Amnuay Pintong (MTCNA, MTCTCE, MTCUME) - Otik Nework Co., Ltd.

Please follow step by step.

First Step: Prepare RouterOS iso file and Folder.

1. Download RouterOS image from <u>www.mikrotik.com/download</u> (Choose x86 architecture).(see figure 1)

■ MikroTik Routers and Wire ×				≜ - □
→ C	.com/download			Q.52 👗
features, just m improvements a absolute latest b If you are alrea done by clickin menu in WebFi	ony version o download the ost important fixes. Choose of nd new features, or choose of puilds in test environments. ady running RouterOS, up ng on "Check For Updates" ig or WinBox.	Current to have the sai Release candidate for grading to the latest ' in QuickSet or Syste	me fixes including testing the version can be m > Packages	A contract the second sec
RouterOS	6.34.6 (Bugfix only) CRS, NetBox, NetMetal, PowerBox, QRI	6.36.2 (Current)	5.26 (Legacy) P. BaseBox, DynaDish, RB2011, SXT;	6.37rc24 (Release candidate) OmniTik, Groove, Metal, Sextant,
Main package	RB7xx	. 4.	.¥.	.¥.
Extra packages	.↓.	.↓.	.↓.	.↓.
SMIPS	hAP lite			
Main package	<u>.</u>	.↓	-	.↓
Extra packages	4	4	-	.↓.
X86	RB230, X86			
Main package	.↓.	.↓	.↓	.↓.
Extra packages	4		.↓	4
CD Image	.↓.	.↓	.↓.	4
The Dude server Main package	_↓	<u>↓</u> ↓	.↓	<u>↓</u> ↓
Extra packages	.↓.	4	.↓.	.↓
ARM	RB3011			

Figure 1 Download RouterOS iso file.

2. Create new folder on D: driver or other drive that you need and save RouterOS (iso) file in here. See figure 1.2

Amnuay Pintong (MTCNA, MTCTCE, MTCUME) - Otik Nework Co., Ltd.

IN I D IN - I		Picture Tools			MikroTik	6			×
File Home Sh	nare View	Manage							^ 🕐
Navigation pane - Panes	ane 💽 Ext ine 🔊 Me	ra large icons 📰 dium icons 👬 t 📑 Layou	Large icons Small icons Details t	Sort by •	☐ Group by ▼ ☐ Add columns ▼ ☐ Size all columns to fit Current view	 ☐ Item check boxes ✓ File name extensio ☐ Hidden items Show/h 	ns Hide selected items	Options	
€ ∋ - ↑ 🍑	This PC →	DATA (D:) → Mik	troTik			~ C	Search MikroTik		,p
Desktop Downloads Recent places	 Name ■ GN ● mi 	IS3-LAB-MIKROTI krotik-6.36.iso	^ K.png		Date 31/08/2016 9:53 13/08/2016 22:15	Type PNG image Disc Image File	Size 80 KB 25,440 KB	Tags	
輚 Homegroup									
🖳 This PC									
📙 Desktop									
Documents									
Music									
2 items	• •								:==

Figure 2 Create new folder and save iso to here.

3. Download GNS3 from <u>www.gns3.com</u> (you can follow download step from this site)



Figure 3 Download GNS3

You can check path location for GNS3 at "C:\Program files\" (see figure 3)

4. Follow this step to create virtual image and install RouterOS on Qemu (Emulator)

Amnuay Pintong (MTCNA, MTCTCE, MTCUME) - Otik Nework Co., Ltd.

How to create MikroTik image Router on GNS3

Open command prompt (windows + R and type cmd and enter.)



And type this command.



Create RouterOS image (Choose format type is qcow2 and size is 8Gb you can customize disk size that you want)



See the result after run command like this

Amnuay Pintong (MTCNA, MTCTCE, MTCUME) - Otik Nework Co., Ltd.



Start emulator for install RouterOS from ISO file.

