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ASTERISK



MikroTik

МикроТік в сетях
ІР-телефонии Asterisk

ЧТО ТАКОЕ **ASTERISK**

Asterisk – это как Mikrotik, но только в IP-телефонии



АБСОЛЮТНО
БЕСПЛАТЕН



СВОБОДНОЕ И
ОТКРЫТОЕ ПО



16 ЛЕТ
РАЗВИТИЯ



ПОЗВОЛЯЕТ СДЕЛАТЬ
ПРАКТИЧЕСКИ ВСЁ,
ЧТО МОЖЕТ ПРИЙТИ
К ВАМ В ГОЛОВУ



ПОПУЛЯРЕН
В 170+ СТРАН



ИСПОЛЬЗУЕТСЯ БОЛЕЕ
ЧЕМ НА 1,000,000
СЕРВЕРОВ ВО ВСЕМ
МИРЕ

О НАС



ГЕОГРАФИЯ НАШИХ КЛИЕНТОВ –
ОТ КАЛИНИНГРАДА
О ПЕТРОПАВЛОВСКА-КАМЧАТСКОГО



МЫ ВЫПОЛНИЛИ
ПОРЯДКА 400 ПРОЕКТОВ
ПО ВНЕДРЕНИЮ СИСТЕМ
IP-ТЕЛЕФОНИИ



НАМ ВСЕГО 5 ЛЕТ



НАШИ СОТРУДНИКИ РАБОТАЮТ ИЗ 7-МИ ГОРОДОВ,
И ЭТО – НЕ ФРИЛАНСЕРЫ



МЫ – САМАЯ КРУПНАЯ В РФ КОМПАНИЯ,
СПЕЦИАЛИЗИРУЮЩАЯСЯ НА ВНЕДРЕНИИ
САМОЙ ПОПУЛЯРНОЙ СИСТЕМЫ
IP-ТЕЛЕФОНИИ ASTERISK



МЫ ПРОВОДИМ ЕЖЕГОДНУЮ
КОНФЕРЕНЦИЮ ПО ASTERISK



КАЖДЫЙ МЕСЯЦ МЫ ПРОВОДИМ
КУРСЫ ПО IP-ТЕЛЕФОНИИ
НА БАЗЕ ASTERISK



ПОЧЕМУ MIKROTIK НЕЗАМЕНИМ В VOIP?



IP-телефония и качество её работы зависит от сети передачи данных.

