

IOS_XE Linux Guestshell Configuration

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This is a configuration guide to set guestshell to access IOS_XE Linux system.

1. Guest Shell Overview

1.1 . Guest Shell

The Guest Shell is a virtualized Linux-based environment, designed to run custom Linux applications, including Python for automated control and management of Cisco devices. Using the Guest Shell, you can also install, update, and operate third-party Linux applications. The guest shell is bundled with the system image and can be installed using the `guestshell enable` Cisco IOS command.

The Guest Shell environment is intended for tools, Linux utilities, and manageability rather than networking.

Guest Shell shares the kernel with the host (Cisco switches and routers) system. Users can access the Linux shell of GuestShell and update scripts and software packages in the container rootfs. However, users within the Guest Shell cannot modify the host file system and processes.

Guest Shell container is managed using **IOx**.

IOx is Cisco's Application Hosting Infrastructure for Cisco IOS XE devices. IOx enables hosting of applications and services developed by Cisco, partners, and third-party developers in network edge devices, seamlessly across diverse and disparate hardware platforms.

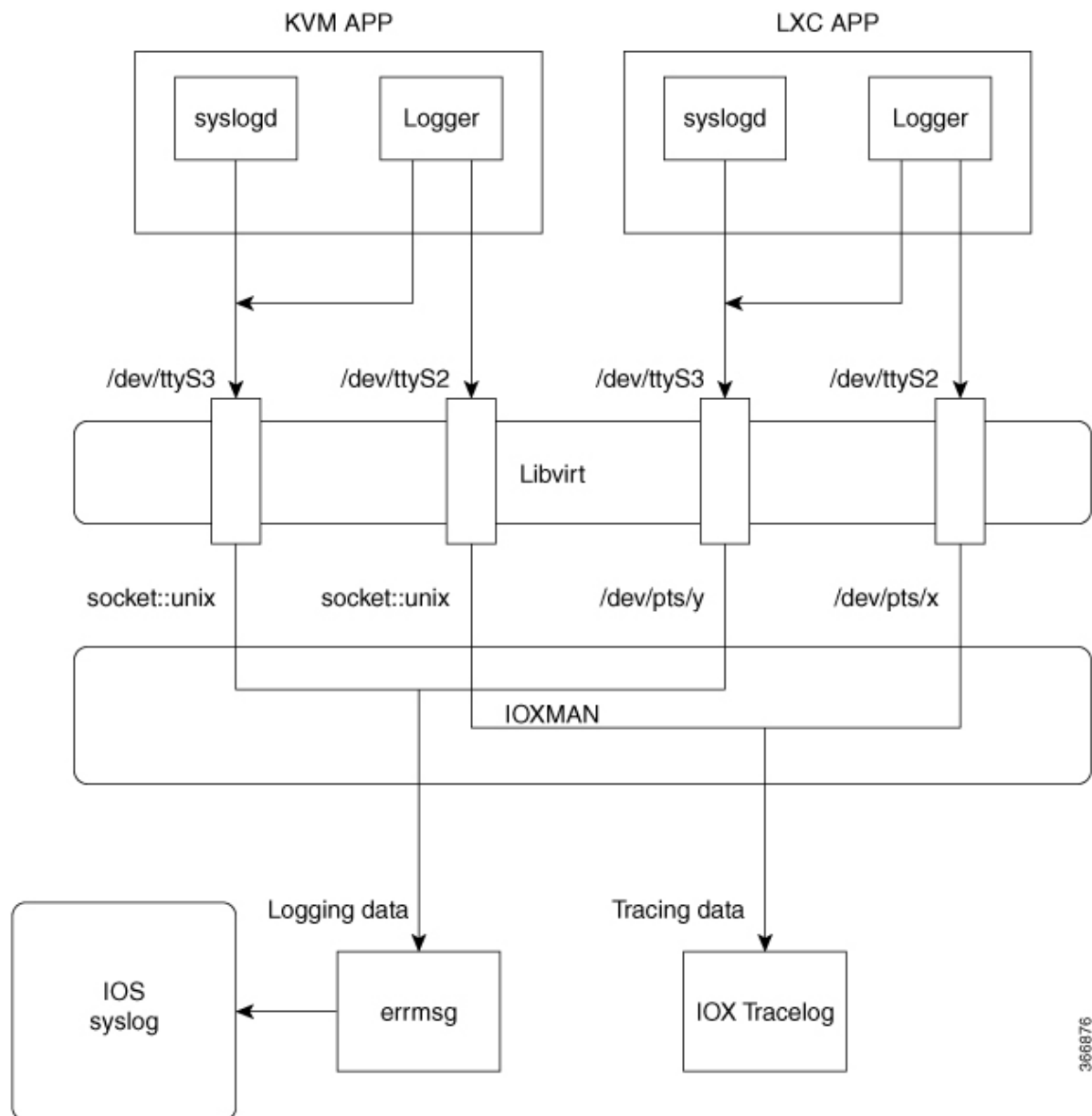
1.2. Cisco IOx Overview

Cisco IOx (IOs + linuX) is an end-to-end application framework that provides application-hosting capabilities for different application types on Cisco network platforms. The Cisco Guest Shell, a special container deployment, is one such application, that is useful in system deployment.

