

EDOARDO SPADONI

COCKPIT: A MODERN ADMIN INTERFACE FOR NETHSERVER



WHO AM I

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SCHEDULE

- ▶ What is NethServer and how to use it
- ▶ Targets
- ▶ Solutions
- ▶ Changes (UI and APIs)
- ▶ NethServer modules structure
- ▶ Contributions

NETHSERVER

WHAT IS NETHSERVER

- ▶ Open Source OS
- ▶ Based on CentOS
- ▶ Wide range of products / modules
 - ▶ Firewall / Web Filter / VPNs
 - ▶ Mail Server / Web Mail
 - ▶ VoIP PBX
 - ▶ Etc...



HOW TO USE NETHSERVER

▶ Web Interface

▶ Terminal

▶ Properties *similar to* ansible **host_vars**

▶ Templates *similar to* ansible **jinja templates**

▶ Events *similar to* ansible **handlers**



Automation Layer

TARGETS

- ▶ Better UI and UX for the user/sysadmin
- ▶ Unprivileged user access delegation to NethServer apps
- ▶ Easier system management

COCKPIT

SOLUTIONS

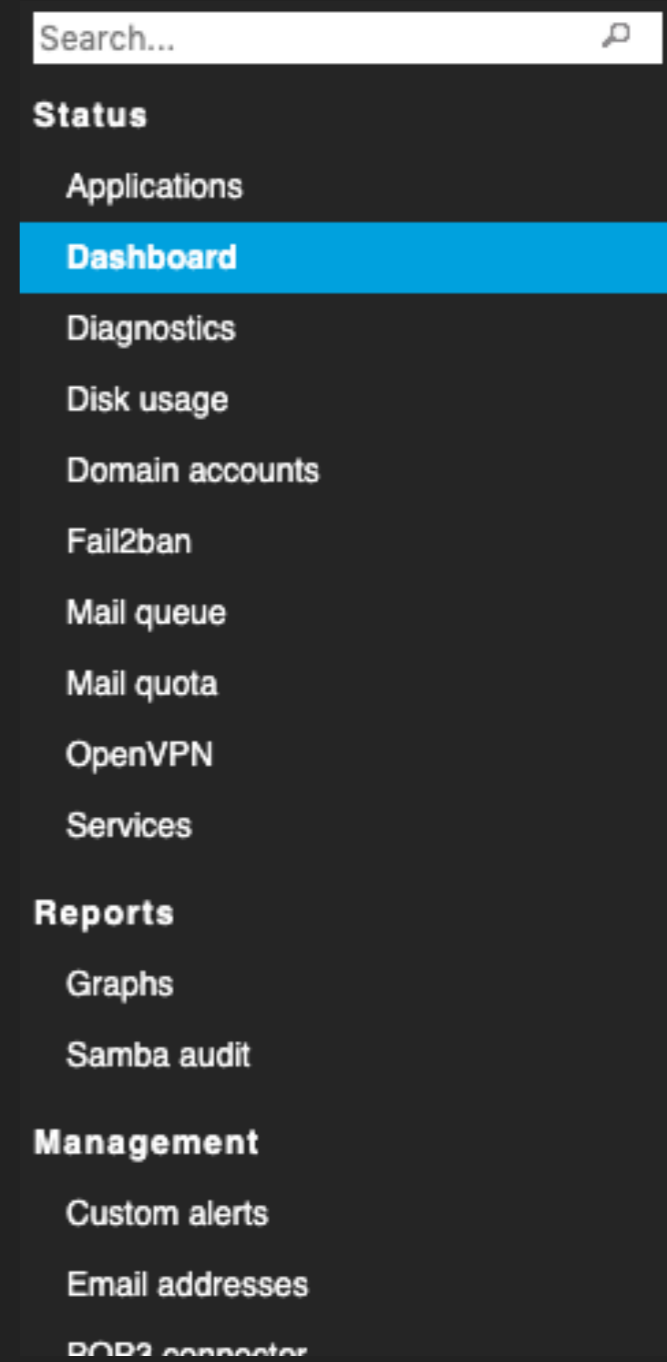
- ▶ Attractive UI/UX based on Patternfly
- ▶ Native delegation based on user permissions
- ▶ Each click of a button runs a command
- ▶ Running a command is like pressing a button
- ▶ Easy to script actions
- ▶ Native support to modules



