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MetaROUTER Overview & Configuration

Brian Vargyas
Baltic Networks
www.balticnetworks.com

Overview of this presentation

- MetaROUTER Overview
- MetaROUTER Limitations
- Different Interface types
- Real world application use
- How to make your own with OpenWRT
- How to access the RouterBOARD console port within MetaROUTER
- Demonstration of a running MetaROUTER

MetaROUTER Overview

- Scalable RouterOS within RouterOS on Atheros/PPC, x86 Platforms.
- Virtual environment allows to user to partition system into different administrative domains.
- Ability to run pre-compiled Atheros/PPC OpenWRT images
- Available since RouterOS 3.21 (4.0beta3 for PPC)

MetaROUTER Requirements

- RouterOS 3.28 recommended
- Any RB400 / 1000 & x86 Platform
- Each RouterOS instance requires at least 16MB Ram, 32MB Ram recommended
- NAND memory requirements minimal (For RouterOS only)

MetaROUTER Limitations & Faults

- Only 8 instances per RouterBOARD
- No CF or microSD devices can be used for running images
- No ability to export running virtual image back into a file (Feature Request ☺)
- OpenWRT on MetaROUTER won't properly shutdown when RouterOS reboots.
- Limited by available Ram (256MB 450G)
- No ability to monitor running states with Dude Server (Feature Request ☺)
- Host Router on occasion reboots with watchdog timeout error (V3.28)

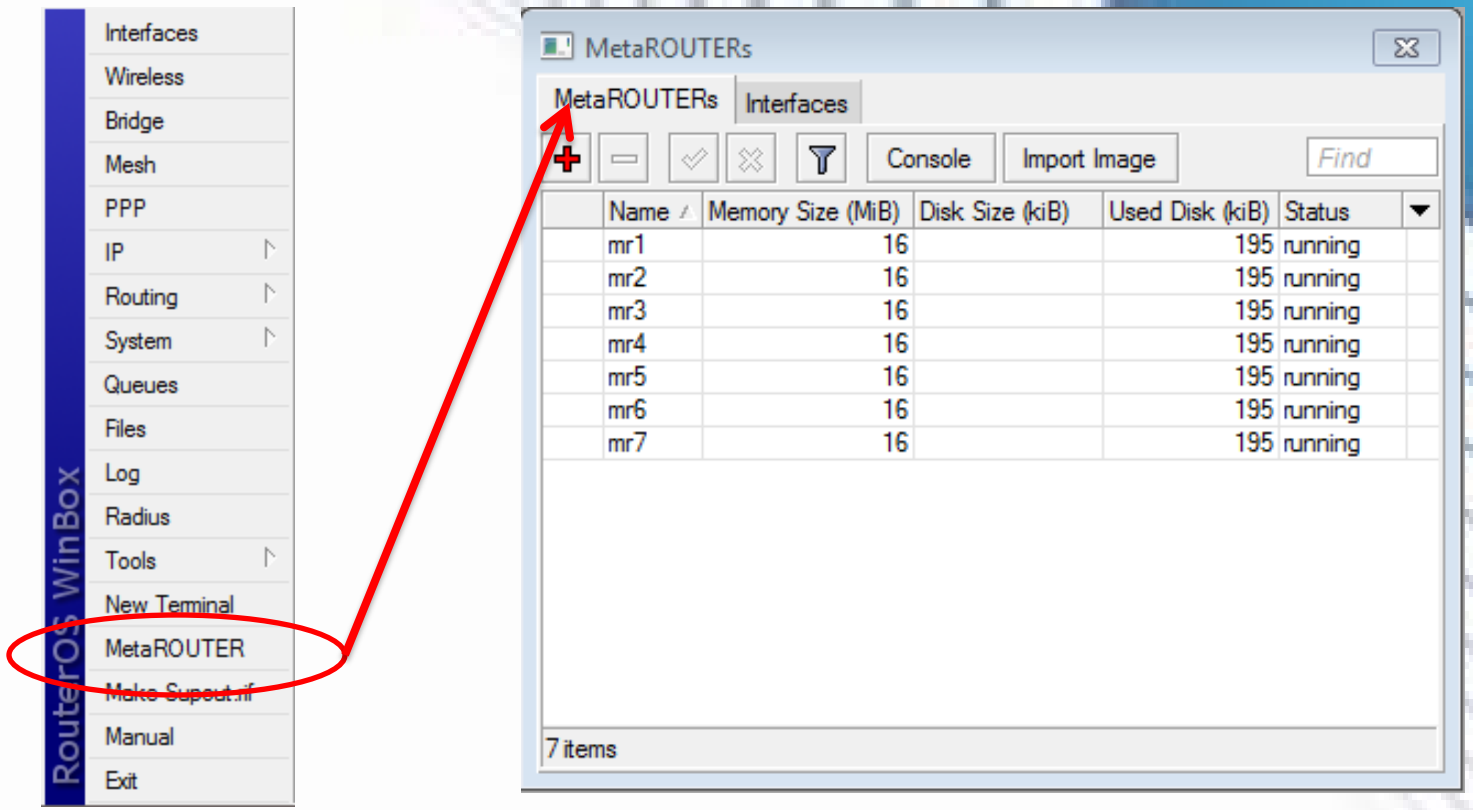
MetaROUTER access to the world

- Console access through Winbox or CLI interface
- Two different types of virtual interfaces
- Dynamic interfaces used to connect to a bridge group you create
- Static interfaces are used to directly connect MetaROUTER instance to physical port on your host.