	Administrator: Command Prompt	- 0 ×
C:\Program Files\GNS3\qemu-2.4.0>qemu-system-i386w.exe -m	n 256 "D:\mikrotik\ros.img" -cdrom "d:\mikrotik\mikrotik-6.36.iso" -	-boot d
6		

Start to install RouterOS

•	QEMU	_ □ ×
<u>M</u> achine ⊻iew		~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~
Welcome to	MikroTik Router Software	installation
Move around menu using 'p' Select all with 'a', minim cancel and reboot.	and 'n' or arrow keys, se um with 'm'. Press 'i' to	lect with 'spacebar'. install locally or 'q' to
[X] system [X] ppp [X] dhcp [X] advanced-tools [X] calea [X] dude [X] gps	[X] hotspot [X] ipv6 [X] kvm [X] lcd [X] mpls [X] multicast [X] ntp	[X] routing [X] security [X] ups [X] user-manager [X] wireless-cm2
system (depends on nothing Main package with basic se): rvices and drivers	

Press ' a ' for select all package (you can choose some items for faster and best performance) and press ' i ' to install



Press Y to confirm install RousterOS (it will delete all data on your disk. Don't care because it new installation) wait wait and wait....

If it show this screen it mean that installation is completed

Amnuay Pintong (MTCNA, MTCTCE, MTCUME) - Otik Nework Co., Ltd.

Q	QEMU	▶	-	×
<u>M</u> achine ⊻iew				
Formatting boot partition 100%				
installed system-6.36 installed wireless-cm2-6.36 installed user-manager-6.36 installed ups-6.36 installed security-6.36 installed routing-6.36 installed ntp-6.36 installed multicast-6.36 installed multicast-6.36 installed kvm-6.36 installed kvm-6.36 installed hotspot-6.36 installed dude-6.36 installed duce-6.36 installed duce-6.36 installed duce-6.36 installed duce-6.36 installed duce-6.36 installed duce-6.36 installed duce-6.36 installed duce-6.36 installed duce-6.36 installed duce-6.36				

you can go to the menu "machine > Quit"

@		C
<u>M</u> achine	⊻iew	
<u>P</u> ause	ion 100%	
<u>R</u> eset Power Quit	Down Ctrl+Alt+Q -6.36	
install install install install	ed ups-6.36 ed security-6.36 ed routing-6.36 ed ntp-6.36	

Finished to create RouterOS images. Ready to run on GNS3 Let's go next step.

Amnuay Pintong (MTCNA, MTCTCE, MTCUME) - Otik Nework Co., Ltd.

l I 🗋 🚯 🖛 I	Dis	c Image Tools		MikroTik	¢			×
File Home Share	View	Manage						^ (
Navigation pane - Panes	Extra large	icons Large icons ons Small icons E Details Layout	÷ ⇒ Sort by +	 ☐ Group by ▼ ▲ Add columns ▼ ★ Size all columns to fit Current view 	 ☐ Item check boxes ✓ File name extension ☐ Hidden items Show/h 	Hide selected items	Options	
🛞 🌛 🔻 🕆 🚺 > Thi	s PC → DATA (I	D:) → MikroTik			~ C	Search MikroTik		,p
☆ Favorites	Name	^		Date	Туре	Size	Tags	
Desktop	GNS3-LAB	-MIKROTIK.png		31/08/2016 9:53	PNG image	80 KB		
🚺 Downloads	ikrotik-6	.36.iso		13/08/2016 22:15	Disc Image File	25,440 KB		
🖳 Recent places	🙆 ros.img			31/08/2016 10:32	Disc Image File	168,000 KB		
ntegroup								
🖳 This PC								
📔 Desktop			3					
Documents								
Downloads Y	c							

Now when you open the mikrotik folder you will see some items like this.

5. Add RouterOS image on GNS3

Open GNS3 and put your project name and localtion that you want to save a project and click OK.

e	New project	?	×
Project			
Name:	MT_ON_GNS3		
Location:	D:\MikroTik\MT_ON_GNS3	Browse	
Open a proj	ject Recent projects OK	Cance	

On GNS3 go to Edit > Preferences...



Amnuay Pintong (MTCNA, MTCTCE, MTCUME) - Otik Nework Co., Ltd.

Choose QEMU > Qemu VMs > New > Name "example ROS" and Next..

