

NETSHe Software Suite for Networking and Embeddable Devices

Product Description

NETSHe is a software suite for networking and embeddable devices (routers, access points, set top boxes, NASes). It includes an operating system with a powerful management web-interface, a set of utilities and services and a software development kit. The NETSHe software development kit provides capability to build operating system images (firmware) with a required set of pre-installed software and services.

NETSHe can be used as firmware by carriers / business customers for networking and embeddable devices, whereas software / hardware developers and vendors can use it as an SDK.

Architecture and Key Components

NETSHe is based on OpenWRT branch.

NETSHe SDK is based on OpenWRT branches and toolchain.

NETSHe differs from OpenWRT in that:

- their initialization and configuration subsystems are absolutely different and incompatible;
- some software packages are omitted;
- NETSHe has some original software packages (e.g. web-interface);
- some software packages have different versions;
- NETSHe has some modified software packages with own patchsets (e.g. wireless stack);
- patch-sets are different; and
- the lists of supported hardware platforms are slightly different.

The Product has a modular design and provides capability to build firmware images having a minimal and optimal software set to fit customer requirements.

The key components of NETSHe are:

- own initialization and configuration subsystem;
- powerful web-interface providing versatile device control and management; and
- unique wireless stack with TDMA implementation and some helpful features (*).

NETSHe is implemented to fit strict requirements for networking and embeddable devices: low memory, CPU and storage resources. It is tested and used for x86, MIPS and ARM CPUs.

Key Features

NETSHe has been developed to provide all management / configuration actions for a device through the web-interface only.

NETSHe has a single and universal management interface for all supported hardware platforms providing not only a powerful management tool for basic system settings but also

for the most required services, such as networking, firewall, QoS and routing (RIP, OSPF, BGP).

NETSHe provides tight integration of the applied software and services within the firmware having a single 'configuration point' and keeping all system settings in a single file. It can work in a managed network environment and can be integrated into network monitoring and management systems.

NETSHe has a unique built-in wireless stack (*).

Key Functions

- Network interface management (including point-to-point and wireless);
- VLANs and aliases;
- Advanced routing (static, multipath, rule-based, RIP, OSPF, BGP);
- Zone based firewall;
- Bridges with brouter and filtering capability;
- Interface bonding;
- Quality of Service, bandwidth management, traffic shaping, rate control and traffic prioritization;
- L7 based (application patterns based) IP-traffic filtering and marking;
- Extended management of wireless interfaces;
- Access Point, Ad-Hoc, Client and Repeater mode with (or without) variable WEP encryption modes, WPA-PSK, WPA2-PSK, WPA-EAP, WPA2-EAP, 802.11X authorization and key management;
- Access concentrator for variable VPN's (PPTP, L2TP and OpenVPN);
- IPSEC support for L2TP VPN solution;
- PPPoE access concentrator;
- Built-in hot-spot controller with UAM-authorization; walled garden and bandwidth management;
- Authorization and accounting through external radius-server;
- Built-in IP-address assignment or assignment via external radius-server;
- DHCP server with flexible rules; dynamic IP-address assignment;
- static IP-address assignment; configurable black-list mode for DHCP requests from specified MAC's;
- DHCP relay;
- Network time synchronization server and client. Server integration with DHCP server;
- Built-in HTTP proxy with ability to use upstream proxy;
- Full software management; support of external software repositories; software installation and deletion;
- User management; two levels of user access: full and read-only;
- External storage management; SWAP control;
- System monitoring; chart graphing in a near real-time mode;
- System monitoring through SNMP v2 protocol;
- Configurable system backup; backup images can be moved to external devices and/or network shares;

- Files and folders restoration;
- Backup and restoration of configurations;
- Firmware flashing;
- Traffic capture and analysis;
- System halt and reboot;
- Some helpful utilities.