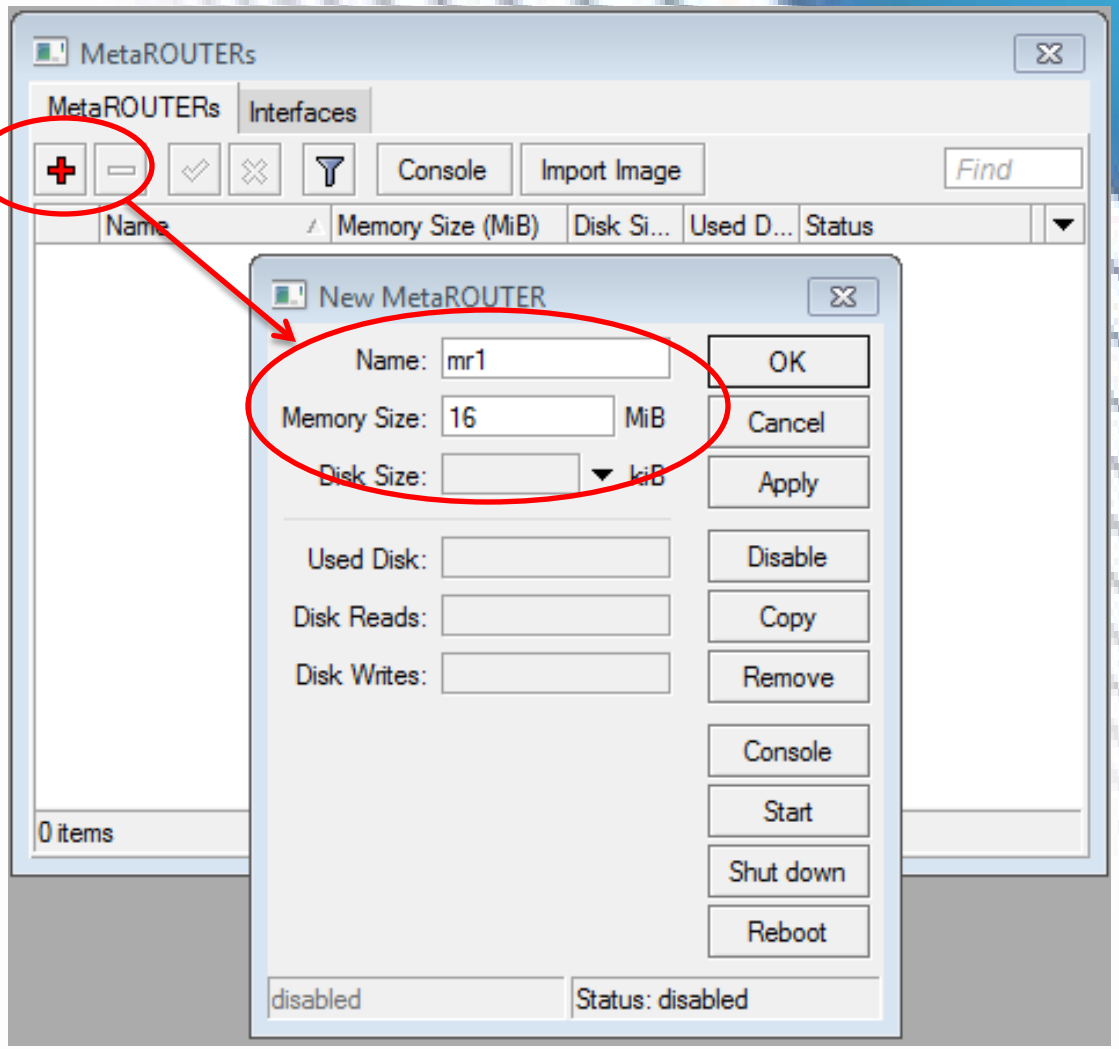
MetaROUTER Performance

- Performance is really good and virtualized RouterOS and OpenWRT perform very well
- Latency increased by a few milliseconds
- Expect to take a ~30% hit in packet performance through the MetaROUTER in real world applications
- Traffic through static interface slightly better then dynamic interface

