

- ?????????. ???Unifi Controller??OpenWRT??..
- ?????????:
1. ??????????, ???OpenWRT
 2. ??Hypervisor
 3. ???Windows?Unifi Controller, ???port??????????
 4. ???. ????. ??????????Cloud key. TNND, ??PoE switch.

????LEDE?OpenWRT, ???Hyper-V??VM??LEDE...

LEDE

Status ▾System ▾Network ▾Logout

AUTO REFRESH ON

No password set!

There is no password set on this router. Please configure a root password to protect the web interface and enable SSH.
Go to password configuration...

Status

System

Hostname	LEDE
Model	Microsoft Corporation Virtual Machine
Firmware Version	LEDE Reboot 17.01.2 r3435-65eec8bd5f / LuCI lede-17.01 branch (git-17.152.82987-7f6fc16)
Kernel Version	4.4.71
Local Time	Fri Aug 4 09:23:38 2017
Uptime	0h 3m 34s
Load Average	0.00, 0.00, 0.00

Memory

Total Available	1995512 kB / 2053660 kB (97%)
Free	1994896 kB / 2053660 kB (97%)
Buffered	616 kB / 2053660 kB (0%)

???Unifi Controller, ?????????OS?????...

?????, RAM?????????. ??????VM???... ?RAM??????. ?????????OS????Unifi Controller?Memory Usage??.

Memory

Total Available	1529864 kB / 2053660 kB (74%)
Free	1518372 kB / 2053660 kB (73%)
Buffered	11492 kB / 2053660 kB (0%)

????????????????????1GB??. ??????, ??AP???????...=_"
 ???VM????, ??????????????
 ???LEDE?, ?????internet???????