CHANGES TO UI AND UX

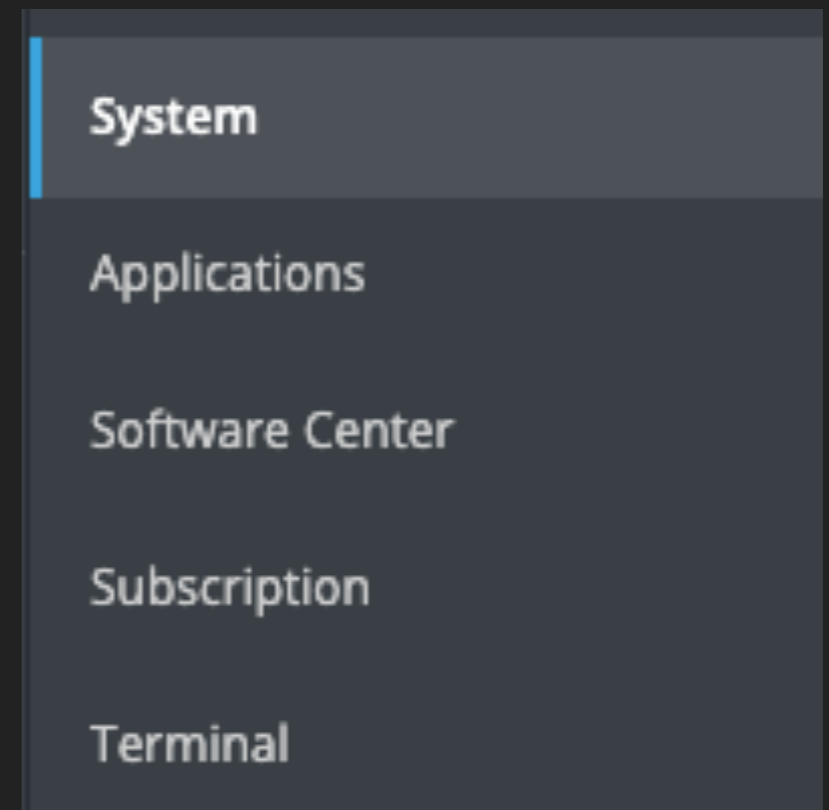
CHANGES TO UI/UX – OLD SERVER MANAGER

- ▶ More than 50 items in a typical configuration
- ▶ Hard to find settings
- ▶ Scattered information



