



Cisco 8000 Hardware Emulator Datasheet

Software Release

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Product Overview

The Cisco 8000 Hardware Emulator portfolio (here after referred to as 8000e) provides one for one equivalent simulation of the 8xxx Series routers. Unlike other Virtualized Network Operating System solutions, 8000e provides both accurate hardware chassis and forwarding engine emulation. This enables 8000e to run the same production IOS-XR images as hardware. Secondly, it can run third party Operating Systems such as SONIC which have been ported to the 8000 series routers.

Benefits

Key benefit for customers:

- Early access to virtual hardware for testing and integration
- Integration with network emulation environments
- Integration into CI/CD development pipelines
- Evaluation of next generation IOS-XR7

Emulated Platforms

Currently Supported Platforms:

Hardware Emulator	Port Configuration	OS support
1	400GE + 100GE	-XR 7.x NIC
1-32FH	400GE	-XR 7.x
2	400GE + 60x100GE	-XR 7.x
1-32H	100GE	-XR 7.x
2-64H	100GE	-XR 7.x

Note 1: Additional emulated platforms will be released coinciding with the introduction of new 8000 routing hardware.

8000 Emulator Architecture

The 8000e product line leverages type 2 hardware accelerated hypervisor technology and benefits from running on the host operating system. Being a hardware emulator, the 8000e is a distinct software product and is independent of the operating system it runs.

IOS-XR | SONIC

Enhanced-KVM Hypervisor | Device Models | Forwarding Engine

Operating System (Ubuntu/Redhat/CentOS)

Host hardware

While single board/CPU platforms can be represented with an instance of the hypervisor, modular chassis such as the 8808 require multiple instances. For this reason, the computational requirement for a populated modular chassis grows with the number route processors, Line cards, and Fabric cards simulated in the system.

Deploying the Emulator

The software package comes with complete toolset required to create and run topologies of emulated routers. Using our solution, user can launch flavors of the 8000 emulator, other virtual routers, traffic generators, and interconnect them. The topology is specified in a YAML notation. The toolset includes a python library to manage the simulation lifecycle.

Users can also deploy an instance of the emulated router within their own framework. To deploy as a component, the 8000 instance is wrapped in a docker container. It can also be wrapped in a single VM.

Deployment options are:

Deployment	Base System	OS	What is provided	Note
Over installation	cores	intu22	ix packages + install scripts	
ix	+ Mem	itOS/RH8		
docker env	cores	intu22	docker file to create environment	
	+ Mem	itOS/RH8		
S	metal	intu22	omation scripts to create AMI images	
	ince			
re	cores	intu22	ix packages + install scripts	quires nested VM
	+ Mem			
gle	cores	intu22	ix packages + install scripts	quires nested VM.

id	+ Mem			
l	cores	intu22	ix packages + install scripts	quires nested VM
	+ Mem			
dows*	cores	dows	ix packages + install scripts	quires nested VM
er-V	+ Mem	intu VM		
dows*	cores	dows10	ix packages + install scripts	quires nested VM
ware	+ Mem	intu VM		
ole*	cores	OS	ix packages + install scripts	
ion	+ Mem	intu VM		

Note 1: Resource requirements for the last three rows cover ability to run single instances in nested virtualization mode.

Note 2: Integration with CML2 and GNS3 are forthcoming.

Runtime Requirements

Emulator	Operating System	CPU	Memory	Min Memory	Disk	Comment
1	-XR7		i	i	i+	
2	-XR7		i	i	i/board	
4/8808	-XR7		i*	i*	i+	board in system
		LC)	32)	20)		
1	VIC		2		i+	

Limitations

While 8000 emulator attempts to match actual hardware router, there are limitations:

Feature	Emulator limitation
traffic shaping and rate limiting	functionality is limited and does not match hardware.

Throughput

Emulator throughput is in the thousands of packets a second and cannot be used to handle production traffic.

Counters

Some hardware counters are not supported in the emulator.