Diagnostics

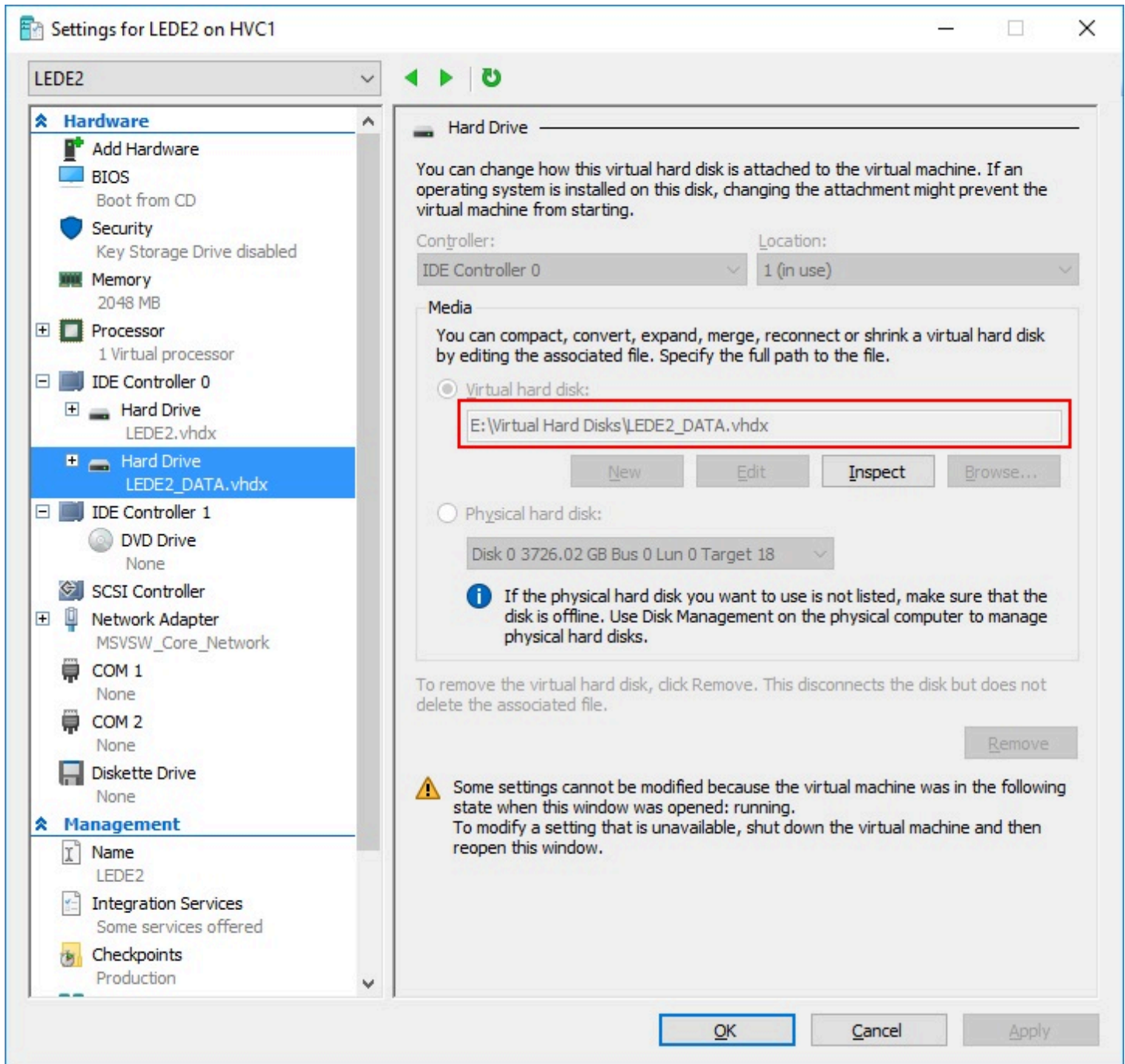
Network Utilities

<input type="text" value="lede-project.org"/>	<input type="text" value="lede-project.org"/>	<input type="text" value="lede-project.org"/>
IPv4 ▾ <input type="button" value="Ping"/>	IPv4 ▾ <input type="button" value="Traceroute"/>	<input type="button" value="Nslookup"/>

```
PING lede-project.org (139.59.209.225): 56 data bytes
64 bytes from 139.59.209.225: seq=0 ttl=50 time=224.254 ms
64 bytes from 139.59.209.225: seq=1 ttl=50 time=223.300 ms
64 bytes from 139.59.209.225: seq=2 ttl=50 time=223.277 ms
64 bytes from 139.59.209.225: seq=3 ttl=50 time=223.585 ms
64 bytes from 139.59.209.225: seq=4 ttl=50 time=223.439 ms

--- lede-project.org ping statistics ---
5 packets transmitted, 5 packets received, 0% packet loss
round-trip min/avg/max = 223.277/223.571/224.254 ms
```

?????, ??Hyper-V????16GB?drive????Unifi Controller??.



????opkg update??????:

```

root@LEDE: ~
\_____\/ -----
root@LEDE:~# opkg update
Downloading http://downloads.lede-project.org/releases/17.01.2/targets/x86/64/packages/Packages.gz
Updated list of available packages in /var/opkg-lists/reboot_core
Downloading http://downloads.lede-project.org/releases/17.01.2/targets/x86/64/packages/Packages.sig
Signature check passed.
Downloading http://downloads.lede-project.org/releases/17.01.2/packages/x86_64/base/Packages.gz
Updated list of available packages in /var/opkg-lists/reboot_base
Downloading http://downloads.lede-project.org/releases/17.01.2/packages/x86_64/base/Packages.sig
Signature check passed.
Downloading http://downloads.lede-project.org/releases/17.01.2/packages/x86_64/luci/Packages.gz
Updated list of available packages in /var/opkg-lists/reboot_luci
Downloading http://downloads.lede-project.org/releases/17.01.2/packages/x86_64/luci/Packages.sig
Signature check passed.
Downloading http://downloads.lede-project.org/releases/17.01.2/packages/x86_64/packages/Packages.gz

```

???df -h?????:

```

root@LEDE:~# df -h
Filesystem      Size      Used Available Use% Mounted on
/dev/root        252.0M      9.6M    237.2M   4% /
tmpfs            1002.8M    540.0K    1002.2M   0% /tmp
tmpfs             512.0K         0      512.0K   0% /dev
root@LEDE:~#

