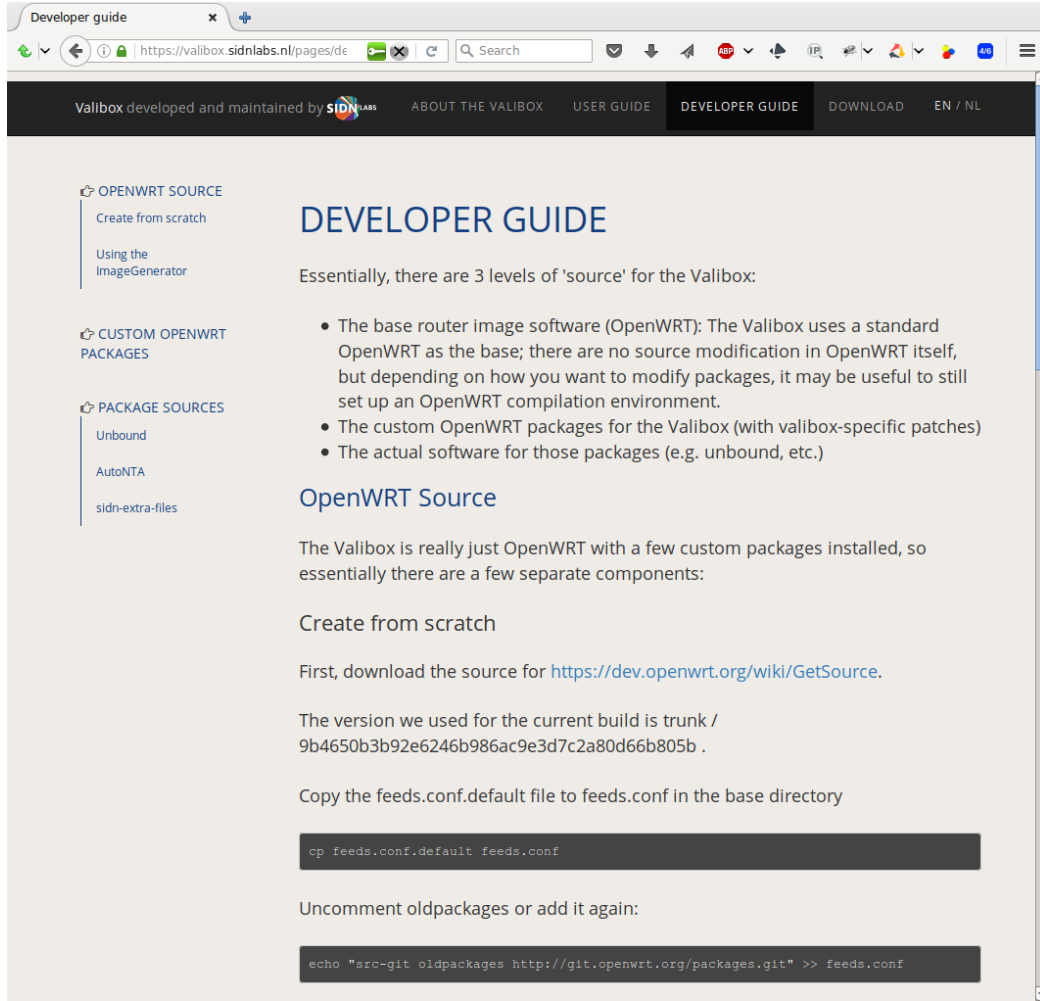
- Our extension of Unbound
- Better DNSSEC error reporting
- Custom NTA management



The screenshot shows a web browser window with the address bar displaying "valibox./autonta/ask_nta/servfail.nl". The page content includes a title "SIDN Labs ValiBox" and a section titled "Problem with servfail.nl". The text describes a DNSSEC validation error: "An error occurred while looking up the domain name servfail.nl. It is possible this error is caused because DNSSEC-validation failed. The server at 37.97.255.53 returned a bad answer. Error: signature expired. For the DNS record: key servfail.nl. If you think that this is caused by a configuration error of the DNS administrator at this zone, you can set a Negative Trust Anchor. Doing so will enable (insecure) access to the domain. The NTA will remain until the ValiBox is restarted. Do NOT do this if you do not trust it. Set a Negative Trust Anchor for servfail.nl". To the right of the text is an illustration of a yellow folder labeled "ValiBox" with a silver padlock. Below the error report is a section titled "ValiBox Main menu" with the text: "Here you can change the settings of the ValiBox, update passwords, see log files, and make backups."



Valibox Software



The screenshot shows a web browser displaying the 'Developer guide' page for Valibox. The page has a dark navigation bar with links for 'ABOUT THE VALIBOX', 'USER GUIDE', 'DEVELOPER GUIDE' (which is active), 'DOWNLOAD', and 'EN / NL'. The main content area is titled 'DEVELOPER GUIDE' and includes a sidebar with links to 'OPENWRT SOURCE', 'CUSTOM OPENWRT PACKAGES', and 'PACKAGE SOURCES'. The main text explains that there are three levels of 'source' for Valibox: OpenWRT, custom OpenWRT packages, and actual software packages. It provides instructions on how to 'Create from scratch', including downloading the source from <https://dev.openwrt.org/wiki/GetSource> and copying the `feeds.conf.default` file to `feeds.conf`. It also shows terminal commands for uncommenting old packages or adding them again.

Valibox developed and maintained by SIDN LABS

ABOUT THE VALIBOX USER GUIDE DEVELOPER GUIDE DOWNLOAD EN / NL

DEVELOPER GUIDE

Essentially, there are 3 levels of 'source' for the Valibox:

- The base router image software (OpenWRT): The Valibox uses a standard OpenWRT as the base; there are no source modification in OpenWRT itself, but depending on how you want to modify packages, it may be useful to still set up an OpenWRT compilation environment.
- The custom OpenWRT packages for the Valibox (with valibox-specific patches)
- The actual software for those packages (e.g. unbound, etc.)

OpenWRT Source

The Valibox is really just OpenWRT with a few custom packages installed, so essentially there are a few separate components:

Create from scratch

First, download the source for <https://dev.openwrt.org/wiki/GetSource>.

The version we used for the current build is trunk / 9b4650b3b92e6246b986ac9e3d7c2a80d66b805b .

Copy the `feeds.conf.default` file to `feeds.conf` in the base directory

```
cp feeds.conf.default feeds.conf
```

Uncomment oldpackages or add it again:

```
echo "src-git oldpackages http://git.openwrt.org/packages.git" >> feeds.conf
```

- Open source
- <https://valibox.sidnlabs.nl>
- https://github.com/SIDN/sidn_openwrt_pkgs



So Again, Why?

- Allow less technical people to have DNSSEC at home
- (Make Valiboxes for your friends!)
- Experiment with negative trust anchor management
- Platform for future other home network protection tools

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Questions and Discussion

<https://valibox.sidnlabs.nl>

https://github.com/SIDN/sidn_openwrt_pkgs

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