Cisco IOx facilitates the life cycle management of applications and data exchange by providing a set of services that helps developers to package prebuilt applications, and host them on a target device. IOx life cycle management includes distribution, deployment, hosting, starting, stopping (management), and monitoring of applications and data. IOx services also include application distribution and management tools that help users discover and deploy applications to the IOx framework.

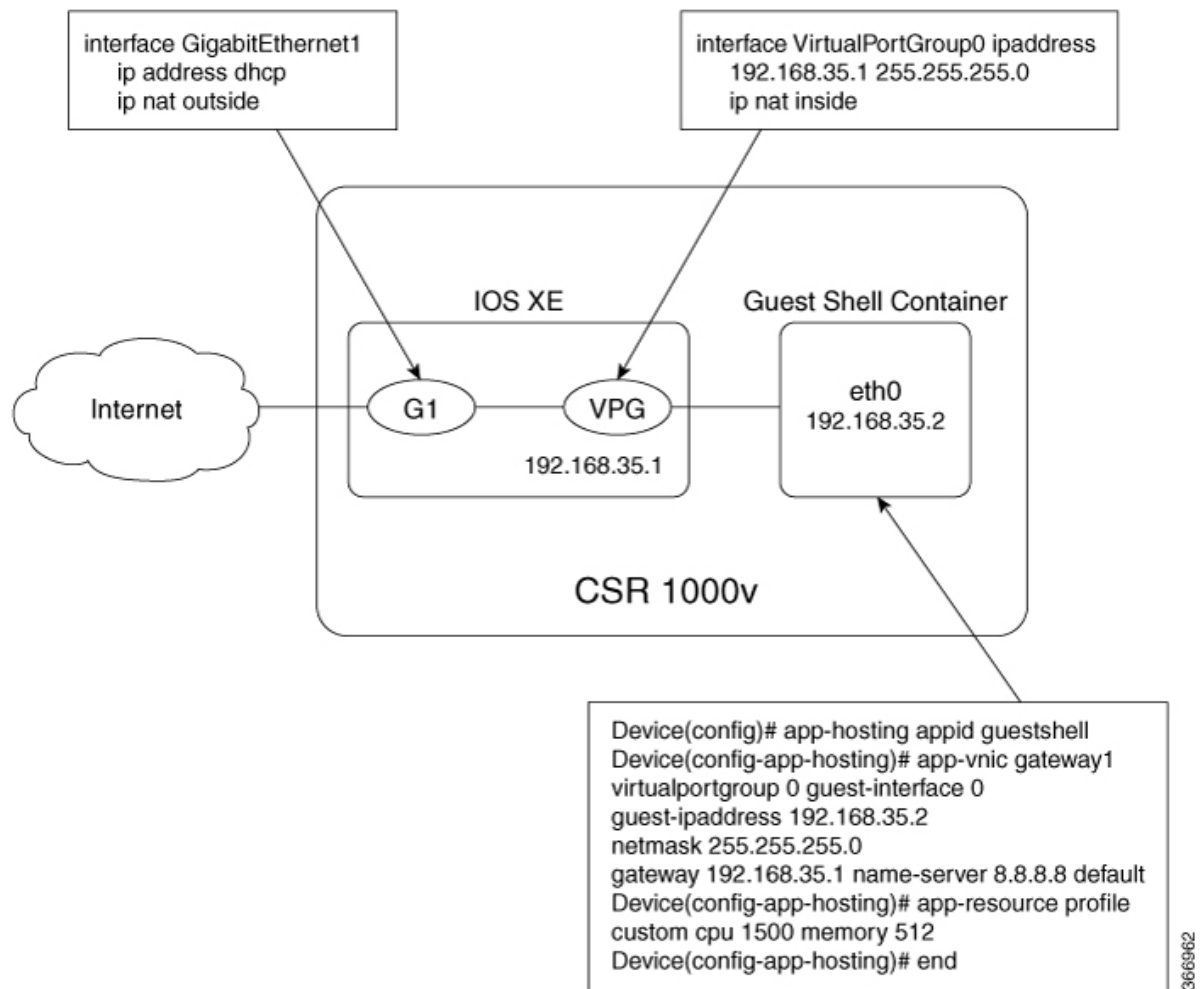
2. IOX(IOs linuX) Concept

2.1. IOXMAN Structure



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2.2. Managing the Guest Shell using Application Hosting



3. Guestshell Configuration

This is a topology.