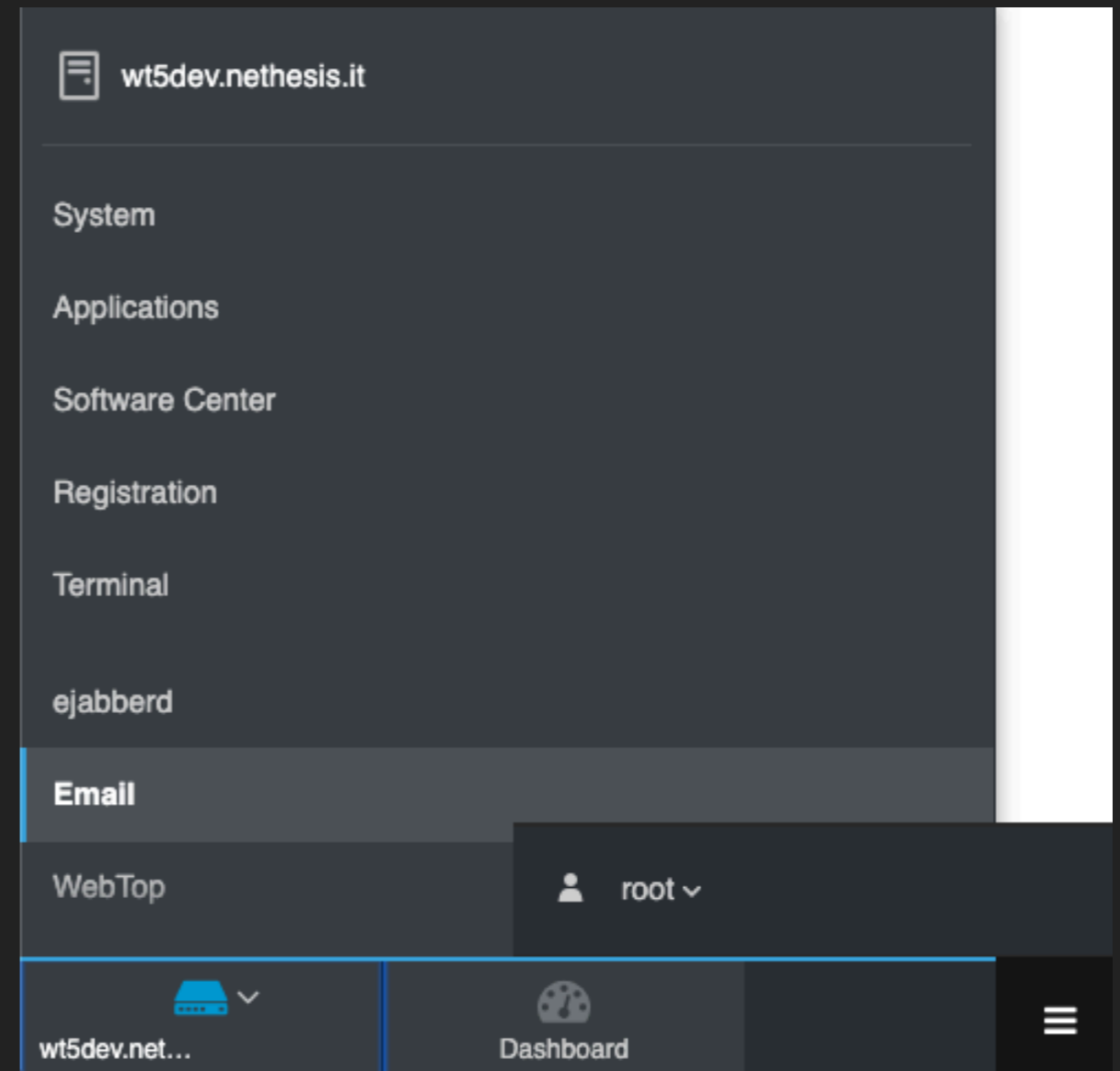
CHANGES TO UI/UX – NEW SERVER MANAGER

- ▶ 5 fixed elements
- ▶ Customisable apps shortcuts
- ▶ Less than 10 items in a typical configuration



CHANGES TO UI/UX – NEW SERVER MANAGER

- ▶ 5 fixed elements
- ▶ Customisable apps ...
- ▶ Less than 10 items ...
- ▶ Responsive



CHANGES TO UI/UX – NEW SERVER MANAGER

- ▶ 5 fixed elements
- ▶ Customisable apps ...
- ▶ Less than 10 items ...
- ▶ Responsive
- ▶ Page design

The screenshot displays the 'Certificates' section of the Cockpit interface. It features a header with the title 'Certificates' and a link for 'More info about Certificates'. Below this is an 'Actions' section containing a blue button labeled 'Upload certificate' with a dropdown arrow. The main area is a 'List' of certificates, which includes a search input field and a table with columns for 'File' and 'Issuer'. A single certificate entry is visible, showing the file path '/etc/pki/tls/certs/NSRV.crt' and the issuer 'NethServer, O=Example Org, ST=SomeState, OU=Main'. At the bottom, there is a pagination control showing 'Rows per page 25' and 'Previous Next' navigation buttons.