```

???????drive??????????, ??ls /dev/[sh]d* ???:

```

root@LEDE:~# ls /dev/[sh]d*
/dev/sda /dev/sda1 /dev/sda2 /dev/sdb
root@LEDE:~#

```

????????sdb????, ????. ??fdisk??, ??LEDE?????????. ???????:

Status

Installed packages (fdisk)

Available packages (fdisk)

	Package name	Version	Size (.ipk)	Description
Install	cfdisk	2.29.2-1	32403	cfdisk is a curses-based program for partitioning any hard disk drive
Install	cgdisk	1.0.1-1	61518	ncurses-based partition table manipulation utility with GPT support. Similar to sfdisk, but works with GPT partitions. Shares the same limitations of the gdisk partition utility. While it can read and convert MBR partitions in GPT, it cannot modify MBR partitions on its own.
Install	fdisk	2.29.2-1	42731	a menu-driven program for creation and manipulation of partition tables
Install	gdisk	1.0.1-1	61261	GPT partition table manipulation utility with an interface similar to fdisk. It can read and convert MBR partitions in GPT but is otherwise unable to generate or modify MBR partitions.
Install	libfdisk	2.29.2-1	138020	The libfdisk library is used for manipulating with partition tables.
Install	sfdisk	2.29.2-1	39393	list the size of a partition, list the partitions on a device, check the partitions on a device and repartition a device

?????, ??fdisk -l /dev/sdb ??????sdb????:

```

root@LEDE:~# fdisk -l /dev/sdb
Disk /dev/sdb: 16 GiB, 17179869184 bytes, 33554432 sectors
Units: sectors of 1 * 512 = 512 bytes
Sector size (logical/physical): 512 bytes / 4096 bytes
I/O size (minimum/optimal): 4096 bytes / 4096 bytes
root@LEDE:~#

```

?????, ??????, ??fdisk:


```

root@LEDE: ~
Units: sectors of 1 * 512 = 512 bytes
Sector size (logical/physical): 512 bytes / 4096 bytes
I/O size (minimum/optimal): 4096 bytes / 4096 bytes
root@LEDE:~# fdisk /dev/sdb

Welcome to fdisk (util-linux 2.29.2).
Changes will remain in memory only, until you decide to write them.
Be careful before using the write command.

Device does not contain a recognized partition table.
Created a new DOS disklabel with disk identifier 0xc5e08e0b.

Command (m for help): n
Partition type
   p   primary (0 primary, 0 extended, 4 free)
   e   extended (container for logical partitions)
Select (default p): p
Partition number (1-4, default 1): 1
First sector (2048-33554431, default 2048):
Last sector, +sectors or +size{K,M,G,T,P} (2048-33554431, default 33554431):

Created a new partition 1 of type 'Linux' and of size 16 GiB.

Command (m for help):

```

????w?????????:

```

root@LEDE: ~
Welcome to fdisk (util-linux 2.29.2).
Changes will remain in memory only, until you decide to write them.
Be careful before using the write command.

Device does not contain a recognized partition table.
Created a new DOS disklabel with disk identifier 0xc5e08e0b.

Command (m for help): n
Partition type
   p   primary (0 primary, 0 extended, 4 free)
   e   extended (container for logical partitions)
Select (default p): p
Partition number (1-4, default 1): 1
First sector (2048-33554431, default 2048):
Last sector, +sectors or +size{K,M,G,T,P} (2048-33554431, default 33554431):

Created a new partition 1 of type 'Linux' and of size 16 GiB.

Command (m for help): w
The partition table has been altered.
Calling ioctl() to re-read partition table.
Syncing disks.

root@LEDE:~#

```

???fdisk -l /dev/sdb ??????????partition:

```

root@LEDE: ~
e extended (container for logical partitions)
Select (default p): p
Partition number (1-4, default 1): 1
First sector (2048-33554431, default 2048):
Last sector, +sectors or +size{K,M,G,T,P} (2048-33554431, default 33554431):

Created a new partition 1 of type 'Linux' and of size 16 GiB.

Command (m for help): w
The partition table has been altered.
Calling ioctl() to re-read partition table.
Syncing disks.

root@LEDE:~# fdisk -l /dev/sdb
Disk /dev/sdb: 16 GiB, 17179869184 bytes, 33554432 sectors
Units: sectors of 1 * 512 = 512 bytes
Sector size (logical/physical): 512 bytes / 4096 bytes
I/O size (minimum/optimal): 4096 bytes / 4096 bytes
Disklabel type: dos
Disk identifier: 0xc5e08e0b

Device      Boot Start      End  Sectors  Size Id Type
/dev/sdb1                2048 33554431 33552384  16G 83 Linux
root@LEDE:~#

```

????partition? /dev/sdb1.