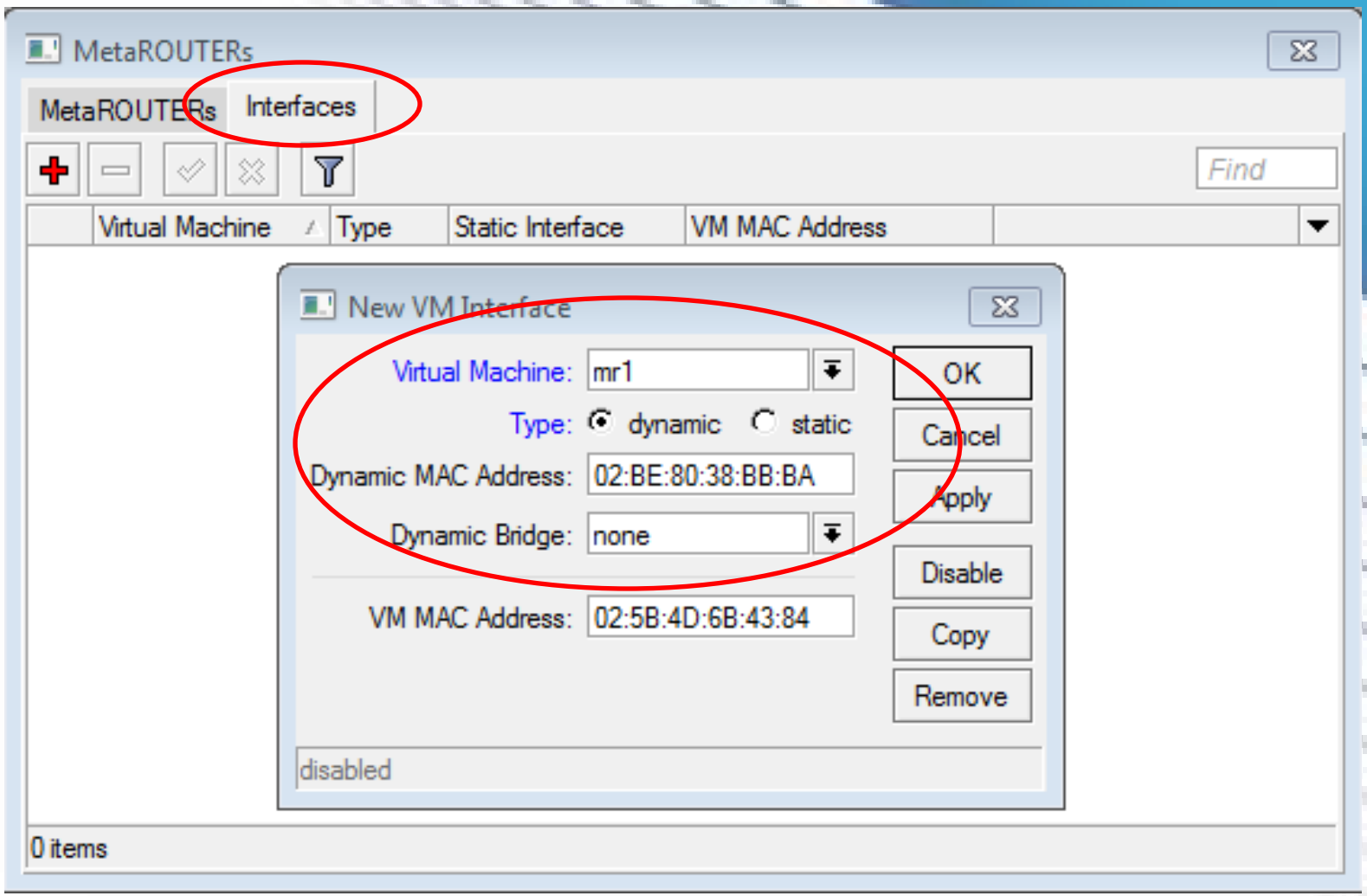
The MetaROUTER Winbox Interface



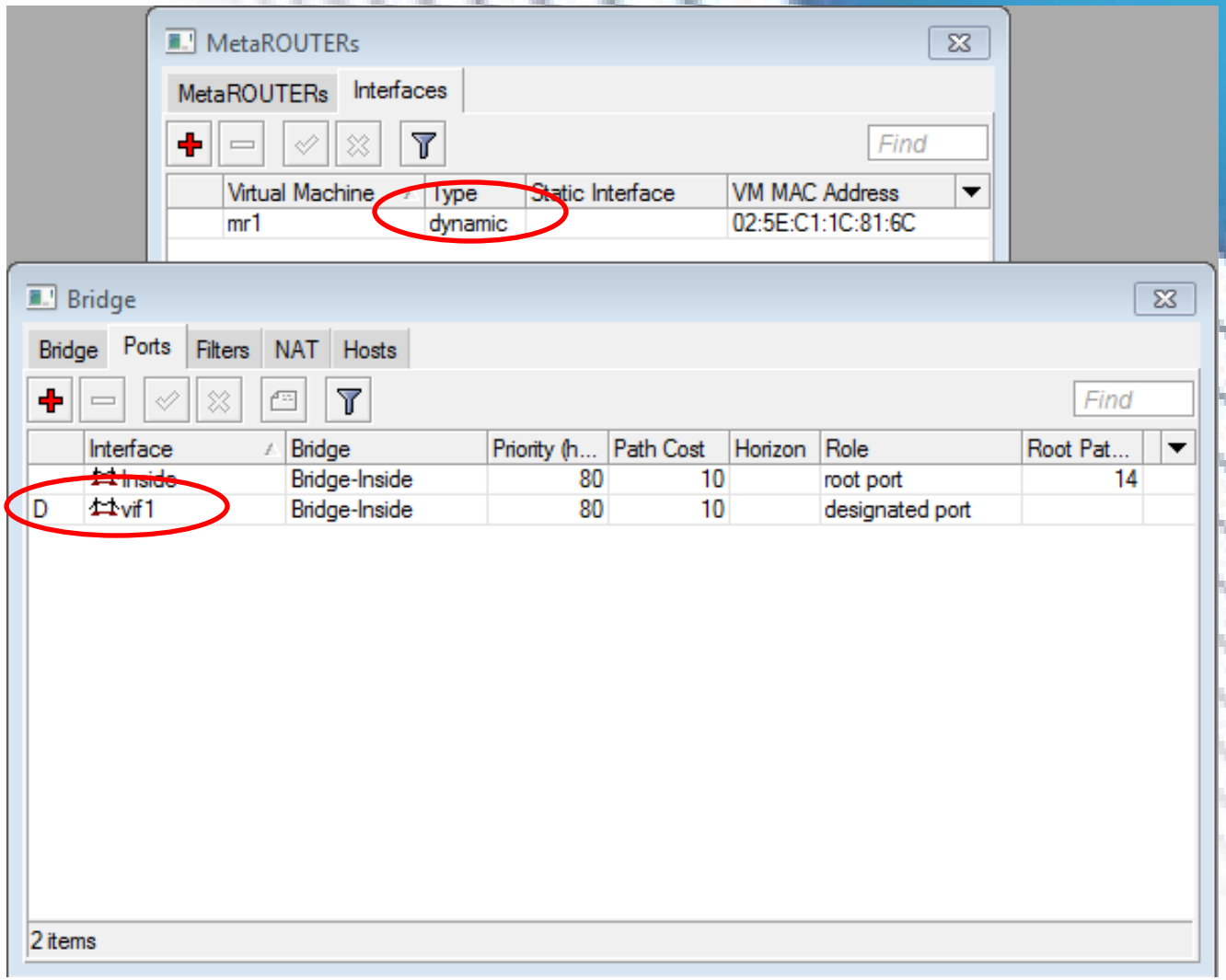
Creating a MetaROUTER



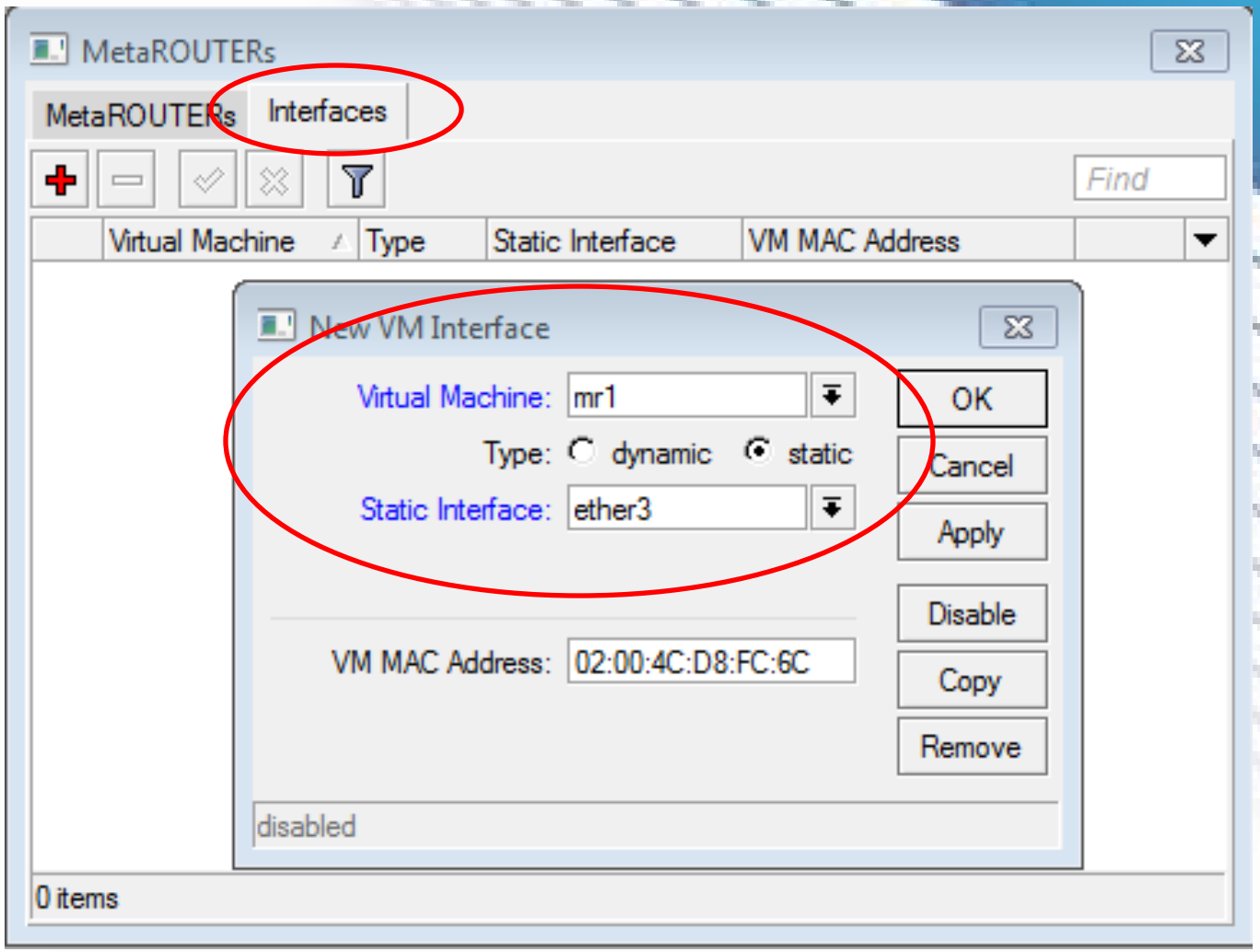
Dynamic Interface Creation



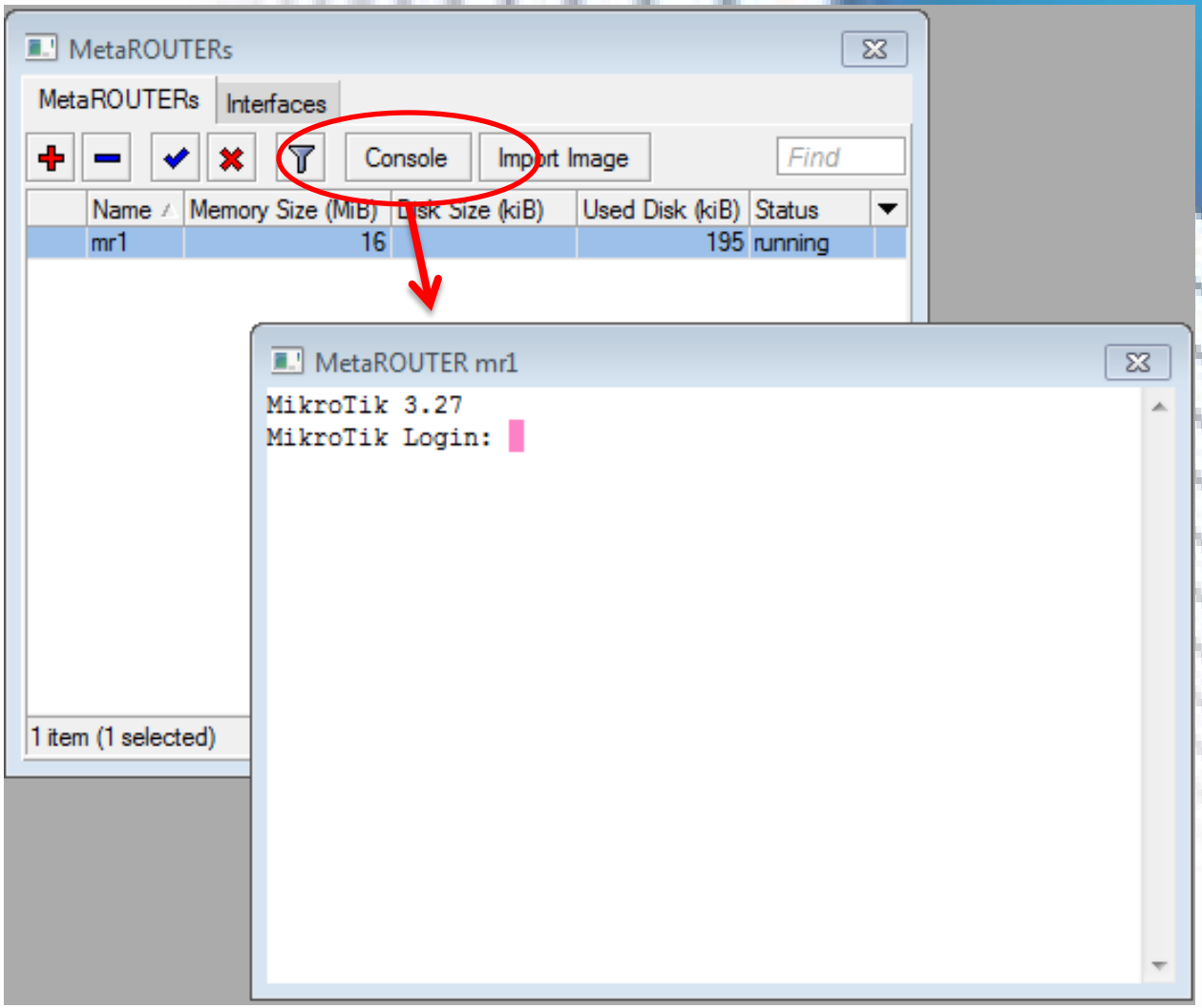
Dynamic VIF Interface



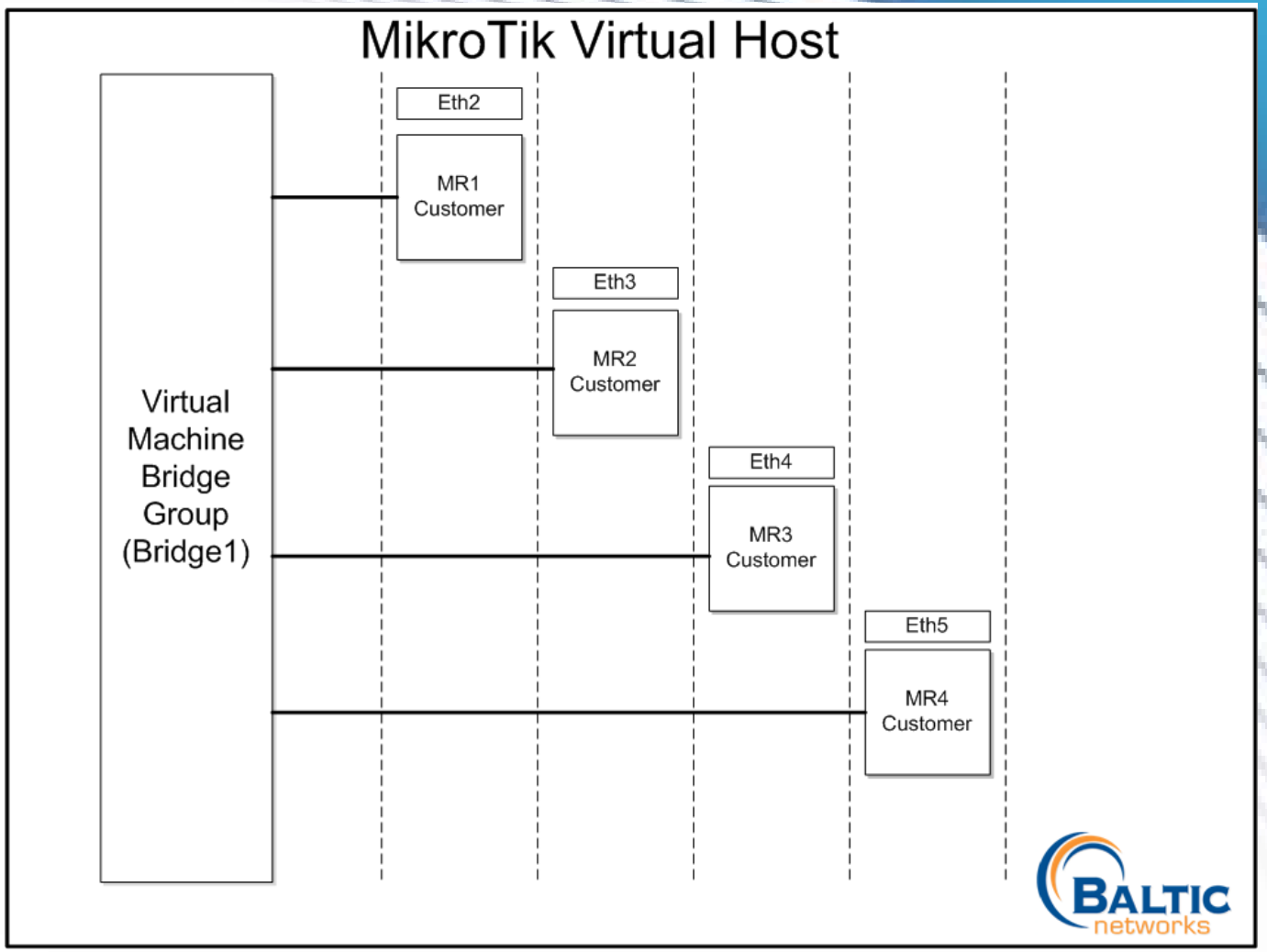
Static Interface Creation



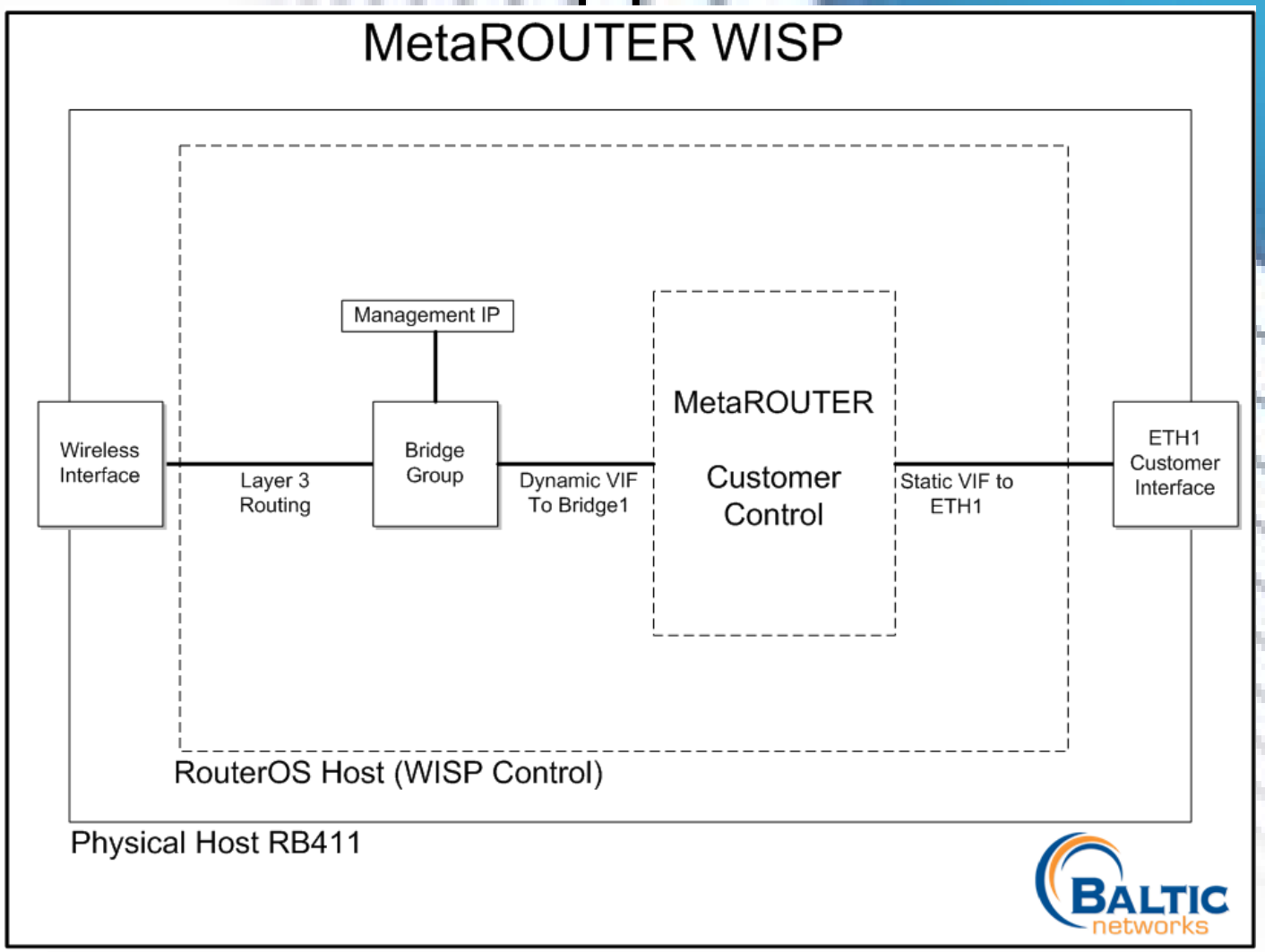