CHANGES TO UI/UX – NEW SERVER MANAGER

- ▶ 5 fixed elements
- ▶ Customisable apps ...
- ▶ Less than 10 items ...
- ▶ Responsive
- ▶ Page design
- ▶ Wizards

The screenshot shows a wizard titled "Create data backup" with four steps: "When", "Where", "How", and "Final". The "Where" step is currently active, indicated by a blue circle with the number "2". Below the steps is a database icon and the text "Choose where to save the backup" with a link "More info about Storage backends.". There are seven storage backend options in a grid: NFS (highlighted with a blue border), CIFS, Local disk, WebDAV, SFTP, Backblaze B2, and Amazon S3. Below the grid are two input fields: "NFS Share" and "NFS Host", with a "Check" button below them. At the bottom right are "Cancel", "< Back", and "Next >" buttons.

CHANGES TO UI/UX – NEW SERVER MANAGER

- ▶ 5 fixed elements
- ▶ Customisable apps ...
- ▶ Less than 10 items ...
- ▶ Responsive
- ▶ Page design
- ▶ Wizards
- ▶ Hints

Settings

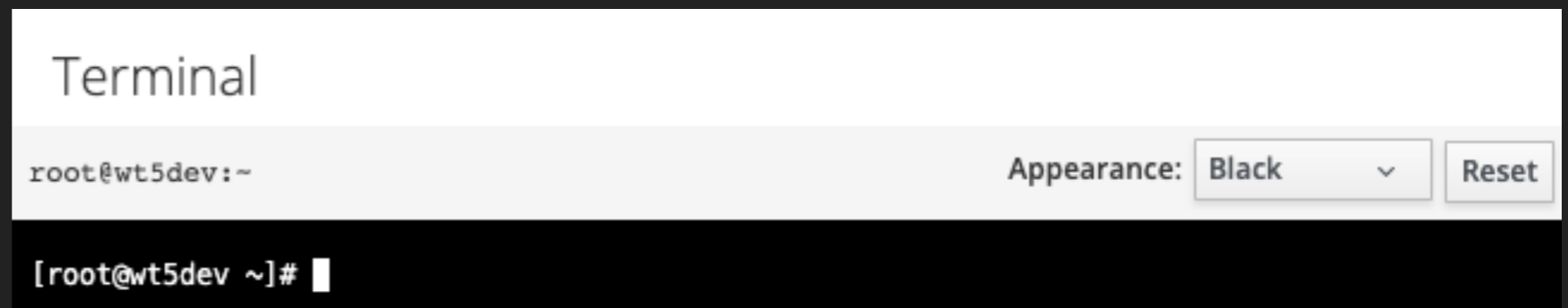


Please, review the following settings:

- **Server Manager** : Limit access to server manager specifying the allowed IP addresses

CHANGES TO UI/UX – NEW SERVER MANAGER

- ▶ 5 fixed elements
- ▶ Customisable apps ...
- ▶ Less than 10 items ...
- ▶ Responsive
- ▶ Page design
- ▶ Wizards
- ▶ Hints
- ▶ Web Terminal