LEDE????????e2fsprogs???. ??????ext4????.

?? mkfs.ext4 /dev/sdb1

```

root@LEDE:~# mkfs.ext4 /dev/sdb1
mke2fs 1.43.3 (04-Sep-2016)
Discarding device blocks: done
Creating filesystem with 4194048 4k blocks and 1048576 inodes
Filesystem UUID: e342ccfc-1863-4935-a872-736043f20710
Superblock backups stored on blocks:
    32768, 98304, 163840, 229376, 294912, 819200, 884736, 1605632, 2654208,
    4096000

Allocating group tables: done
Writing inode tables: done
Creating journal (16384 blocks): done
Writing superblocks and filesystem accounting information: done

root@LEDE:~#

```

????block-mount???????:

Status

Installed packages (mount)

Available packages (mount)

	Package name	Version	Size (.ipk)	Description
Install	babeld	1.8.0-3	61535	Babel is a loop-avoiding distance-vector routing protocol roughly based on DSDV and AODV, but with provisions for link cost estimation and redistribution of routes from other routing protocols. While it is optimised for wireless mesh networks, Babel will also work efficiently on wired networks. It will generate between 1.2 and 2.4 times the amount of routing traffic that RIPng would generate, while never counting to infinity.
Install	block-mount	2016-12-04-84b530a7-2	20904	Block device mounting and checking
Install	cifsmount	6.4-2	13669	CIFS mount utilities
Install	collectd-mod-entropy	5.5.3-3	2193	Entropy amount input plugin
Install	davfs2	1.5.4-2	53444	Web Distributed Authoring and Versioning (WebDAV), an extension to the HTTP-protocol, allows authoring of resources on a remote web server.davfs2 provides the ability to access such resources like a typical filesystem, allowing for use by standard applications with no built-in support for WebDAV. davfs2 is designed to fully integrate into the filesystem semantics of Unix-like systems (mount, umount, etc.). davfs2 makes mounting by unprivileged users as easy and secure as possible. davfs2 does extensive caching to make the file system responsive, to avoid unnecessary network traffic and to prevent data loss, and to cope for slow or unreliable connections. davfs2 will work with most WebDAV servers needing little or no configuration.
Install	fuse-utils	2.9.7-1	15777	FUSE (Filesystem in UserSpace) This package contains the FUSE utilities. - fusemount - ulockmgr_server

????block-mount?mount??ext4????.

Mount Points - Mount Entry

Mount Entry

General Settings

Advanced Settings

Enable this mount ☒UUID

If specified, mount the device by its UUID instead of a fixed device node

Mount point

Specifies the directory the device is attached to

[Back to Overview](#)
[Save & Apply](#)
[Save](#)
[Reset](#)

?????????????. ??Apply&Save?, LEDE?????. ???reboot. reboot???, ?? df -h???, ???mount?:


```

root@LEDE: ~
login as: root
root@10.2.140.13's password:

BusyBox v1.25.1 () built-in shell (ash)

  LE  LE  LE
  DE  DE  DE
  LE  LE  LE
  DE  DE  DE

  | | | | |
  | | | | |
  | | | | |
  | | | | |

lede-project.org

-----
Reboot (17.01.2, r3435-65eec8bd5f)
-----

root@LEDE:~# df -h
Filesystem      Size      Used Available Use% Mounted on
/dev/root        252.0M    12.1M    234.8M   5% /
tmpfs            1002.8M    516.0K    1002.3M   0% /tmp
tmpfs            512.0K      0      512.0K   0% /dev
/dev/sdb1        15.7G     44.0M     14.8G   0% /mnt/sdb1
root@LEDE:~#

```

??debootstrap????????OS??:

Status

Installed packages (debootstrap)

Available packages (debootstrap)

	Package name	Version	Size (.ipk)	Description
Install	debootstrap	1.0.87-1	25692	debootstrap is used to create a Debian base system from scratch, without requiring the availability of dpkg or apt. It does this by downloading .deb files from a mirror site, and carefully unpacking them into a directory which can eventually be chrooted into.