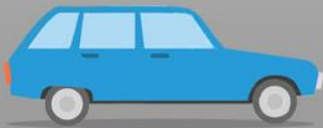


Хорошую, управляемую и масштабируемую сеть можно и нужно строить на Mikrotik

Инструменты Mikrotik для управления сетью



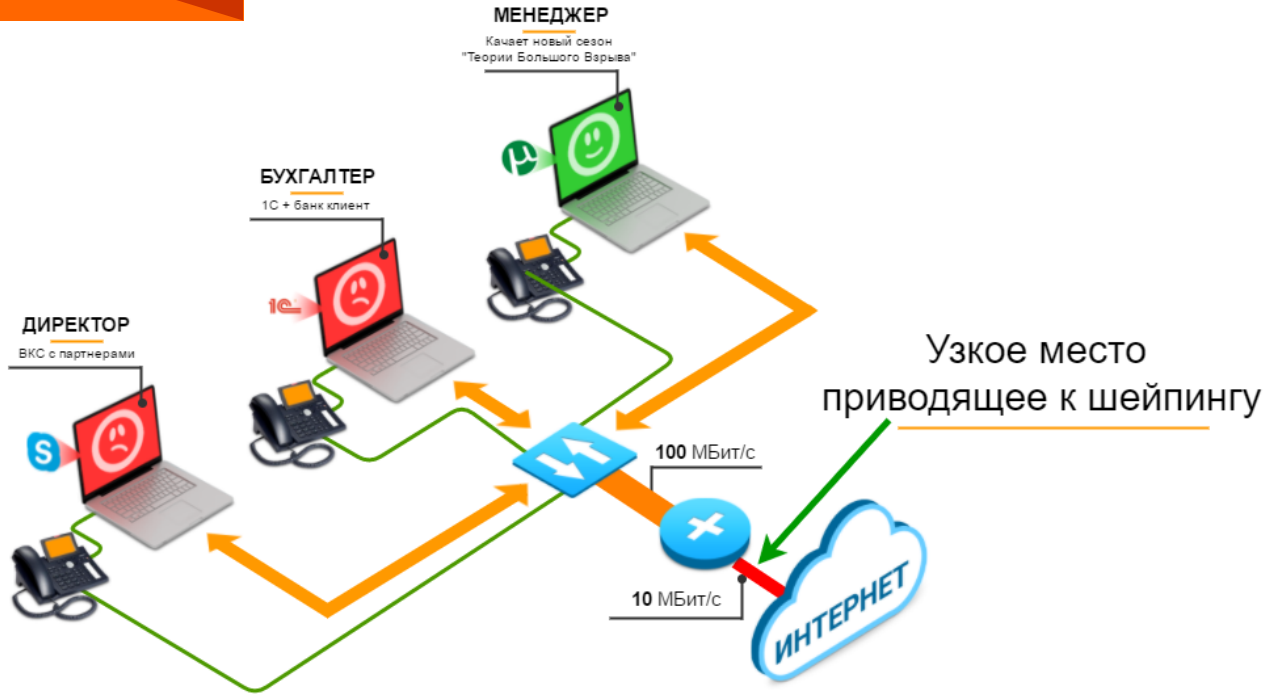
QoS



QoS

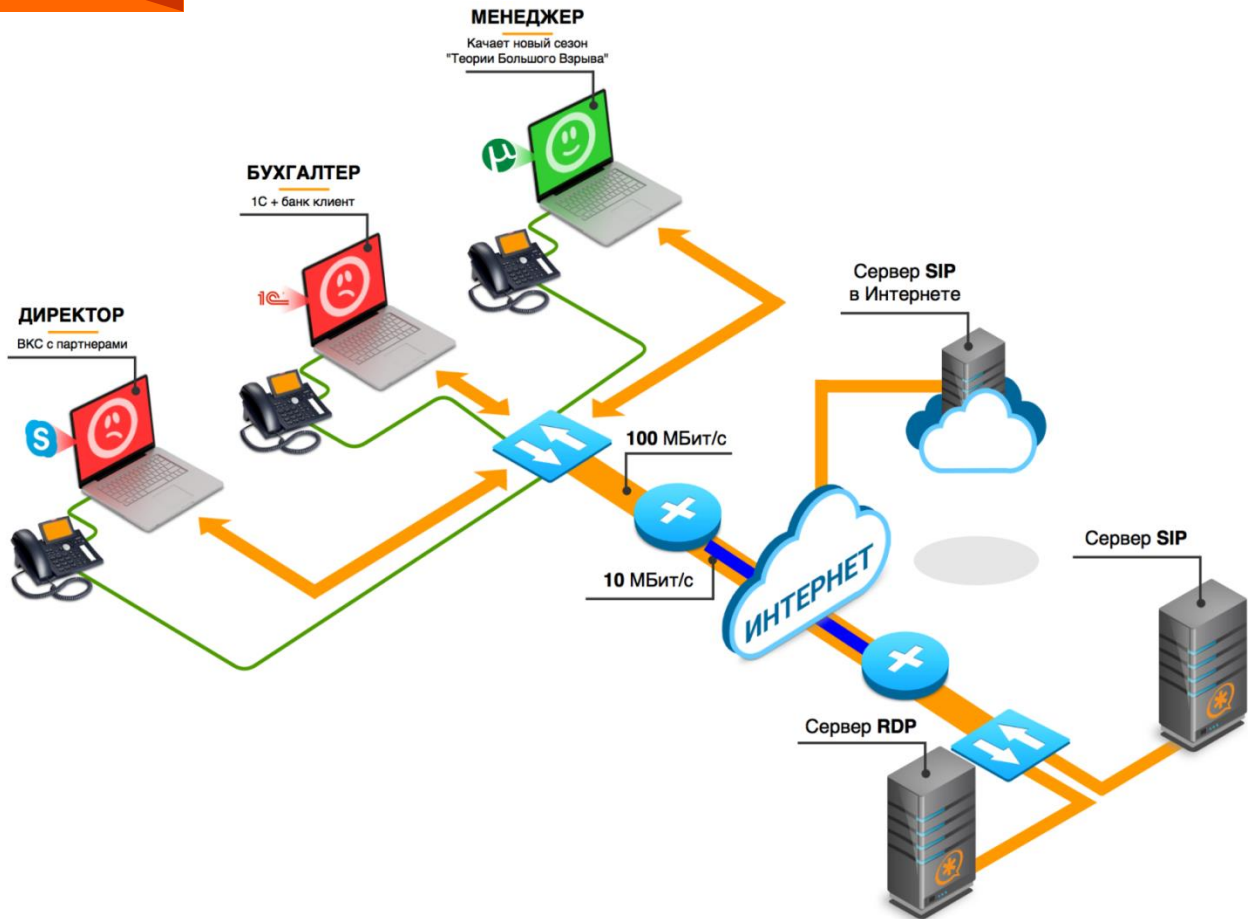


QoS

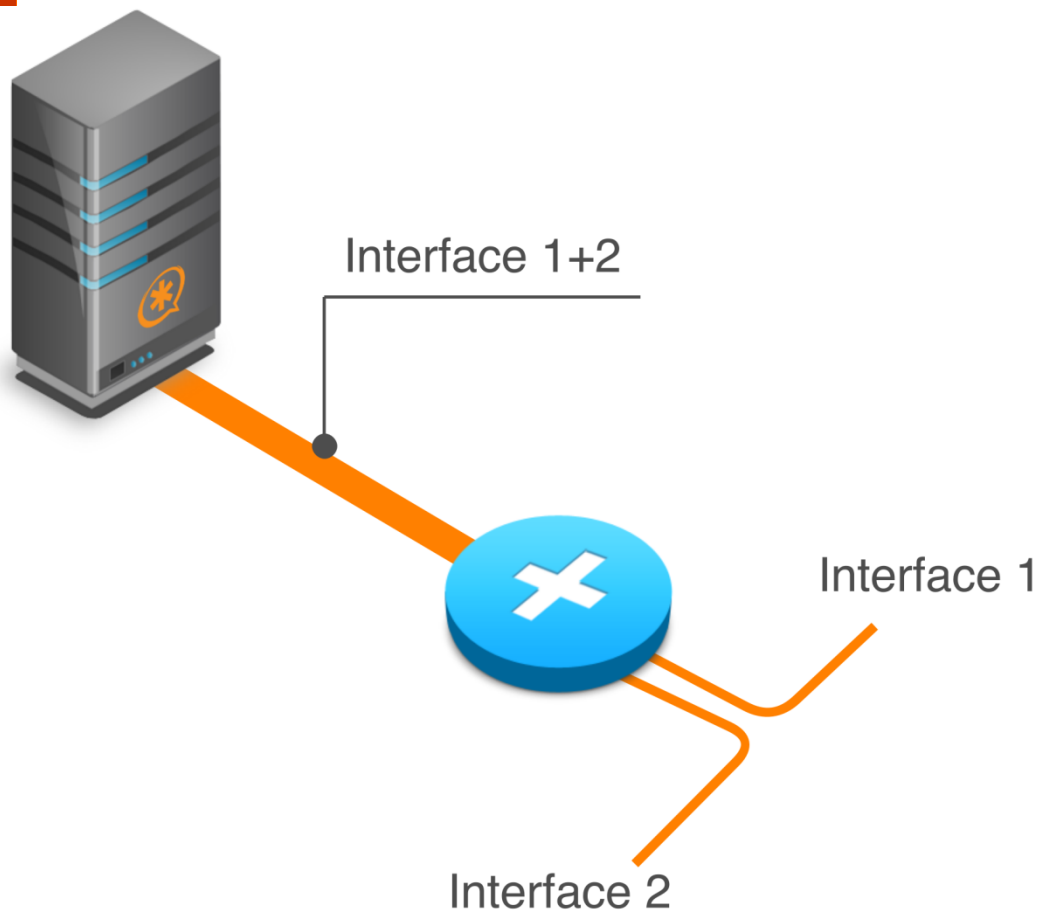


Официальные спонсоры
лагов на канале

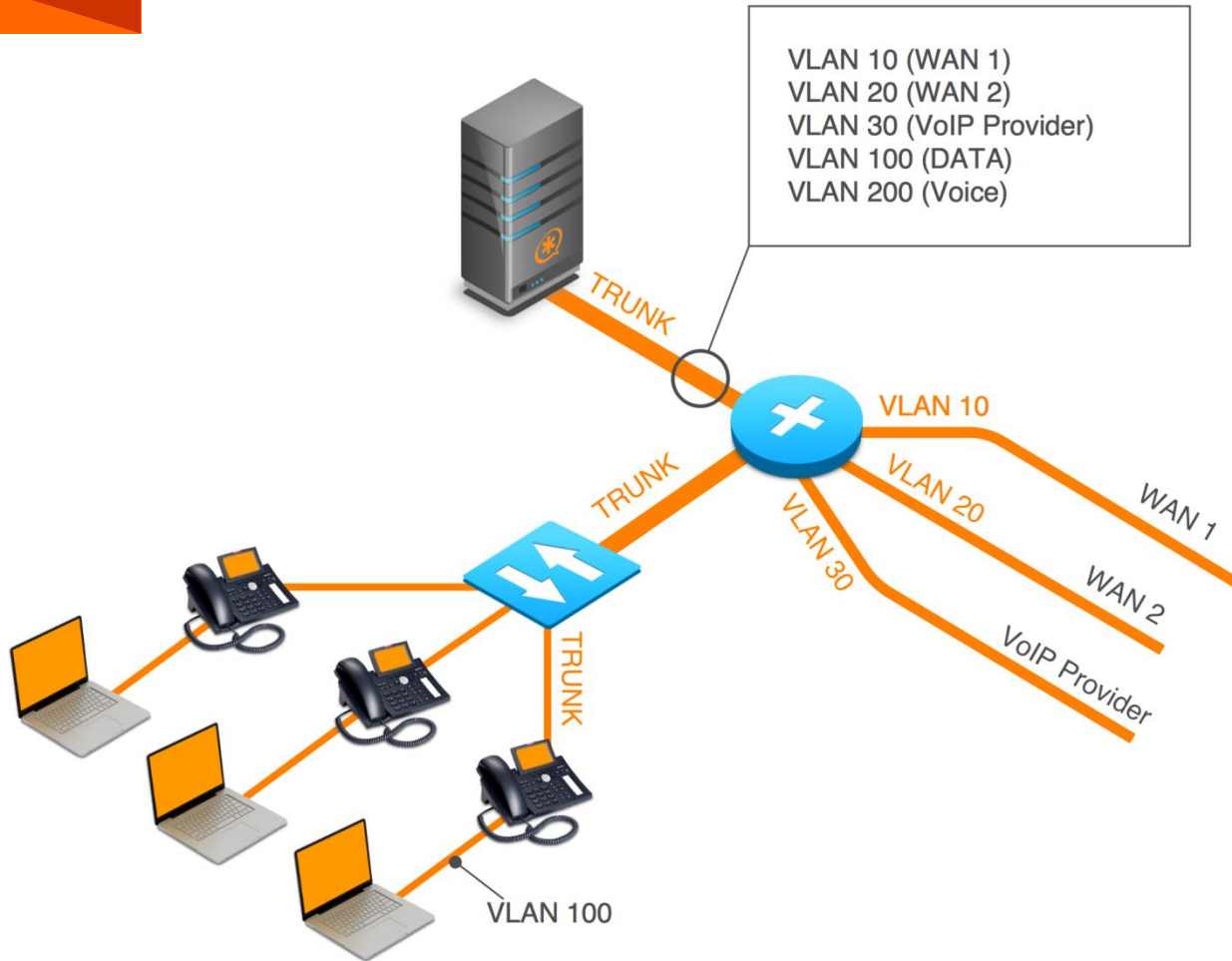
QoS внутри VPN



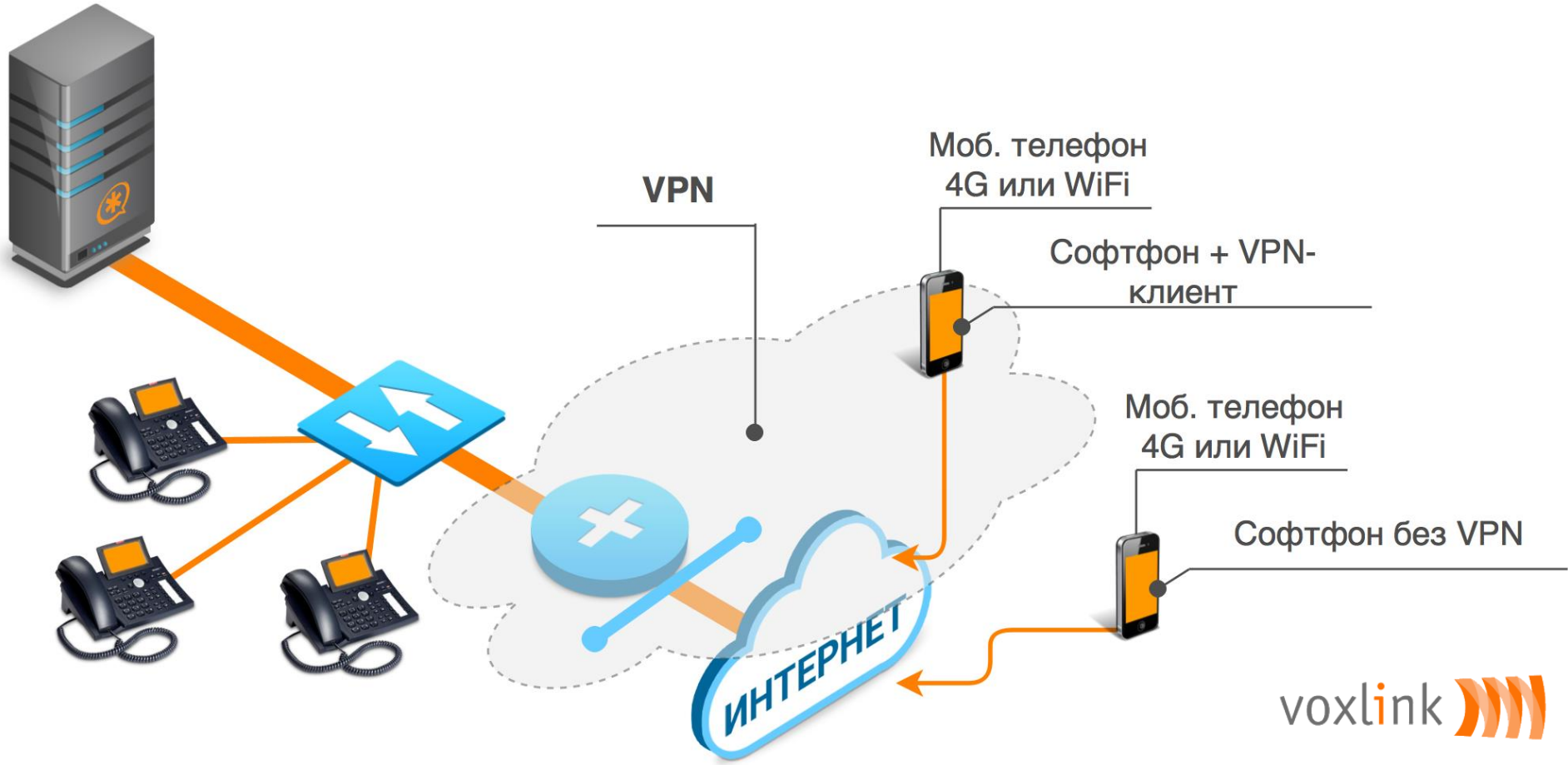
VLAN