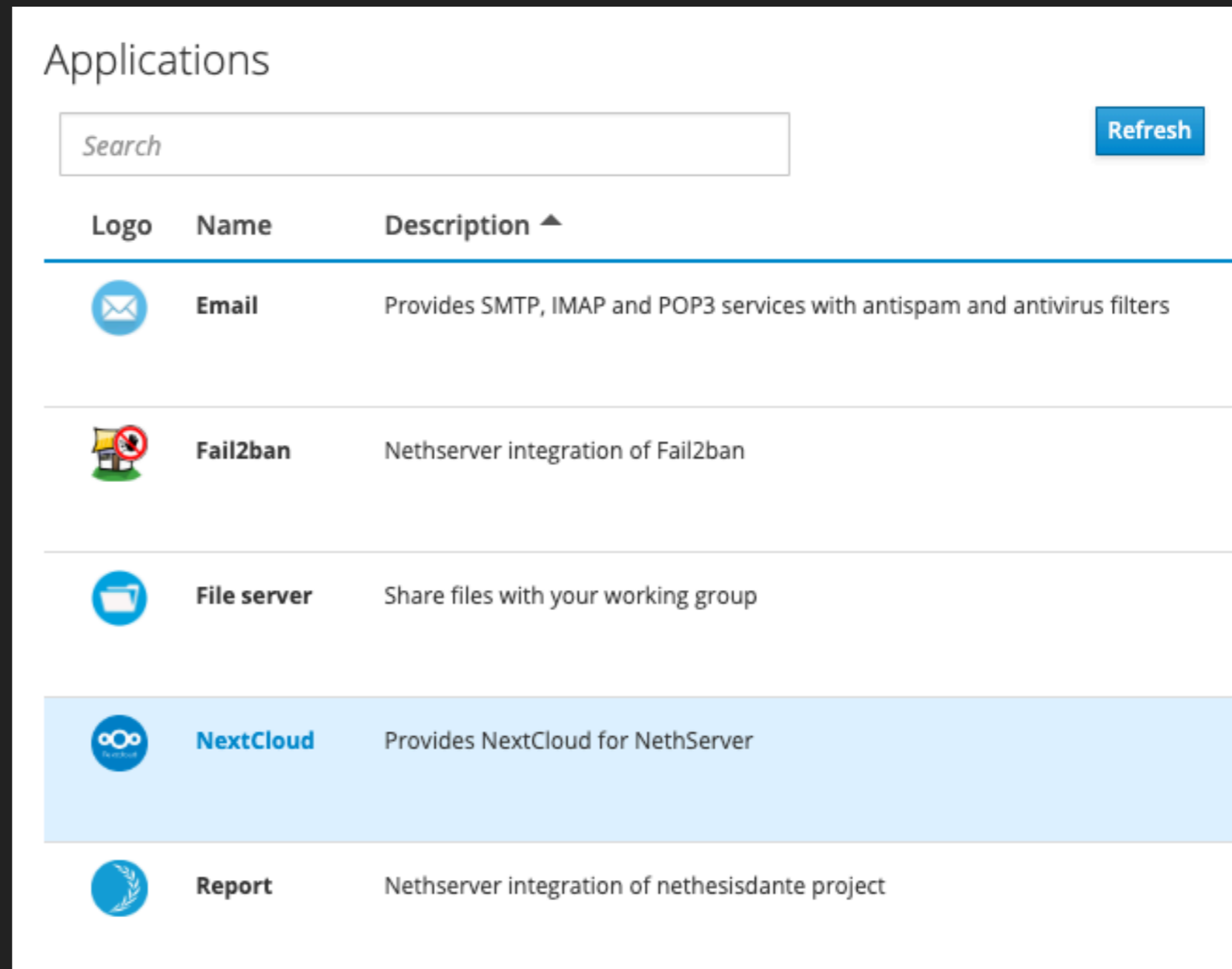
CHANGES TO UI/UX – NEW SERVER MANAGER

- ▶ 5 fixed elements
- ▶ Customisable apps ...
- ▶ Less than 10 items ...
- ▶ Responsive
- ▶ Page design
- ▶ Wizards
- ▶ Hints
- ▶ Web Terminal
- ▶ Software Center






The screenshot displays the 'Software Center' interface. At the top, it shows 'Updates' with 'Updates available: 0' and buttons for 'Update all', 'Changelog', and 'Configure'. Below this is the 'Applications (18 found)' section, featuring a search bar and buttons for 'Installed packages' and 'Install 0 applications'. Four application cards are visible: 'Base system' (blue), 'NethService' (orange), 'NethSecurity' (blue), and 'NethVoice' (green). At the bottom, there are 'Select all' and 'Deselect all' buttons, and two application details cards: 'Bandwidth monitor' (with subtext 'Configure and manage Ntopng') and 'Basic firewall' (with subtext 'Configure network adapters and basic firewall'). Each card has a checkbox and an information icon.