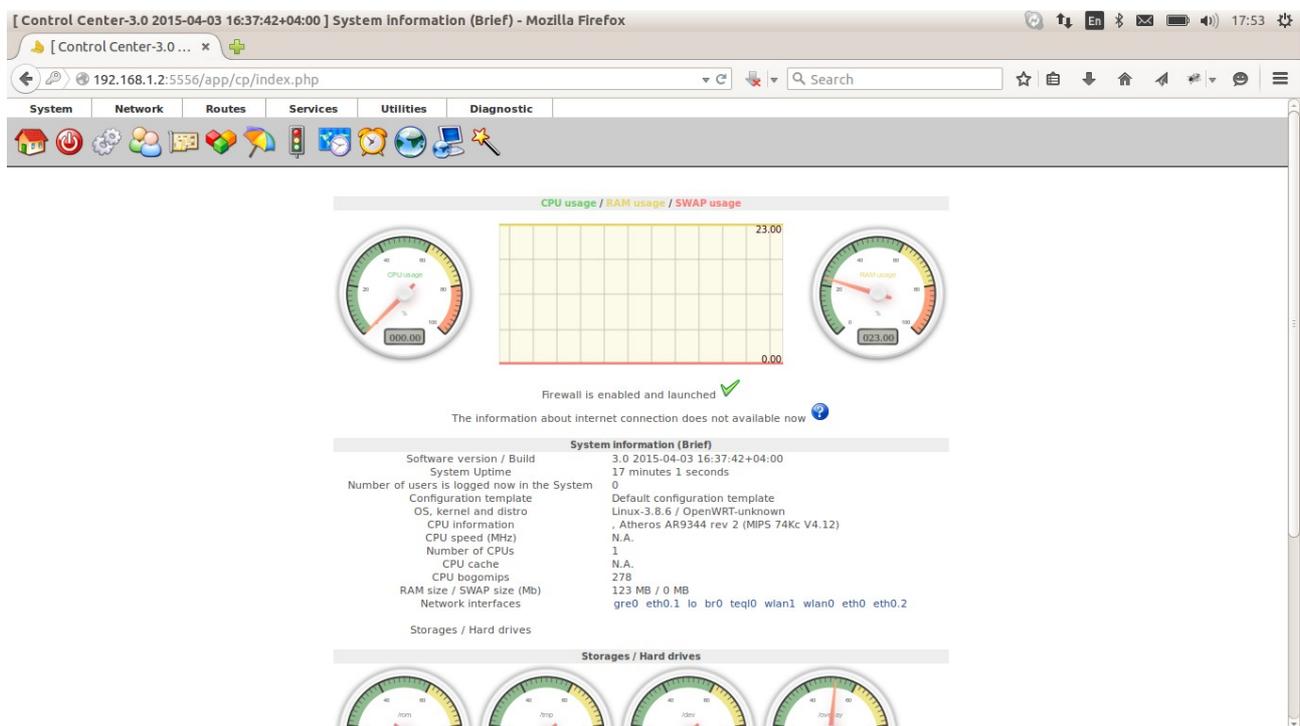
Benefits

NETSHe reduces the total cost of ownership through:

- lower requirements to personnel qualification due to the unified web-interface;
- unified management interface, configuration skills and methods for different hardware platforms / devices; and
- integration with existing network management systems.

Further benefits of NETSHe are:

- deep software and services integration;
- unique wireless stack;
- powerful and state-of-the-art management web-interface; and
- wide compatibility.



NETSHe's parent was recognized as the winner of the Ubiquiti RouterStation Challenge in 2009.

Use Cases

The Product is typically applied as firmware of wireless routers. NETSHe-powered

firmware can be used in new installations and as upgrades for existing ones.

With a NETSHe SDK You can build firmware for specific solutions:

- featured CPEs / set top boxes;
- firewalls;
- routers;
- NASes;
- home automation smart controllers; and
- industrial controllers.

Specifications

NETSHe works well with hardware based on x86/MIPS/ARM CPUs, at least 32MB of RAM and 4MB of storage.

NETSHe SDK requires a Linux-based OS on the host system to run. We recommend Debian 6.0 / Ubuntu 14.04 on the host system with an x86 compatible CPU.

The target host system must have at least 1GB of RAM and 50GB of free disk space.

** - Separate documentation / description is available.*