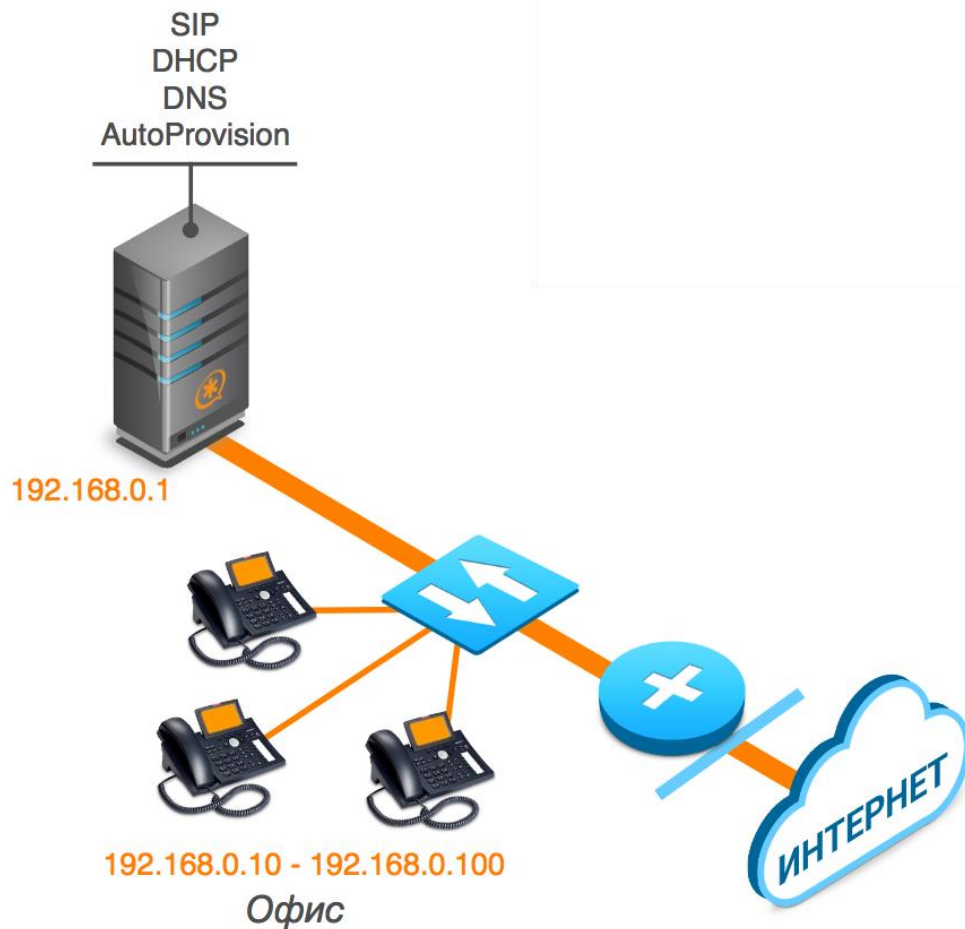
VLAN: Server-On-A-Stick



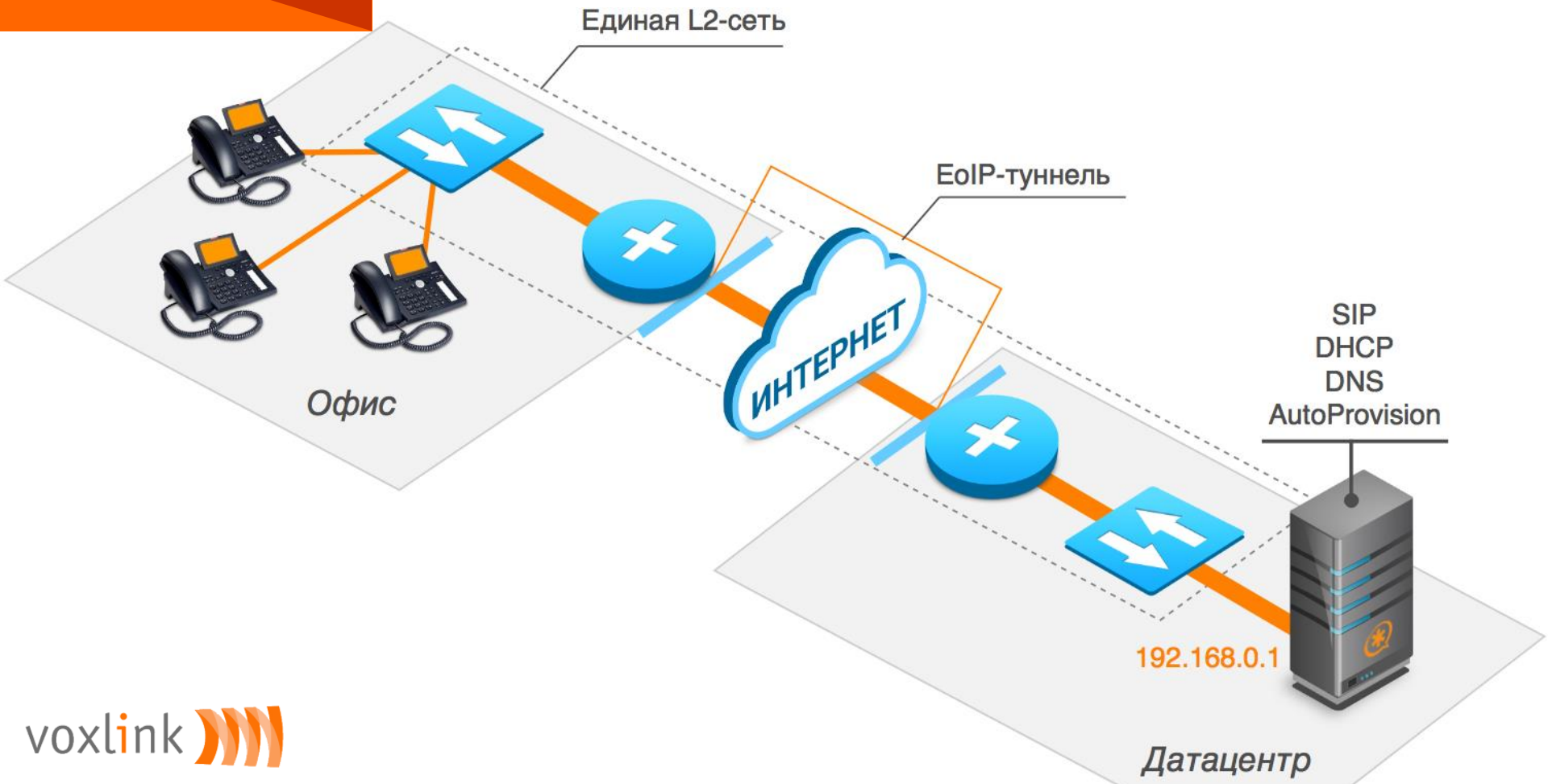
VPN



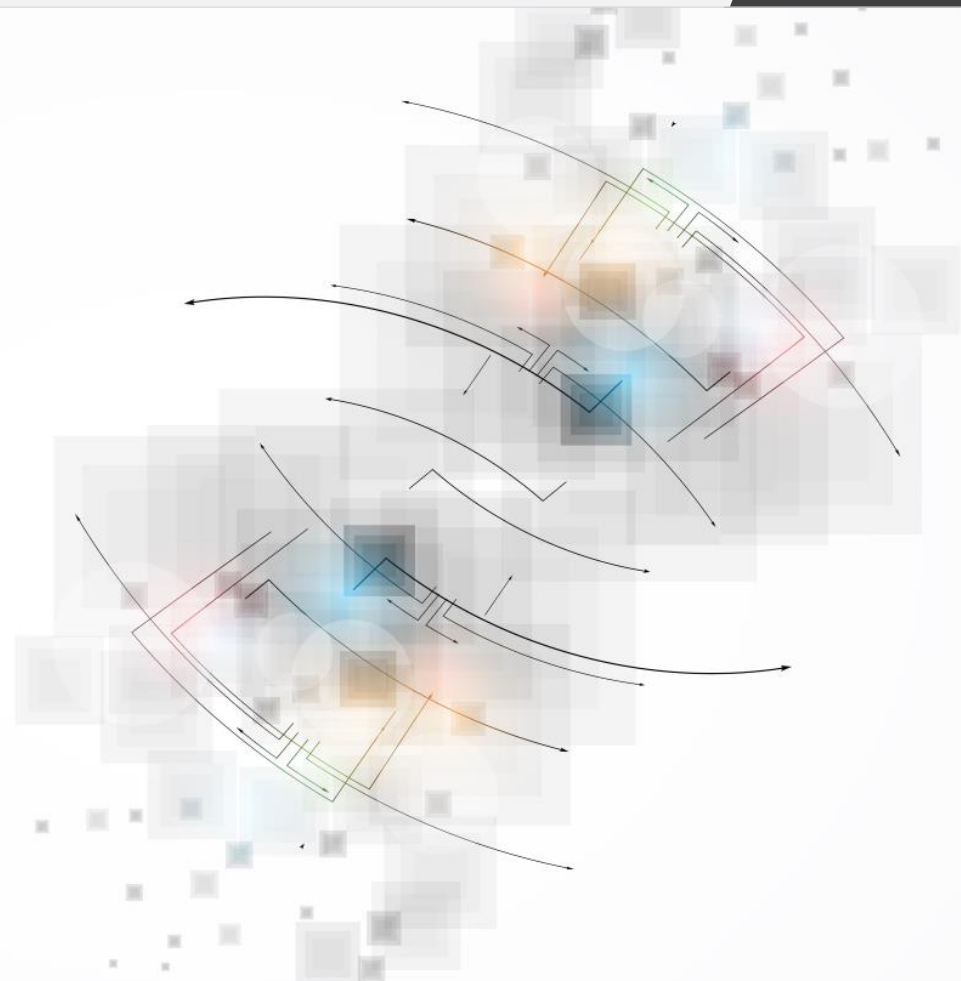
ЕoIP: ВЫНОС В ДЦ



EoIP: вынос в ДЦ



Функциональные ВОЗМОЖНОСТИ



Asterisk и Mikrotik можно интегрировать между собой.

- Asterisk может посылать команды на Mikrotik
- Mikrotik может посылать команды на Asterisk

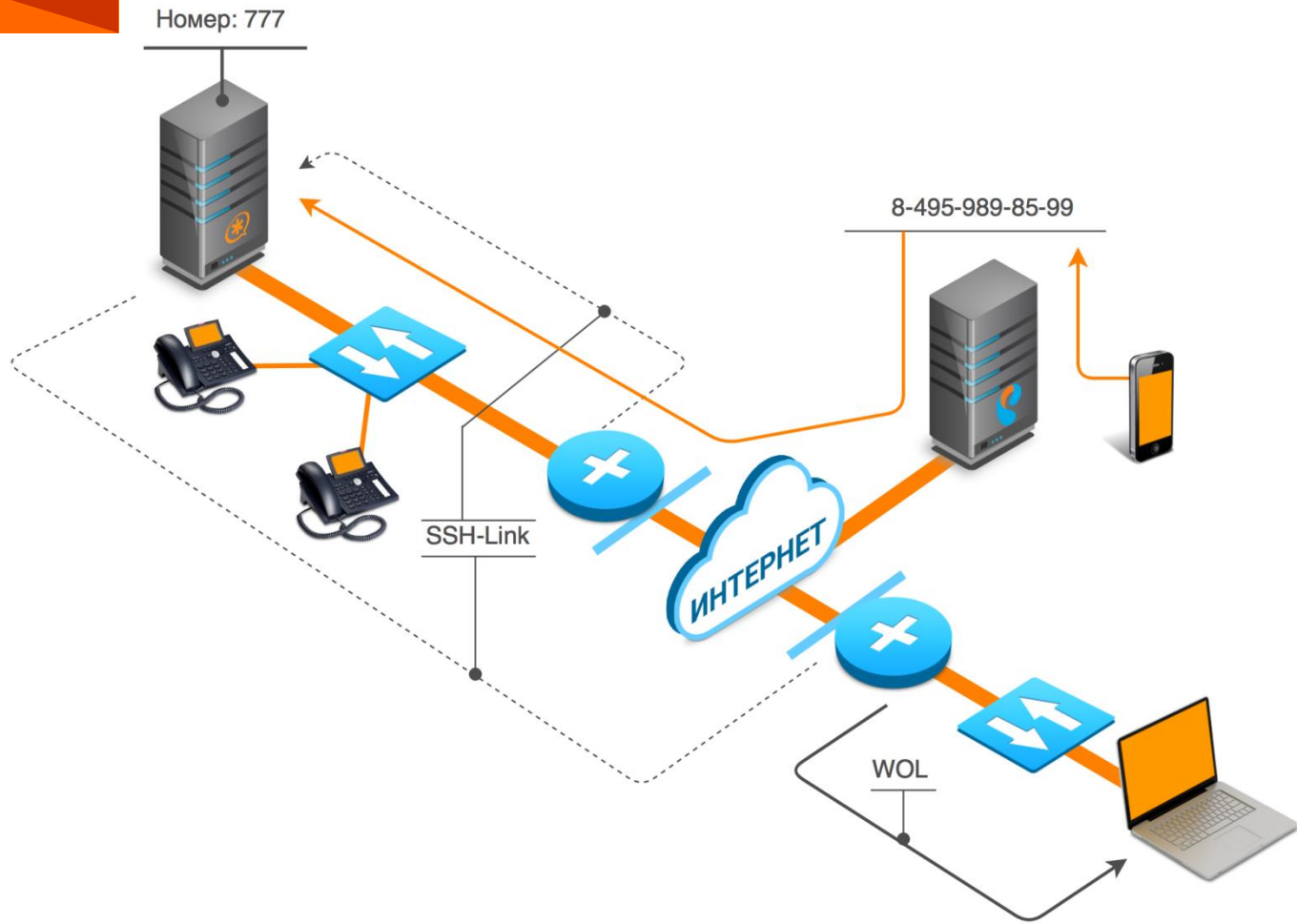
Примеры использования такой интеграции:

- Управление Mikrotik с любого телефонного аппарата (хоть Panasonic)
- Изменение настроек Asterisk при смене IP-адреса при Dual-WAN
- Выполнение произвольных скриптов на Asterisk при событии на Mikrotik
- Выполнение произвольных скриптов на Mikrotik при событии на Asterisk

Как делается интеграция:

- По API
- По SSH

Связь Mikrotik & Asterisk



DHCP сервер

RouterOS WinBox

192.168.192.1 (Office-314-RouterSwitch) - WinBox v6.35.2 on CRS125-24G-1S-2HnD (mipsbe)

Safe Mode

Hide Passwords

DHCP Server

DHCP Networks Leases Options Option Sets Alerts

Find

| Address | Gateway | DNS Servers | Domain | WINS Servers | Next Server |
|--|---------|-------------|--------|--------------|-------------|
| ::: Для загрузки CiscoOS Asterisk: BootFileName: pxelinux.0/::: Для загрузки WTWare: 5.4.16/rtware.pxe | | | | | |
| 192.168.10.0/24 | | | | | 192.168... |
| 192.168.66.0/24 | | | | | |
| 192.168.100.0/24 | | | | | |
| 192.168.192.0/24 | | | | | 192.168... |

DHCP Network <192.168.192.0/24>

Address: 192.168.192.0/24

Gateway: 192.168.192.1

Netmask: 24

DNS Servers: 192.168.192.1

Domain: voxlink.ru

WINS Servers:

NTP Servers: 79.137.209.155

CAPS Managers:

Next Server: 192.168.192.102

Boot File Name:

DHCP Options: tftpd66

DHCP Option Set:

OK Cancel Apply Comment Copy Remove

4 items (1 selected)

DHCP сервер

168.192.1 (Office-314-RouterSwitch) - WinBox v6.35.2 on CRS125-24G-1S-2HnD (mipsbe)

Safe Mode

Hide Passwords

Quick Set

CAPsMAN

Interfaces

Wireless

Bridge

PPP

Switch

Mesh

IP

Routing

System

Queues

Files

Log

Radius

Tools

New Terminal

LCD

MetaROUTER

DHCP Server

DHCP

Networks

Leases

Options

Option Sets

Alerts

Name

Code

Value

128

128

s'70.127.200.155'

129

129

s'70.127.200.155'

130

130

s'70.127.200.155'

131

131

s'70.127.200.155'

132

132

s'70.127.200.155'

133

133

s'70.127.200.155'

134

134

s'70.127.200.155'

local

66

s'192.168.192.102'

mitel

43

s'192.168.192.102'

mitel_new

43

s'192.168.192.102'

option-150

150

s'192.168.192.102'

tftp66-trainer

66

s'192.168.192.102'

tftp66_test

66

s'192.168.192.102'

tftpd66

66

s'192.168.192.102'

tftpd66-Grush...

66

s'192.168.192.102'

DHCP Option <tftp66_test>

Name: tftp66_test

Code: 66

Value: s'192.168.192.102'

Raw Value: 3139322e3136382e...

OK

Cancel

Apply

Copy

Remove

TFTP сервер

192.168.192.1 (Office-314-RouterSwitch) - WinBox v6.35.2 on CRS125-24G-1S-2HnD (mipsbe)

Safe Mode Hide Passwords

Quick Set
CAPsMAN
Interfaces
Wireless
Bridge
PPP
Switch
Mesh
IP
Routing
System
Queues
Files
Log
Radius
Tools
New Terminal
LCD
MetaROUTER
Partition
Make Supout.tif

DHCP Server

DHCP Networks Leases Options Option Sets Alerts

DHCP Lease <192.168.192.203, 0.0.0.0>

TFTP

New TFTP

IP Addresses: 0.0.0.0

Req. Filename:

Real Filename:

Allow
 Read Only

Hits: 0

enabled

OK
Cancel
Apply
Disable
Copy
Remove

| # | IP A | Read O... | Hits |
|---------|------|-----------|------|
| 0 items | | | |

Address List:

| | | | | |
|---|-----------|--|----|------------|
| D | 192.168.1 | | 84 | 2C:27:D7:3 |
| D | 192.168.1 | | 75 | 44:6D:6C:C |
| D | 192.168.1 | | 41 | 2C:27:D7:3 |

Cloud DynDNS

11.1 (MikroTik) - WinBox v6.29.1 on RB2011UiAS-2HnD (mipsbe)

Memory: 101.9 MiB CPU: 7% Hide Passwords

Safe Mode

Terminal

Quick Set
Interfaces
Wireless
Bridge
PPP
Switch
Mesh
IP
IPv6
MPLS
Routing
System
Queues
Files
Log
Radius
Tools
New Terminal
LCD
MetaROUTER

DHCP Server

DHCP Networks Leases

Address / Gateway

192.168.11.0/24

DHCP Network <192.168.11.0/24>

Address: 192.168.11.0/24
Gateway: 192.168.11.1
Netmask: 24

OK
Cancel
Apply

Cloud

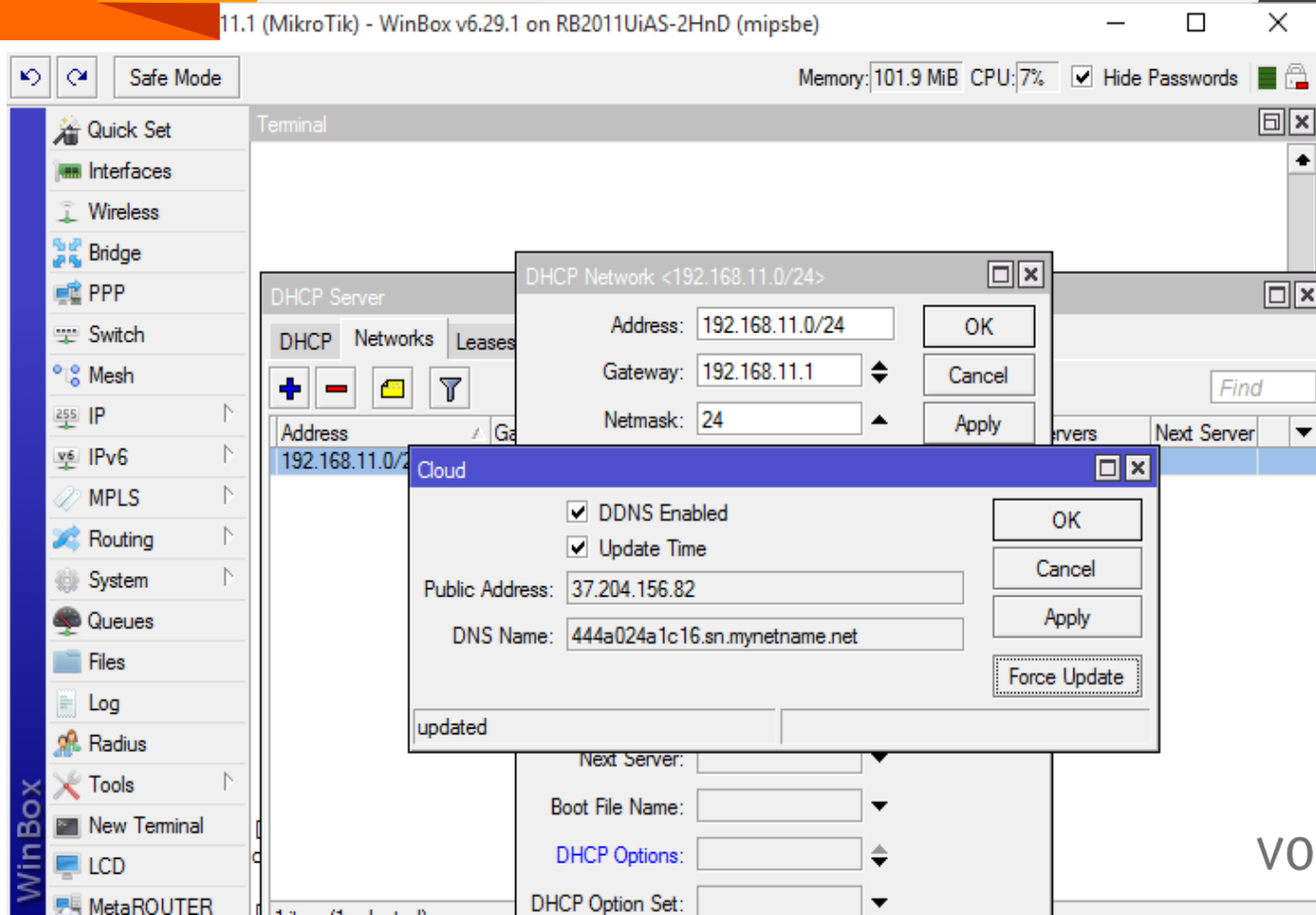
DDNS Enabled
 Update Time

Public Address: 37.204.156.82
DNS Name: 444a024a1c16.sn.mynetname.net

OK
Cancel
Apply
Force Update

updated

Next Server:
Boot File Name:
DHCP Options:
DHCP Option Set:



SIP-ALG

The screenshot shows the Mikrotik WinBox interface. On the left is a vertical menu with various system tools. The main window is titled 'Firewall' and has several tabs: 'Filter Rules', 'NAT', 'Mangle', 'Service Ports', 'Connections', 'Address Lists', and 'Layer7 Protocols'. The 'Service Ports' tab is active, displaying a table of services. The 'sip' service is selected and highlighted in blue. A dialog box titled 'Firewalling Service < sip >' is open over the table, showing the configuration for the 'sip' service. The dialog includes fields for 'Name' (sip), 'Ports' (5060 and 5061), and a checked checkbox for 'SIP Direct Media'. There are buttons for 'OK', 'Cancel', 'Apply', and 'Enable'. The status at the bottom of the dialog is 'disabled'.