Console Access



Multi-Tenant Applications



WISP Applications



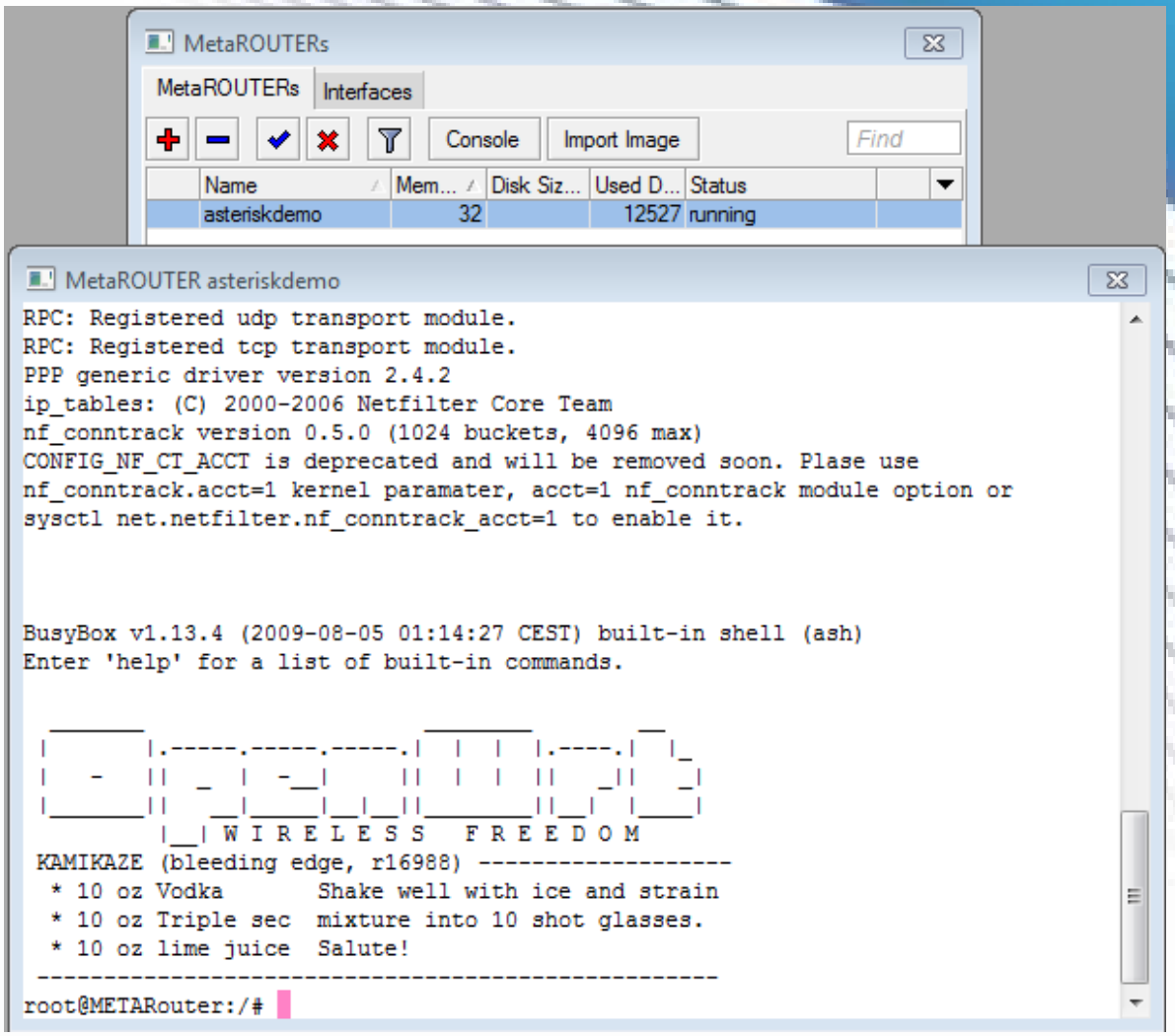
Make your own MetaROUTER

- Import Image feature allows you to import a special built OpenWRT kernel running busybox shell.
- Basic buildroot image only 2-3MB in size
- Lots of packages available, including Asterisk, SQUID, Apache, PHP, etc.