?????, ?????debian?Linux??, ??????:

debootstrap --arch=amd64 jessie /mnt/sdb1/debian <http://mirrors.163.com/debian/>

```

root@LEDE: ~
┌───────────┐ ┌───────────┐ ┌───────────┐ ┌───────────┐
│ LE         │ │             │ │             │ │             │
│ DE         │ │             │ │             │ │             │
├───────────┘ └───────────┘ └───────────┘ └───────────┘
│ LE         │ │             │ │             │ │             │
│ DE         │ │             │ │             │ │             │
├───────────┘ └───────────┘ └───────────┘ └───────────┘
│ LE         │ │             │ │             │ │             │
│ DE         │ │             │ │             │ │             │
├───────────┘ └───────────┘ └───────────┘ └───────────┘

lede-project.org

-----
Reboot (17.01.2, r3435-65eec8bd5f)
-----

root@LEDE:~# df -h
Filesystem      Size      Used Available Use% Mounted on
/dev/root        252.0M    12.1M   234.8M    5% /
tmpfs            1002.8M    516.0K   1002.3M    0% /tmp
tmpfs            512.0K          0     512.0K    0% /dev
/dev/sdb1       15.7G     44.0M    14.8G    0% /mnt/sdb1
root@LEDE:~# debootstrap --arch=amd64 jessie /mnt/sdb1/debian http://mirrors.163.com/debian/
W: Cannot check Release signature; keyring file not available /usr/share/keyrings/debian-archive-keyring.gpg
I: Retrieving InRelease
I: Retrieving Release
I: Retrieving Packages
```

```

???????????, ????????????. ??????????2~3?????. ??debian???, ??GUI?Startup, ?????????????(??/etc/rc.local):
mount -o bind /proc /mnt/sdb1/debian/proc
mount -o bind /dev /mnt/sdb1/debian/dev
mount -o bind /dev/pts /mnt/sdb1/debian/dev/pts

```

Local Startup

This is the content of /etc/rc.local. Insert your own commands here (in front of 'exit 0') to execute them at the end of the boot process.

Put your custom commands here that should be executed once
the system init finished. By default this file does nothing.

```
mount -o bind /proc /mnt/sdb1/debian/proc
mount -o bind /dev /mnt/sdb1/debian/dev
mount -o bind /dev/pts /mnt/sdb1/debian/dev/pts
```

```
exit 0
```


Submit??, ?LEDE??reboot. ??chroot??debian??:

chroot /mnt/sdb1/debian /bin/bash

```
root@LEDE:/# chroot /mnt/sdb1/debian /bin/bash
root@LEDE://# ls
bin  dev  home  lib64  mnt  proc  run  srv  tmp  var
boot  etc  lib  media  opt  root /sbin  sys  usr
root@LEDE://#
```

????Unifi Controller??, ?????sources.list????.

```
root@LEDE://etc# cd apt
root@LEDE://etc/apt# ls
apt.conf.d  preferences.d  sources.list  sources.list.d  trusted.gpg.d
```