RouterOS WinBox

Firewall

Filter Rules NAT Mangle Service Ports Connections Address Lists Layer7 Protocols

Find

| Name | Ports | SIP Direct Media |
|--------|------------|------------------|
| ftp | 21 | |
| X h323 | | |
| X irc | 6667 | |
| pptp | | |
| X sip | 5060, 5061 | yes |
| lftp | 69 | |

Firewalling Service < sip >

Name: sip

Ports: 5060

5061

SIP Direct Media

disabled

OK Cancel Apply Enable

Connection List

RouterOS WinBox

- Quick Set
- CAPsMAN
- Interfaces
- Wireless
- Bridge
- PPP
- Switch
- Mesh
- IP
- Routing
- System
- Queues
- Files
- Log
- Radius
- Tools
- New Terminal
- LCD
- MetaROUTER
- Partition
- Make Supout.rif
- Manual

Firewall

Filter Rules NAT Mangle Service Ports Connections Address Lists Layer7 Protocols

Tracking Find

| | Src. Address | Dst. Address | Pr... | Connecti... | Timeout | TCP State | Orig./Repl. Rate |
|------|----------------------|-----------------------|----------|-------------|----------|-----------|-------------------|
| SAC | 85.30.235.148:1701 | 217.174.103.170:1701 | 17 (u... | | 00:02:54 | | 0 bps/0 bps |
| SACs | 192.168.10.35:5060 | 192.168.10.155:5060 | 17 (u... | | 00:02:46 | | 0 bps/0 bps |
| SACs | 192.168.10.101:5060 | 89.208.190.2:5060 | 17 (u... | | 00:02:15 | | 0 bps/0 bps |
| SACs | 192.168.10.102:5060 | 89.208.190.2:5060 | 17 (u... | | 00:02:00 | | 0 bps/0 bps |
| SACs | 192.168.10.103:5060 | 89.208.190.2:5060 | 17 (u... | | 00:02:38 | | 0 bps/0 bps |
| SACs | 192.168.10.104:5060 | 89.208.190.2:5060 | 17 (u... | | 00:02:24 | | 0 bps/0 bps |
| SACs | 192.168.10.105:5060 | 89.208.190.2:5060 | 17 (u... | | 00:02:18 | | 0 bps/0 bps |
| SACs | 192.168.10.106:5060 | 89.208.190.2:5060 | 17 (u... | | 00:02:53 | | 0 bps/0 bps |
| SCs | 192.168.10.106:16544 | 8.8.8.8:53 | 17 (u... | | 00:00:03 | | 0 bps/0 bps |
| SCs | 192.168.10.106:17960 | 8.8.8.8:53 | 17 (u... | | 00:00:03 | | 0 bps/0 bps |
| SCs | 192.168.10.106:18099 | 8.8.8.8:53 | 17 (u... | | 00:00:03 | | 0 bps/0 bps |
| SCs | 192.168.10.106:62933 | 8.8.8.8:53 | 17 (u... | | 00:00:03 | | 0 bps/0 bps |
| SACs | 192.168.10.107:5060 | 192.168.10.190:2:5060 | 17 (u... | | 00:01:40 | | 0 bps/0 bps |
| SACs | 192.168.10.108:5060 | 192.168.10.190:2:5060 | 17 (u... | | 00:02:58 | | 4.4 kbps/3.6 kbps |
| SACs | 192.168.10.111:5060 | 209.155.5060 | 17 (u... | | 00:02:41 | | 0 bps/0 bps |
| SACs | 192.168.10.114:4569 | 209.155.4569 | 17 (u... | | 00:02:52 | | 0 bps/0 bps |
| SACs | 192.168.10.114:5060 | 192.168.10.190:2:5060 | 17 (u... | | 00:02:53 | | 0 bps/0 bps |
| Cs | 192.168.10.114:5060 | 209.3.5060 | 17 (u... | | 00:00:02 | | 0 bps/0 bps |
| SACs | 192.168.10.114:33227 | 209.156.1197 | 17 (u... | | 00:02:51 | | 0 bps/0 bps |
| SACs | 192.168.10.125:5060 | 209.155.5060 | 17 (u... | | 00:02:41 | | 0 bps/0 bps |
| SACs | 192.168.10.149:50960 | 232.247.443 | 17 (u... | | 00:00:44 | | 0 bps/0 bps |
| SCs | 192.168.10.149:56685 | 77.88.8.8:53 | 17 (u... | | 00:00:02 | | 0 bps/0 bps |
| SACs | 192.168.10.149:56778 | 173.194.122.201:443 | 17 (u... | | 00:02:06 | | 0 bps/0 bps |
| SACs | 192.168.10.149:62271 | 108.177.14.189:443 | 17 (u... | | 00:02:56 | | 0 bps/0 bps |
| SACs | 192.168.10.149:62704 | 173.194.32.151:443 | 17 (u... | | 00:02:45 | | 0 bps/0 bps |
| SCs | 192.168.10.149:64035 | 84.245.131.253:2544 | 17 (u... | | 00:00:02 | | 0 bps/0 bps |

Asterisk на Mikrotik

Asterisk может быть установлен непосредственно на Mikrotik в Metarouter

Производительность – несколько вызовов в секунду.

Как увеличить:

- Использовать Direct IP (“Canreinvite”)
- Отключить транскодирование
- Не использовать MoH, Voice Announcements
- Упростить диалплан

METAROUTER

MikroTik



Asterisk™

А ты
хорошо
подумал?



Инструменты Mikrotik для траблшутинга сети



TORCH

code

Memory: 101.6 MiB CPU: 6% Hide Passwords

- Quick Set
- Interfaces
- Wireless
- Bridge
- PPP
- Switch
- Mesh
- IP
- IPv6
- MPLS
- Routing
- System
- Queues
- Files
- Log
- Radius
- Tools
- New Terminal
- LCD
- MetaROUTER
- Partition
- Make Supout.nf
- Manual
- Exit

Torch (Running)

- Basic

Interface: ether1-trunk

Entry Timeout: 00:00:03 s

- Collect

- Src. Address
- Dst. Address
- MAC Protocol
- Protocol
- DSCP
- Src. Address6
- Dst. Address6
- Port
- VLAN Id

- Filters

Src. Address: 0.0.0.0/0

Dst. Address: 0.0.0.0/0

Src. Address6: ::/0

Dst. Address6: ::/0

MAC Protocol: all

Protocol: any

Port: any

VLAN Id: any

DSCP: any

- Start
- Stop
- Close
- New Win

| Et... | Prot... | Src. | Dst. | VLAN Id | DSCP | Tx Rate | Rx Rate | Tx Pack |
|----------|---------|-----------------|-----------------|---------|------|------------|------------|---------|
| 800 (ip) | | 192.168.11.37 | 192.168.11.1 | | | 154.0 k... | 8.8 kbps | |
| 800 (ip) | | 192.168.11.38 | 79.137.209.167 | | | 310.4 k... | 28.2 kbps | |
| 800 (ip) | | 79.137.209.167 | 37.204.156.82 | | | 27.2 kbps | 311.8 k... | |
| 800 (ip) | | 192.168.11.37 | 192.168.192.1 | | | 542.5 k... | 15.1 kbps | |
| 800 (ip) | | 217.174.103.170 | 37.204.156.82 | | | 18.3 kbps | 553.4 k... | |
| 800 (ip) | | 192.168.11.38 | 93.158.134.3 | | | 592 bps | 624 bps | |
| 800 (ip) | | 93.158.134.3 | 37.204.156.82 | | | 592 bps | 624 bps | |
| 800 (ip) | | 192.168.11.37 | 94.100.180.59 | | | 0 bps | 0 bps | |
| 800 (ip) | | 94.100.180.59 | 192.168.11.37 | | | 0 bps | 0 bps | |
| 800 (ip) | | 144.76.57.164 | 37.204.156.82 | | | 440 bps | 560 bps | |
| 800 (ip) | | 192.168.11.38 | 144.76.57.164 | | | 528 bps | 512 bps | |
| 800 (ip) | | 192.168.11.37 | 255.255.255.255 | | | 0 bps | 0 bps | |
| 800 (ip) | | 192.168.11.75 | 79.137.209.155 | | | 0 bps | 0 bps | |
| 800 (ip) | | 79.137.209.155 | 37.204.156.82 | | | 0 bps | 0 bps | |
| 800 (ip) | | 192.168.11.38 | 111.221.77.164 | | | 0 bps | 0 bps | |

RouterOS WinBox



Отладка

The screenshot displays the MikroTik WinBox interface. On the left is a navigation sidebar with categories like Quick Set, CAPsMAN, Interfaces, Wireless, Bridge, PPP, Switch, Mesh, IP, Routing, System, Queues, Files, Log, Radius, Tools, New Terminal, LCD, MetaROUTER, Partition, Make Supout.rif, Manual, and Exit. The main window shows the Firewall configuration page with tabs for Filter Rules, NAT, Mangle, Service Ports, Connections, Address Lists, and Layer7 Protocols. A Terminal window is open, showing the prompt [voxlinc@Office-314-RouterSwitch] > repeated four times. A Packet Sniffer Settings dialog box is open, with the 'Filter' tab selected. The 'Memory Limit' is set to 1000 kb, 'Only Headers' is unchecked, 'File Name' is '123.pcap', and 'File Limit' is 10000 kb. The 'Apply' and 'Start' buttons are highlighted with red boxes. A File List dialog box is also open, showing a list of files. The file '123.pcap' is highlighted with a red box. The File List dialog shows 81 items, with 32.9 MiB of 128.0 MiB used (74% free).

RouterOS WinBox

Firewall

Filter Rules NAT Mangle Service Ports Connections Address Lists Layer7 Protocols

Terminal

```
[voxlinc@Office-314-RouterSwitch] >  
[voxlinc@Office-314-RouterSwitch] >  
[voxlinc@Office-314-RouterSwitch] >  
[voxlinc@Office-314-RouterSwitch] >
```