CHANGES TO UI/UX – APPLICATIONS

- ▶ List of installed apps
- ▶ Configure or delete



The screenshot displays the 'Applications' section of the Cockpit interface. It features a search bar at the top left and a 'Refresh' button at the top right. Below these is a table listing installed applications with columns for 'Logo', 'Name', and 'Description'. The 'NextCloud' application is highlighted in a light blue row.

Logo	Name	Description ▲
	Email	Provides SMTP, IMAP and POP3 services with antispam and antivirus filters
	Fail2ban	Nethserver integration of Fail2ban
	File server	Share files with your working group
	NextCloud	Provides NextCloud for NethServer
	Report	Nethserver integration of nethesisdante project

CHANGES TO UI/UX – APPLICATIONS

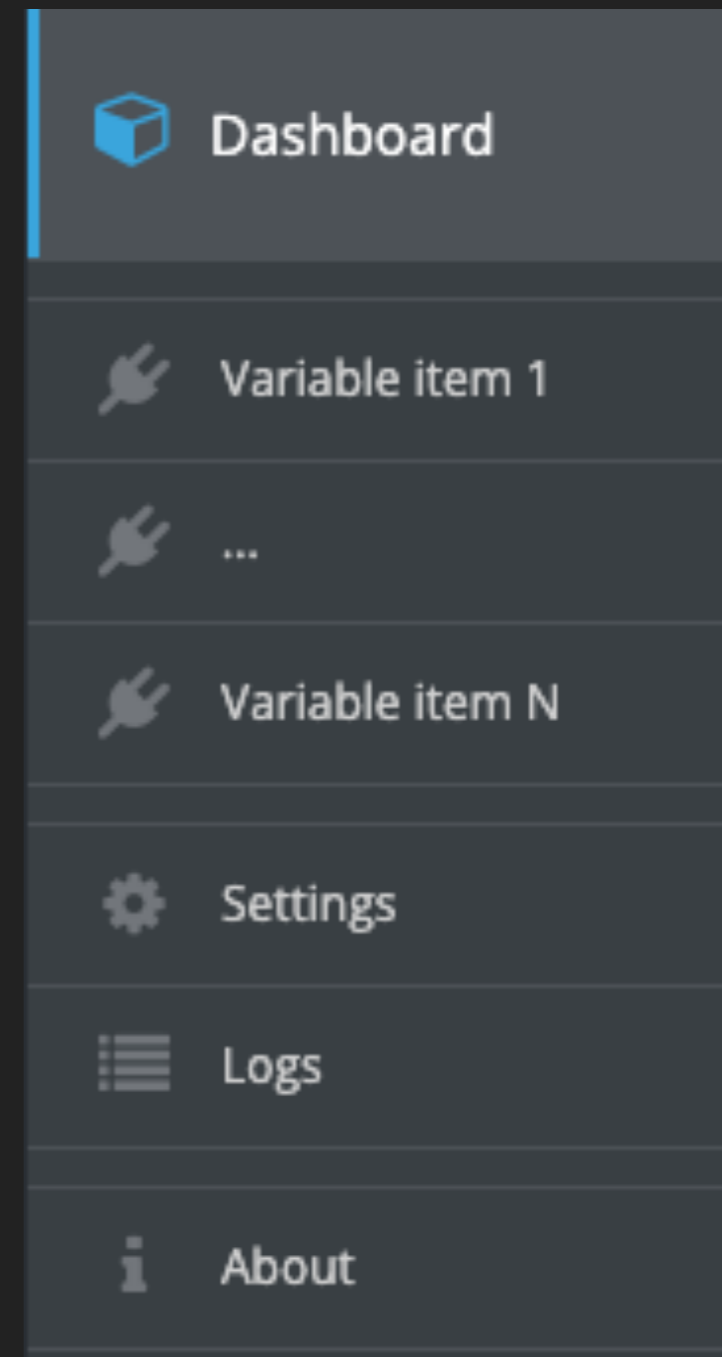
▶ Shortcuts

The screenshot shows the Cockpit Applications menu on the left, with 'ejabberd' highlighted. The main area displays a list of applications with their descriptions, versions, and action buttons. A callout menu is open over the first application, showing 'Add shortcut' and 'Add to home page' options.