?vi?????????:

deb <http://www.ubnt.com/downloads/unifi/debian> unifi5 ubiquiti

???, ??apt-get update?????????:

```

root@LEDE: /
utomatic.gpg --keyring /etc/apt/trusted.gpg.d/debian-archive-jessie-stable.gpg -
-keyring /etc/apt/trusted.gpg.d/debian-archive-stretch-automatic.gpg --keyring /
etc/apt/trusted.gpg.d/debian-archive-stretch-security-automatic.gpg --keyring /e
tc/apt/trusted.gpg.d/debian-archive-stretch-stable.gpg --keyring /etc/apt/truste
d.gpg.d/debian-archive-wheezy-automatic.gpg --keyring /etc/apt/trusted.gpg.d/deb
ian-archive-wheezy-stable.gpg --keyserver keyserver.ubuntu.com --recv C0A52C50
gpg: requesting key C0A52C50 from hkp server keyserver.ubuntu.com
gpg: key C0A52C50: public key "UniFi Developers <unifi-dev@ubnt.com>" imported
gpg: Total number processed: 1
gpg:         imported: 1   (RSA: 1)
root@LEDE://etc/apt# cd ..
root@LEDE://etc# cd ..
root@LEDE://# apt-get update
Ign http://mirrors.163.com jessie InRelease
Get:1 http://mirrors.163.com jessie Release.gpg [2373 B]
Get:2 http://mirrors.163.com jessie Release [148 kB]
Get:3 http://mirrors.163.com jessie/main amd64 Packages [6789 kB]
Get:4 http://www.ubnt.com unifi5 InRelease [3006 B]
Get:5 http://www.ubnt.com unifi5/ubiquiti amd64 Packages [677 B]
Get:6 http://mirrors.163.com jessie/main Translation-en [4582 kB]
Ign http://www.ubnt.com unifi5/ubiquiti Translation-en
Fetched 11.5 MB in 5s (2243 kB/s)
Reading package lists... Done
root@LEDE://#

```

??GPG key, ??????:

apt-key adv --keyserver keyserver.ubuntu.com --recv C0A52C50

```

root@LEDE://etc/apt#
root@LEDE://etc/apt# apt-key adv --keyserver keyserver.ubuntu.com --recv C0A52C5
0
Executing: gpg --ignore-time-conflict --no-options --no-default-keyring --homedir
/tmp/tmp.SAlUa85iNu --no-auto-check-trustdb --trust-model always --primary-key
ring /etc/apt/trusted.gpg --keyring /etc/apt/trusted.gpg.d/debian-archive-jessie
-automatic.gpg --keyring /etc/apt/trusted.gpg.d/debian-archive-jessie-security-a
utomatic.gpg --keyring /etc/apt/trusted.gpg.d/debian-archive-jessie-stable.gpg -
-keyring /etc/apt/trusted.gpg.d/debian-archive-stretch-automatic.gpg --keyring /
etc/apt/trusted.gpg.d/debian-archive-stretch-security-automatic.gpg --keyring /e
tc/apt/trusted.gpg.d/debian-archive-stretch-stable.gpg --keyring /etc/apt/truste
d.gpg.d/debian-archive-wheezy-automatic.gpg --keyring /etc/apt/trusted.gpg.d/deb
ian-archive-wheezy-stable.gpg --keyserver keyserver.ubuntu.com --recv C0A52C50
gpg: requesting key C0A52C50 from hkp server keyserver.ubuntu.com
gpg: key C0A52C50: public key "UniFi Developers <unifi-dev@ubnt.com>" imported
gpg: Total number processed: 1
gpg:         imported: 1   (RSA: 1)
root@LEDE://etc/apt#

```

import???, ????????Unifi Controller?. ??????:

apt install unifi

???????, ???browser?????????Unifi Controller?Web?????:

?????, ??????. ??reboot?, ??????????. ?????GUI?Startup??/etc/rc.local??, ??????. ???mount?????:
 chroot /mnt/sdb1/debian service mongodb start
 chroot /mnt/sdb1/debian service unifi start

Local Startup

This is the content of /etc/rc.local. Insert your own commands here (in front of 'exit 0') to execute them at the end of the boot process.

```
# Put your custom commands here that should be executed once
# the system init finished. By default this file does nothing.
```

```
mount -o bind /proc /mnt/sdb1/debian/proc
mount -o bind /dev /mnt/sdb1/debian/dev
mount -o bind /dev/pts /mnt/sdb1/debian/dev/pts
```

```
chroot /mnt/sdb1/debian service mongodb start
chroot /mnt/sdb1/debian service unifi start
```

```
exit 0
```


???????, ?????reboot, Unifi???????????????.
 ??Unifi Controller?????.