Packet Sniffer Settings

General Streaming Filter

Memory Limit: 1000 kb

Only Headers

File Name: 123.pcap

File Limit: 10000 kb

OK
Cancel
Apply
Start
Stop
Packets
Connections
Hosts
Protocols

File List

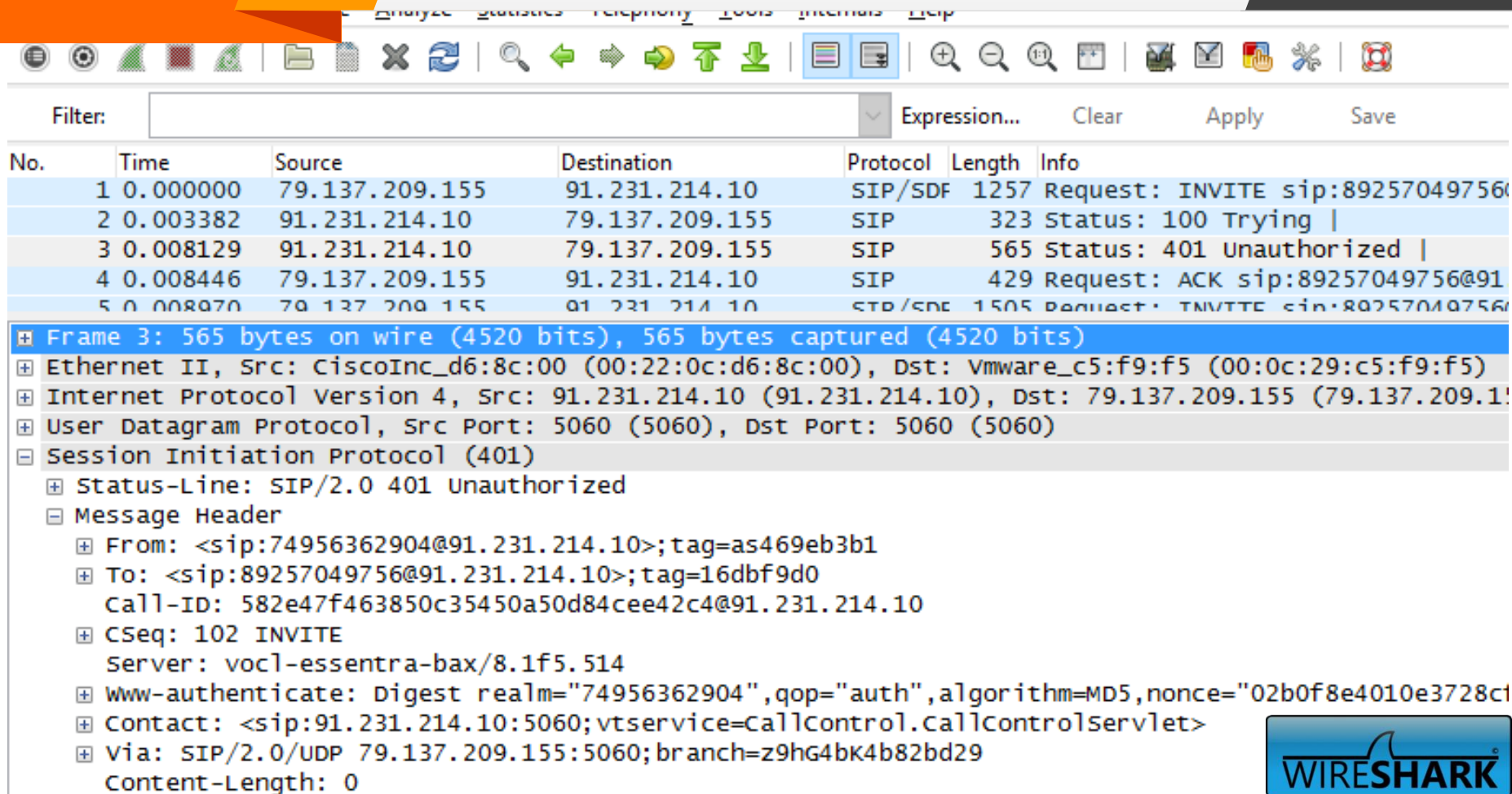
| File Name | Type |
|--------------------------------------|------------|
| 123.pcap | .pcap file |
| Office-314-RouterSwitch-20140524-... | backup |
| Office-314-RouterSwitch-20140602-... | backup |
| Office-314-RouterSwitch-20140602-... | backup |
| Office-314-RouterSwitch-20140714-... | backup |
| ar9330-3.10.fwf | .fwf file |
| audiocodes.pcap | .pcap file |
| auto-before-reset.backup | backup |
| autosupout.old.rif | .rif file |
| autosupout.rif | .rif file |
| bc.rsc | script |
| bpdu.pcap | .pcap file |
| console-dump.txt | .txt file |
| dark-login-fom | directory |

81 items 32.9 MiB of 128.0 MiB used 74% free

6 items (1 selected)

voxlinc

PACKET SNIFFER + WIRESHARK



Filter: Expression... Clear Apply Save

| No. | Time | Source | Destination | Protocol | Length | Info |
|-----|----------|----------------|----------------|----------|--------|---|
| 1 | 0.000000 | 79.137.209.155 | 91.231.214.10 | SIP/SDF | 1257 | Request: INVITE sip:89257049756@91.231.214.10 |
| 2 | 0.003382 | 91.231.214.10 | 79.137.209.155 | SIP | 323 | Status: 100 Trying |
| 3 | 0.008129 | 91.231.214.10 | 79.137.209.155 | SIP | 565 | Status: 401 Unauthorized |
| 4 | 0.008446 | 79.137.209.155 | 91.231.214.10 | SIP | 429 | Request: ACK sip:89257049756@91.231.214.10 |
| 5 | 0.008970 | 79.137.209.155 | 91.231.214.10 | SIP/SDF | 1505 | Request: INVITE sip:89257049756@91.231.214.10 |

Frame 3: 565 bytes on wire (4520 bits), 565 bytes captured (4520 bits) on interface

- Ethernet II, Src: CiscoInc_d6:8c:00 (00:22:0c:d6:8c:00), Dst: vmware_c5:f9:f5 (00:0c:29:c5:f9:f5)
- Internet Protocol Version 4, Src: 91.231.214.10 (91.231.214.10), Dst: 79.137.209.155 (79.137.209.155)
- User Datagram Protocol, Src Port: 5060 (5060), Dst Port: 5060 (5060)
- Session Initiation Protocol (401)
 - Status-Line: SIP/2.0 401 Unauthorized
 - Message Header
 - From: <sip:74956362904@91.231.214.10>;tag=as469eb3b1
 - To: <sip:89257049756@91.231.214.10>;tag=16dbf9d0
Call-ID: 582e47f463850c35450a50d84cee42c4@91.231.214.10
 - CSeq: 102 INVITE
Server: vocl-essentra-bax/8.1f5.514
 - WWW-Authenticate: Digest realm="74956362904",qop="auth",algorithm=MD5,nonce="02b0f8e4010e3728c102b0f8e4010e3728c1"
 - Contact: <sip:91.231.214.10:5060;vt-service=CallControl.callControlServlet>
 - Via: SIP/2.0/UDP 79.137.209.155:5060;branch=z9hg4bk4b82bd29
Content-Length: 0