3.1. Basic Setting for Router

1. Configure Interface and others

```
1 Router#conf t
2 Enter configuration commands, one per line. End with CNTL/Z.
3 Router(config)#no ip domain lookup
4 Router(config)#lin console 0
5 Router(config-line)#exec-timeout 0 0
6 Router(config-line)#logging synchronous
7 Router(config-line)#exit
```

```
1 Router(config)#interface gigabitEthernet 1
2 Router(config-if)#ip address 10.1.1.1 255.255.255.0
3 Router(config-if)#no shutdown
```

3.2. Configure IOX (IOS Linux)

1. Enable IOx

```

1 Router#conf t
2 Enter configuration commands, one per line. End with CNTL/Z.
3 Router(config)#iox
4 Router(config)#end
5 Router#wr
6 Building configuration...
7 [OK]

```

2. Confirm IOx status

We can see IOx service (IOxman): Not Ready.

```

1 Router#show iox-service
2
3 IOx Infrastructure Summary:
4 -----
5 IOx service (CAF) 1.8.1.7 : Running
6 IOx service (HA)      : Not Supported
7 IOx service (IOxman)  : Not Ready
8 Libvirtd 1.3.4        : Running

```

This may take a few minutes.

```

1 Router#show iox
2
3 IOx Infrastructure Summary:
4 -----
5 IOx service (CAF) 1.8.1.7 : Running
6 IOx service (HA)      : Not Supported
7 IOx service (IOxman)  : Running
8 Libvirtd 1.3.4        : Running

```

3. Configure virtualportGroup

```

1 Router(config)#int virtualportGroup 0
2 Router(config-if)#ip address 192.168.2.1 255.255.255.0
3 Router(config-if)#ip nat inside
4 Router(config)#end
5 Router#show ip interface brief
6
7 Interface          IP-Address      OK? Method Status
7 GigabitEthernet1   10.1.1.1        YES manual up
8 GigabitEthernet2   unassigned      YES unset  administratively down
9 GigabitEthernet3   unassigned      YES unset  administratively down
10 GigabitEthernet4   unassigned      YES unset  administratively down

```

```

11 VirtualPortGroup0      192.168.2.1      YES manual up
12 up
13 Router#conf t
14 Enter configuration commands, one per line.  End with CNTL/Z.
15 Router(config)#int gigabitEthernet 1
16 Router(config-if)#ip nat outside
17 Router(config-if)#exit
18 Router(config)#ip access-list standard NAT
19 Router(config-std-nacl)#permit 192.168.2.0 0.0.255.255
20 Router(config-std-nacl)#exit
21 Router(config)#ip nat inside source list NAT interface gigabitEthernet 1
    overload
22 Router(config)#end
23 Router#wr
24 Building configuration...
25 [OK]

```

If the port is not configured correctly, below error message will displayed.

```

1 Router#guestshell
2 The process for the command is not responding or is otherwise unavailable
3
4 Error, guestshell is in disabled state, execute 'guestshell enable'
  before attempting this CLI

```

4. Enable guestshell

```

1 Router(config)#app-hosting appid guestshell
2 Router(config-app-hosting)#vnic management guest-interface 0
3 Router(config-app-hosting)#end
4 Router#guestshell enable
5 Interface will be selected if configured in app-hosting
6 Please wait for completion
7 guestshell activated successfully
8 Current state is: ACTIVATED
9 guestshell started successfully
10 Current state is: RUNNING
11 Guestshell enabled successfully

```

5. Verification

```

1 Router#guestshell run bash
2
3 [guestshell@guestshell ~]$ uname -r
4 4.4.155

```

3.3. Accessing the Guest Shell from the CLI

```

1 Router#guestshell run python
2 Python 2.7.5 (default, Jun 17 2014, 18:11:42)
3 [GCC 4.8.2 20140120 (Red Hat 4.8.2-16)] on linux2
4 Type "help", "copyright", "credits" or "license" for more information.
5 >>>
6 >>>
7 Use exit() or Ctrl-D (i.e. EOF) to exit
8 >>>
9

```

3.4. Accessing the CLI from the Guest Shell

- dohost command built into Guest Shell
- Send commands directly to the router
- Limited to exec privilege commands. No access to config mode.

```

1 [guestshell@guestshell ~]$ dohost "show ip interface brief"
2
3 Interface                IP-Address      OK? Method Status
3 Protocol
4 GigabitEthernet1         10.1.1.1        YES manual up
4
5 GigabitEthernet2         unassigned      YES unset  administratively down down
5
6 GigabitEthernet3         unassigned      YES unset  administratively down down
6
7 GigabitEthernet4         unassigned      YES unset  administratively down down
7
8 VirtualPortGroup0        192.168.2.1     YES manual up
8
9
10 [guestshell@guestshell ~]$ exit
11 Router#

```

4. Reference

[Programmability Configuration Guide, Cisco IOS XE Amsterdam 17.2.x](#)

DEVNET-1695-Introduction to GuestShell

DEVNET-2557-Application Hosting in IOS XE