- Opens up a whole world for building embedded applications on top of RouterOS

Steps to run OpenWRT

- Copy .tar or .gz OpenWRT image into files
- Import file using “Import Image” in MetaROUTER interface
- Wait for import to complete and go into running state.
- Click on running image and then select “Console”
- Hit return a couple times…

What you should see



Getting OpenWRT on the VIF!

- Use the following commands in OpenWRT:

```
uci set network.lan.ipaddr=X.X.X.X
uci set network.lan.netmask=X.X.X.X
uci set network.lan.gateway=X.X.X.X
uci set network.lan.dns=X.X.X.X
uci set system.@system[0].hostname=NAME
uci commit
/etc/init.d/dnsmasq stop
/etc/init.d/dnsmasq disable
reboot
```

OpenWRT Serial Port Access

- Create a loopback bridge group
- Add dynamic interface in MetaROUTER to your OpenWRT image
- Disable console on Host (/system console disable 0)
- Add (/port remote-access) device with IP address on your bridge LAN
- Have OpenWRT application create a TCP socket to your serial port IP address on Host

Online Documentation

- Lots of information on MikroTik Wiki http://wiki.mikrotik.com/wiki/Metarouter
- MikroTik Message Forum http://forum.mikrotik.com (Click on MetaRouter and Xen Forum link)
- OpenWRT (http://www.openwrt.org)
- Baltic Networks (www.balticnetworks.com)

Let's do it again, Live this time!

- Going to enable MetaROUTER on a RB450G (680Mhz Atheros, 256MB Ram, 512MB Flash)
- Using only 16MB of RAM for full RouterOS implementation
- Dynamic Interface for Inside Network Access
- Static Interface for Outside WAN Connection