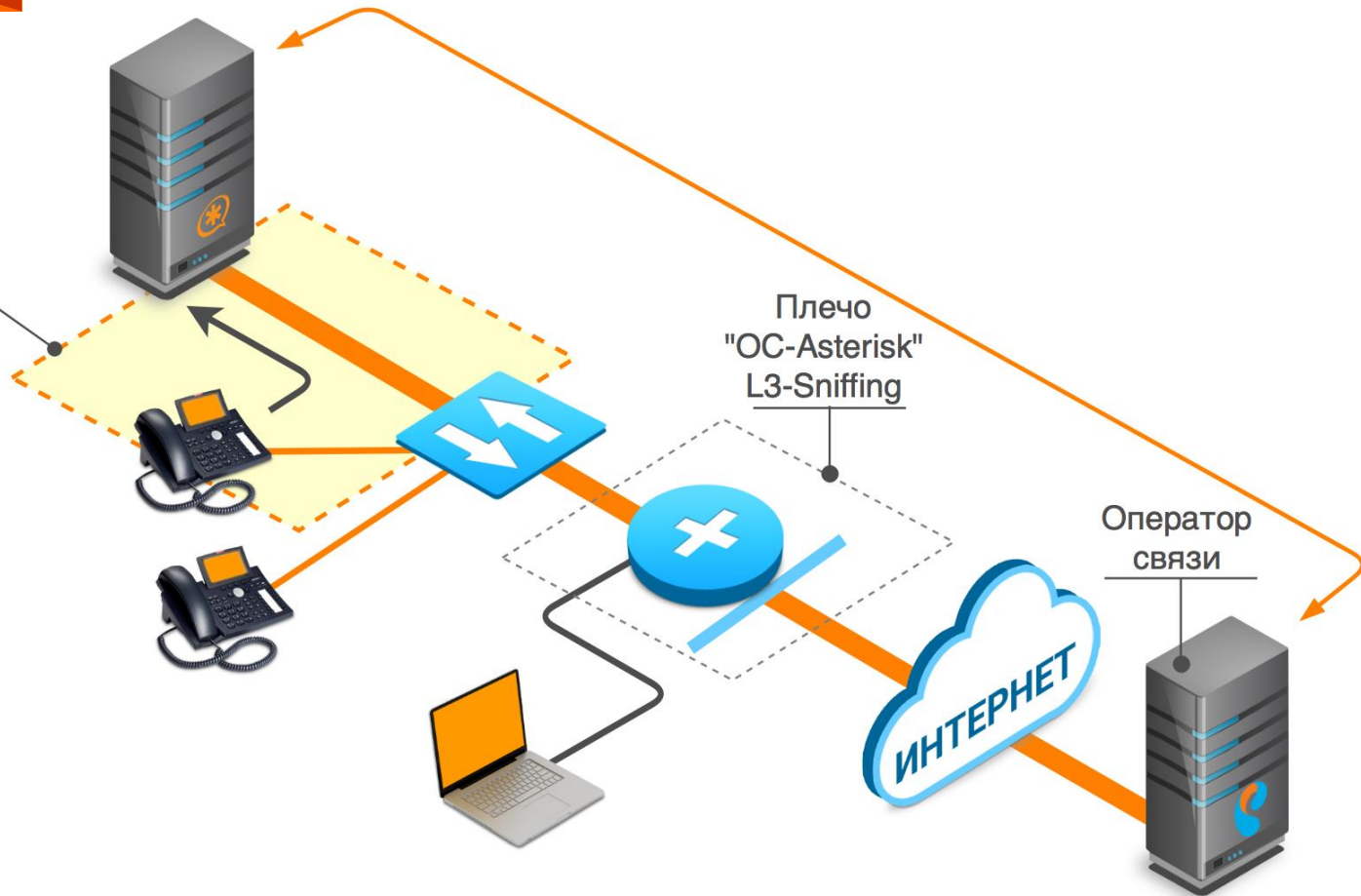


PACKET SNIFFER + WIRESHARK

Плечо
"Asterisk-Local Phone"
L2 - Sniffing - Mirroring

Плечо
"OC-Asterisk"
L3-Sniffing

Оператор
СВЯЗИ

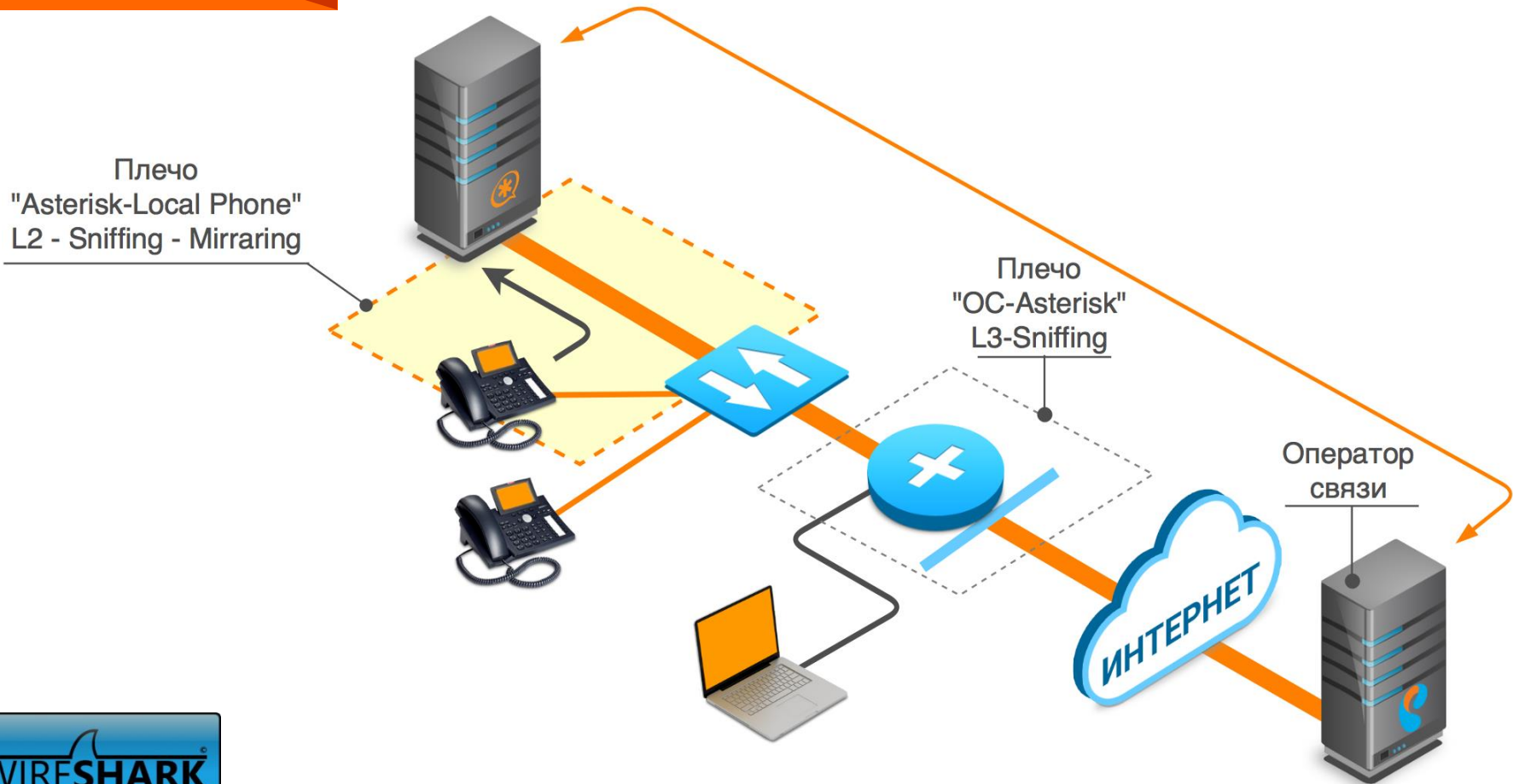


PACKET SNIFFER + WIRESHARK

| Time | Source | Destination | Protocol | Length | Info | Comment |
|-----------|---------------|---------------|----------|--------|---------------------|--|
| 0.000000 | 91.231.214.10 | 91.231.214.10 | SIP | 5060 | INVITE SDP (g711) | SIP From: <sip:74956362904@91.231.214.10 To:<sip:8925704 |
| 0.003382 | 91.231.214.10 | 91.231.214.10 | SIP | 5060 | 100 Trying | SIP Status |
| 0.008129 | 91.231.214.10 | 91.231.214.10 | SIP | 5060 | 401 Unauthorized | SIP Status |
| 0.008446 | 91.231.214.10 | 91.231.214.10 | SIP | 5060 | ACK | SIP Request |
| 0.008970 | 91.231.214.10 | 91.231.214.10 | SIP | 5060 | INVITE SDP (g711) | SIP From: <sip:74956362904@91.231.214.10 To:<sip:8925704 |
| 0.012393 | 91.231.214.10 | 91.231.214.10 | SIP | 5060 | 100 Trying | SIP Status |
| 1.360315 | 91.231.214.10 | 91.231.214.10 | SIP | 5060 | 183 Progress SDP... | SIP Status |
| 1.872298 | 91.231.214.10 | 91.231.214.10 | RTP | 37550 | RTP (g711A) | RTP Num packets:4334 Duration:86.658s SSRC:0x30705E55 |
| 4.716167 | 91.231.214.10 | 91.231.214.10 | SIP | 5060 | 180 Ringing SDP ... | SIP Status |
| 10.622056 | 91.231.214.10 | 91.231.214.10 | SIP | 5060 | 200 OK SDP (g71... | SIP Status |
| 10.622918 | 91.231.214.10 | 91.231.214.10 | SIP | 5060 | ACK | SIP Request |
| 10.791342 | 91.231.214.10 | 91.231.214.10 | RTP | 37550 | RTP (g711A) | RTP Num packets:3888 Duration:77.739s SSRC:0x1CDC3287 |



REALTIME WIRESHARK



REALTIME WIRESHARK

Capture

| No. | Capture | Interface | Link-layer header Prom. | Mode | Snaplen [B] | Buffer [MiB] | Capture Filter |
|-----|--------------------------|---|-------------------------|---------|-------------|--------------|----------------|
| | <input type="checkbox"/> | 192.168.15.45 Ethernet 2 fe80:d1d4:279febfb:37c2 10.10.51.1 | Ethernet | enabled | 262144 | 2 | |

Capture on all interfaces
 Use promiscuous mode on all interfaces

Capture Filter:

Capture Files

File:

Use multiple files
 Next file every
 Next file every
 Ring buffer with

Stop Capture Automatically After...

| | | | | | |
|--------------------------|--------------------------------|-----------|--------------------------|--------------------------------|-------------|
| <input type="checkbox"/> | <input type="text" value="1"/> | packet(s) | <input type="checkbox"/> | <input type="text" value="1"/> | megabyte(s) |
| <input type="checkbox"/> | <input type="text" value="1"/> | file(s) | <input type="checkbox"/> | <input type="text" value="1"/> | minute(s) |

Interface Management

Pipes Local Interfaces Remote Interfaces

Remote Interfaces

Host

Wireshark: Remote Interface

Host:

Port:

Authentication

Null authentication
 Password authentication

Username:

Password:

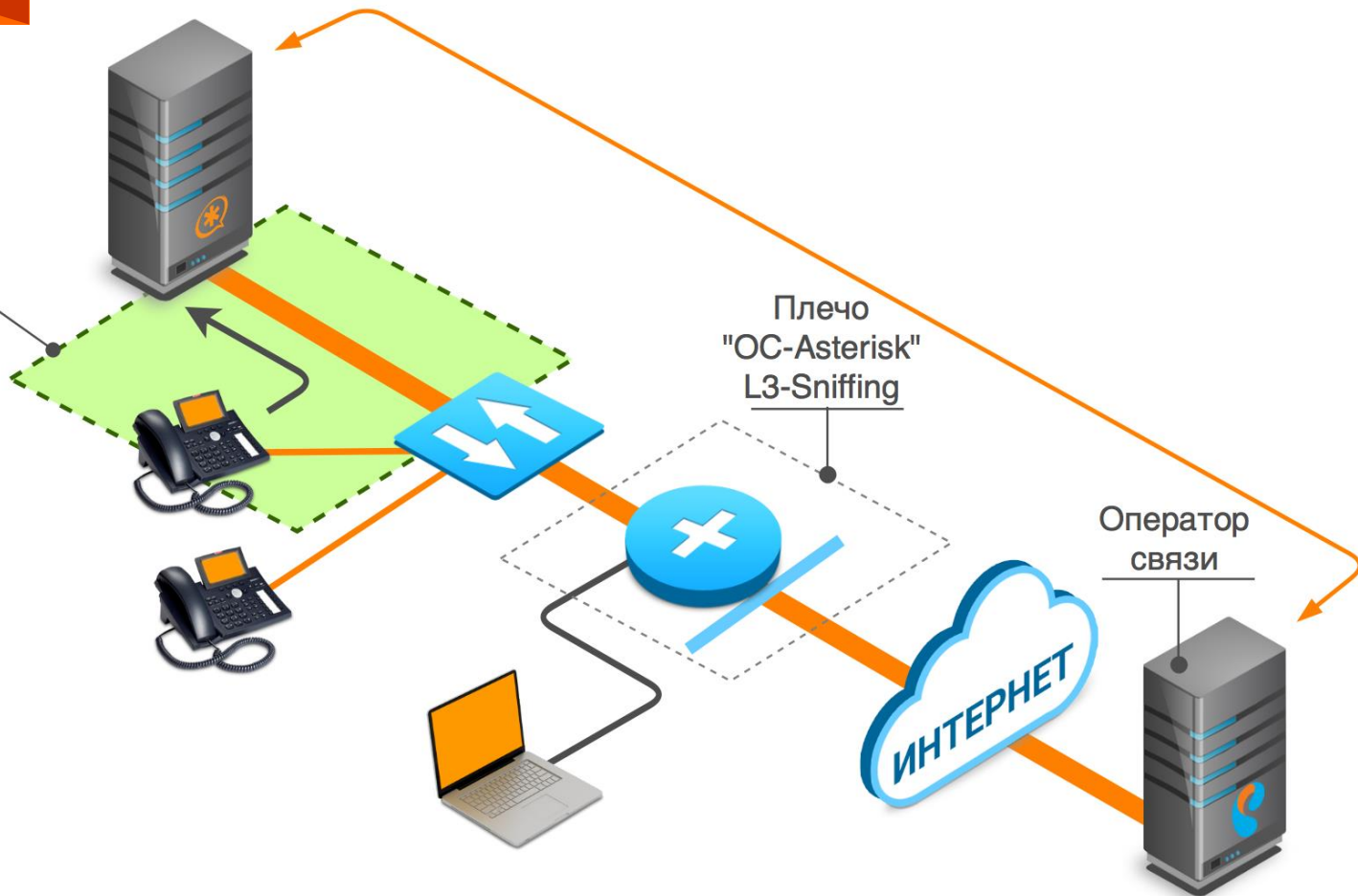
Buttons: Add, Delete, OK, Cancel, Apply, Close