Description	Version	Action
server antivirus using ClamAV	1.0.0	Open
Collects charts for NethServer	2.2.0	Open
Shows custom alerts from Nethesis Operation Center	4.4.2	Settings
ejabberd XMPP server	1.5.2	Settings

CHANGES TO UI/UX – APPLICATIONS

- ▶ Standard menu items for each application



API

API - STRUCTURE

- ▶ `/usr/libexec/nethserver/api/nethserver-<module_name>/`
 - ▶ `create`
 - ▶ `read`
 - ▶ `update`
 - ▶ `delete`
 - ▶ `validate`
 - ▶ `execute (for raw outputs)`
 - ▶ `hints`

API - INPUT AND OUTPUT

- ▶ Input format JSON

```
{ "action": <action>, "field1": "value1" }
```

- ▶ Output format JSON

```
{ "field1": "value1", "field2": "value2", "field3": "value3" }
```

- ▶ Output format (raw)

```
[root@wt5dev ~]# df -h
```

Filesystem	Size	Used	Avail	Use%	Mounted on
devtmpfs	1.4G	0	1.4G	0%	/dev

API - EXECUTION

- ▶ Init process (`cockpit.spawn(...)`)

```
nethserver.exec("system-users/read", {"action":"list-users"},  
success, error);
```

- ▶ Execute command

```
$ echo '{"action":"list-users"}' \  
| /usr/libexec/nethserver/api/system-users/read
```

- ▶ Get response

```
{ "admin": {...}, "foo": {...}, "bar": {...} }
```

API – CORE AND MODULES

- ▶ `nethserver-cockpit` provides core APIs:
 - ▶ `system-users`
 - ▶ `system-certificate`
 - ▶ `system-dns`
 - ▶ `etc...`
- ▶ `nethserver-<module_name>` provides its own APIs:
 - ▶ `read`
 - ▶ `update`
 - ▶ `etc...`

API - RECAP

- ▶ Each API can be used by other modules
- ▶ Each API call has a matching `sudo` user permission
- ▶ Input / Output in JSON format or RAW format
- ▶ Process output streamed to the UI

NETHSERVER MODULE STRUCTURE

NETHSERVER MODULE STRUCTURE - RPM PACKAGE

▶ `$ rpm -ql nethserver-<module_name>`

Automation layer (props, events, templates)

`/etc/e-smith/db/configuration/...`

`/etc/e-smith/events/...`

`/etc/e-smith/templates/...`

Configurations for sudo

`/etc/sudoers.d/50_nsapi_nethserver-<module_name>`

APIs

`/usr/libexec/nethserver/api/nethserver-<module_name>/`

UI

`/usr/share/cockpit/nethserver-<module_name>/`

Manifest

`/usr/share/cockpit/nethserver/applications/nethserver-<module_name>.json`

License

`/usr/share/doc/nethserver-<module_name>/COPYING`

NETHSERVER MODULE STRUCTURE - GIT REPOSITORY

▶ `$ tree -L 1 nethserver-<module_name>`

```
.
├── .tx                -> transifex i18n configuration
├── api                -> APIs for the module
├── root               -> installed on /
├── ui                 -> static frontend files (js,html,css)
├── .travis.yml       -> travis CI configuration
├── COPYING            -> licence
├── README.rst        -> developer instructions
├── createlinks        -> create NethServer events
├── prep-sources       -> build UI static files
├── nethserver-<module>.json -> application manifest for cockpit
└── nethserver-<module>.spec -> specfile to build the RPM package
```

CONTRIBUTIONS

- ▶ GitHub: <https://github.com/NethServer>
- ▶ Issue tracker: <https://github.com/NethServer/dev>
- ▶ Community: <https://community.nethserver.org>
- ▶ Website: <https://www.nethserver.org>
- ▶ Dev guidelines: <https://nethserver.github.io>



QUESTIONS?

THANKS

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