6	Preferences ? ×	
General Server Packet capture VPCS • Dynamips IOS routers • IOS on UNIX IOU Devices • QEMU Qemu VMs • VirtualBox VirtualBox VMs • VMware	Preferences ? × Qemu VM templates Qemu VM templates QetHU VM name Please choose a descriptive name for your new QEMU virtual machine. Name: ROS This is a legacy ASA VM	2 ×
VMware VMs ▼ Docker Docker Containers	<pre>< Bock Next 3 4 c </pre>	ancel

Choose some items like this image and next..

e	New QEMU VM tem Nate	?	×
QEMU binar Please ch	y and memory eck the Qemu binary is correctly set and the virtual machine has enough memory to work.		
Qemu binary:	C:\Program Files\GNS3\qemu-2.4.0\qemu-system i386w.exe (v2.4.0)		•
RAM:	ພະລ MB		\$
	< <u>B</u> ack Next >	Canc	el

Choose the image (ros.img)

Amnuay Pintong (MTCNA, MTCTCE, MTCUME) - Otik Nework Co., Ltd.

e	New QEMU VM template	? ×
Disk image Please choos	se a base disk image for your virtual machine.	
O Existing image	e 💿 New Image	
Disk image (hda):	C: \Users\Administrator\GNS3\jmages\QEMU\ros.img	Create
	Ç.	
	< <u>B</u> ackEinish	Cancel

And click Finish. After that it will show like this.

e	Preferences	? ×
Ceneral Server Packet capture VPCS Dynamips IOS routers IOS on UNIX IOU Devices QEMU Qemu VMs VirtualBox VMs VMware VMware VMs	Preferences 	? ×
VirtualBox VirtualBox VMs VMware VMware VMs Docker Docker Docker Containers	Disk interface (rda): ide Vetwork Adapters: 1 Name format: Ethernet(0) Type: Type: e1000 Optimizations CPU throttling: disabled Process priority: normal V Additional options Options: Options: -nographic ACPI shutdown: False	
	Edit Delete	
	OK Cancel	Apply

You can click Edit button for customize some item such as add new network card like this.

I recommend to add 5 port for testing. (default)

Amnuay Pintong (MTCNA, MTCTCE, MTCUME) - Otik Nework Co., Ltd.

e	QEMU VM configuration							
ROS								
General settings	HDD CD/DVD Network Advanced settings							
Adapters:								
First port name:								
Name format:	Ethernet{0}							
Segment size:	•							
Base MAC:								
Type:	Intel Gigabit Ethernet (e1000)							
Use the legacy networking mode								
	ν2 [,]							
	OK Cancel							

And choose a Symbol for Firewall router (optional)

Amnuay Pintong (MTCNA, MTCTCE, MTCUME) - Otik Nework Co., Ltd.

		Preferences			7 ×		
General	Q 🔮	QEMU VM configuration	? ×	e	Symbol selection ? ×		
Packet capture VPCS	ROS				Use a custom symbol Symbols library		
Dynamips IOS routers	General settings	HDD CD/DVD Network Advanced settin	Symbols Show only built-in symbols				
IOS on UNIX	Template name:	ROS	Search:				
IOU Devices	Default name format:	{name}-{0}					
Qemu VMs	Symbol:	:/symbols/qemu_guest.svg	Browse	×	router.awp		
VirtualBox	Category:	End devices	•	AV	V+		
VirtualBox VMs	RAM:	u co MB	A				
VMware VMs	vCPUs:		A		router		
▼ Docker Docker Containers	Qemu binary:	C:\Program Files\GNS3\gemu-2.4.0\gemu-system	-1386w.exe (v2.4.0) 💌				
	Boot priority:	Boot priority:			router_firewall		
	Console type:	teinet					
				~	router_netflow		
				You car	add your own symbols in the symbols directory		
				100 00			
					OK Cancel		
	OK Cancel Delete						

After you already customized everything. You can close every windows and now ready to run routeros on GNS3. Excellent.....



6. Ready to run RouterOS

Choose ROS and VPCS (Computer)

Amnuay Pintong (MTCNA, MTCTCE, MTCUME) - Otik Nework Co., Ltd.



And click to test running

After you start VMs you can double click and configure it like this.



Now we ready to go with RouterOS...

Good luck.

Amnuay Pintong (MTCNA, MTCTCE, MTCUME) - Otik Nework Co., Ltd.