Buttons: Manage Interfaces, Compile selected BPFs, Start, Close



ЗЕРКАЛИРОВАНИЕ SWITCH-ПОРТА

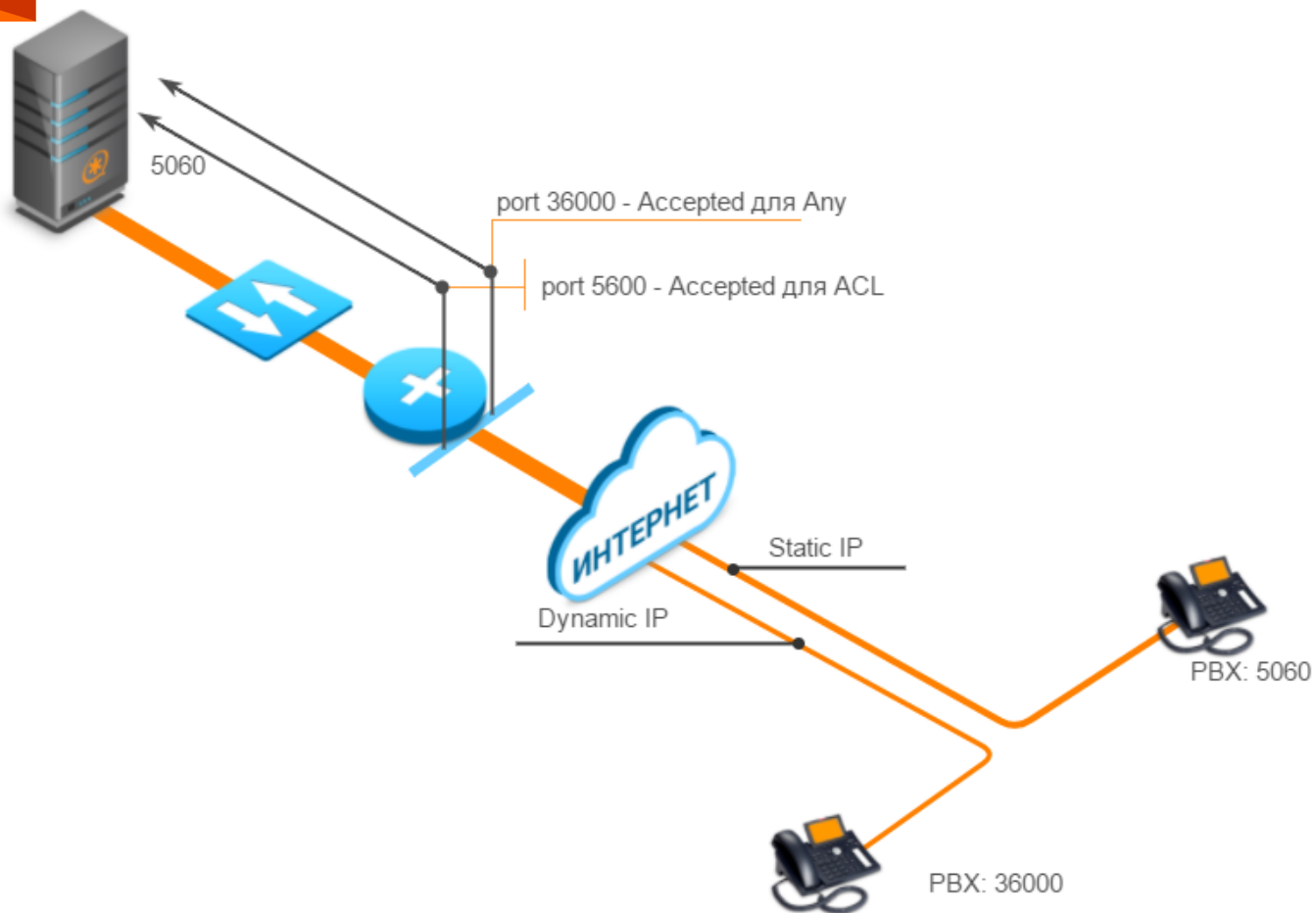
Плечо
"Asterisk-Local Phone"
L2 - Sniffing - Mirroring



Инструменты Mikrotik для обеспечения Безопасности Asterisk



ПЕРЕНОС SIP-ПОРТА



ФИЛЬТРАЦИЯ НЕ-РФ СЕТЕЙ



ФИЛЬТРАЦИЯ СКАНИРОВАНИЯ SIP

New Firewall Rule

General Advanced Extra Action Statistics

Connection Limit
Limit: 100
Netmask: 32

Limit
Rate: 1 / sec
Burst: 5

Dst. Limit
Rate: 1 / sec
Burst: 5
Limit By: dst. address
Expire: 100.00 s

Nth
Every: 2
Packet: 0

Time
Time: 00:00:00 - 1d 00:00:00
 sun mon tue wed thu fri sat

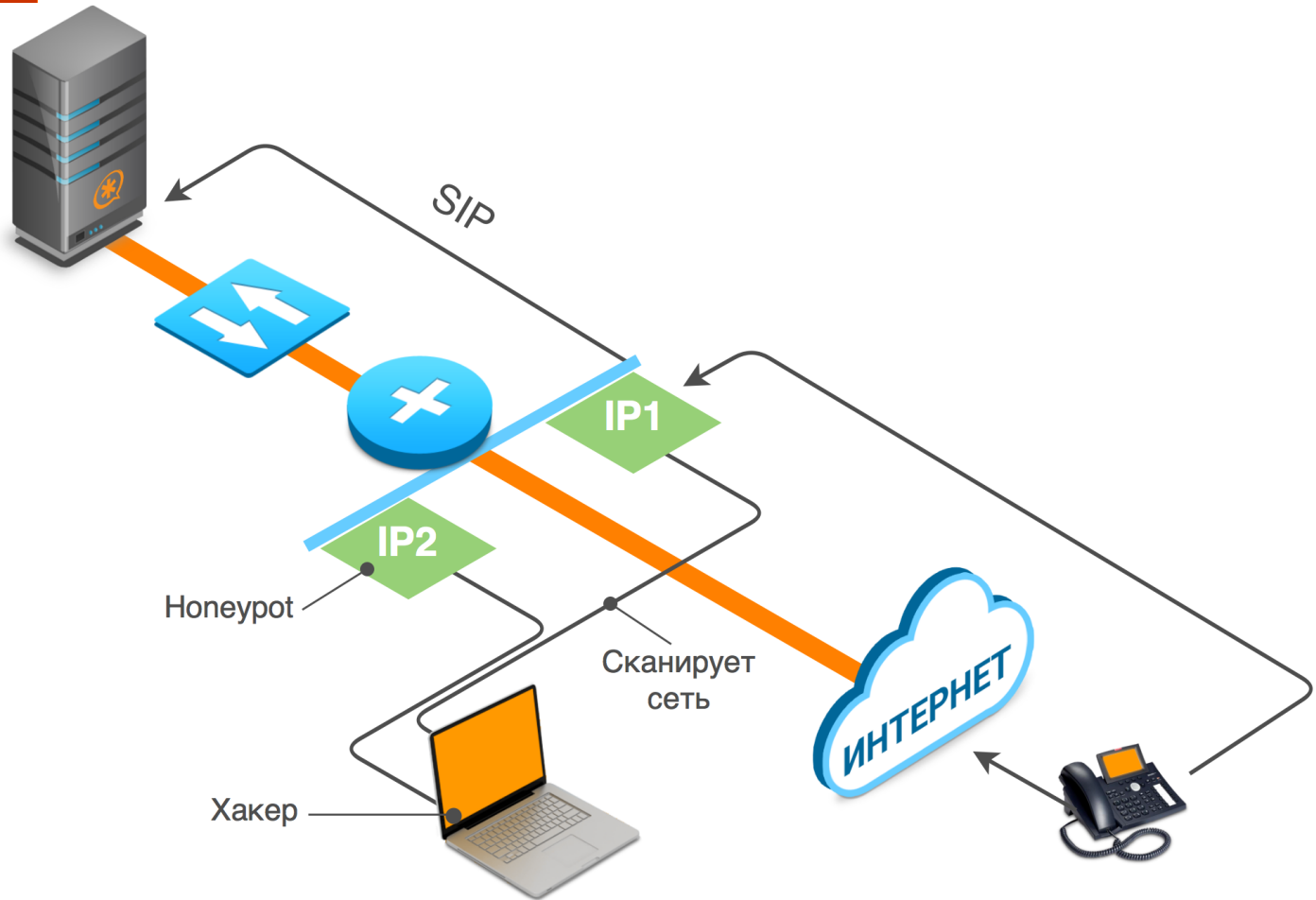
Src. Address Type
Address Type:
 Invert

Dst. Address Type
Address Type: unicast
 Invert

PSD
Weight Threshold: 21
Delay Threshold: 00:00:03
Low Port Weight: 3
High Port Weight: 1

OK
Cancel
Apply
Disable
Comment
Copy
Remove
Reset Counters
Reset All Counters

SIP-HoneyPot



НОЧНОЕ ЗАКРЫТИЕ ПОРТОВ

Hide Passwords

Quick Set
CAPsMAN
Interfaces
Wireless
Bridge
PPP
Switch
Mesh
IP
Routing
System
Queues
Files
Log
Radius
Tools
New Terminal
LCD
MetaROUTER
Partition
Make Supout.rf

Firewall

Filter Rules NAT Mangle

| # | Action | Chain |
|------------------------------|--------------|--------|
| ::: Prevent NAT to private | | |
| 0 | return | srcnat |
| 1 | X + dst... | dstnat |
| 2 | X + dst... | dstnat |
| ::: place hotspot rules here | | |
| 3 | X pas... | unused |
| 4 | + * dst... | dstnat |
| 5 | + * dst... | dstnat |
| 6 | + * dst... | dstnat |
| 7 | = mas... | srcnat |
| 8 | + * dst... | dstnat |
| 9 | + * dst... | dstnat |
| ::: SSH from ESXlx to ESX | | |
| 10 | + * dst... | dstnat |
| 11 | + * dst... | dstnat |
| 12 | + * dst... | dstnat |
| 13 | + * dst... | dstnat |
| 14 | + * dst... | dstnat |
| ::: ESXi 329 | | |
| 15 | X + dst... | dstnat |
| 16 | + * dst... | dstnat |
| 17 | + * dst... | dstnat |
| 18 | + * dst... | dstnat |
| 19 | X + dst... | dstnat |
| 20 | + * dst... | dstnat |

NAT Rule <5090>

General Advanced Extra Action Statistics

Connection Limit
Limit
Dst. Limit
Nth

Time
Time: 00:00:00 - 1d 00:00:00

sun mon tue wed thu fri sat

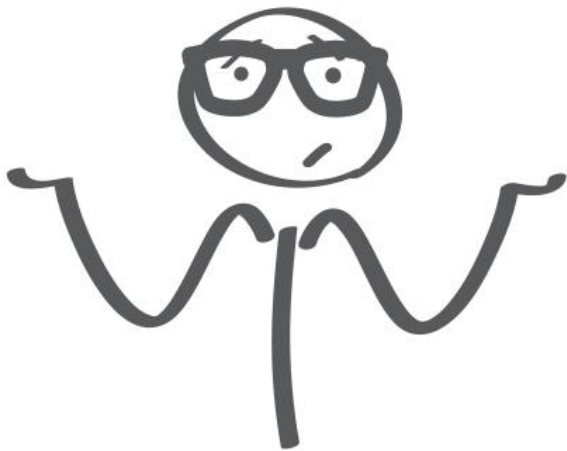
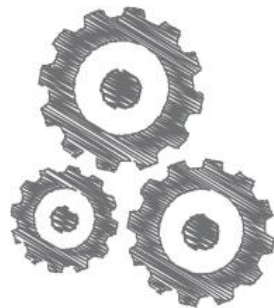
Src. Address Type
Dst. Address Type
PSD
Hotspot
IP Fragment

OK
Cancel
Apply
Disable
Comment
Copy
Remove
Reset Counters
Reset All Counters

В последних версиях RouterOS появилась возможность добавлять в Firewall FQDN-адреса вместо IP-адресов

Это позволяет нам прописывать в ACL клиентов, работающих с динамическими адресами

В чем главная проблема Mikrotik



В чем главная проблема Mikrotik

А теперь попробуйте объяснить своему клиенту, что все что перечислено выше – может стоить всего от 20 долларов и тут нет никакого подвоха!



1390 руб.



3800 руб.

Спасибо за внимание!



voxlink

Внедрение IP-телефонии
на IP-АТС Asterisk

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