ゼロ タッチ プロビジョニング

ネットワーク プロビジョニングの課題に対応するため、シスコは、ゼロ タッチ プロビジョニング モデルを導入しました。このモジュールでは、ゼロ タッチ プロビジョニング機能について説明します。

（注） ゼロ タッチ プロビジョニング機能は自動的に有効になり、設定は不要です。

ゼロタッチプロビジョニングの制約事項

ゼロタッチプロビジョニングは、Cisco Catalyst 9200L SKU ではサポートされていません。

ゼロ タッチ プロビジョニングについて

ゼロ タッチ プロビジョニングの概要

ゼロ タッチ プロビジョニングは、異機種混在ネットワーク環境でのネットワーク デバイス プロビジョニングを自動化する、オープン ブートストラップ インターフェイスを提供します。

ゼロ タッチプロビジョニングをサポートするデバイスが起動し、スタートアップ コンフィギュレーションが見つからない場合（初期インストール時）、デバイスはゼロ タッチ プロビジョニング モードに入ります。デバイスは、Dynamic Host Control Protocol（DHCP）サーバを検索し、インターフェイスの IP アドレス、ゲートウェイ、ドメイン ネーム システム（DNS）サーバの IP アドレスをブートストラップして、ゲスト シェルを有効にします。次にデバイスは

HTTP/TFTP サーバの IP アドレスまたは URL を取得し、HTTP/TFTP サーバからデバイスを構成する Python スクリプトをダウンロードします。

ゲスト シェルは、Python スクリプトを実行するための環境を提供します。ゲスト シェルは、ダウンロードした Python スクリプトを実行して、初期構成をデバイスに適用します。

初期プロビジョニングが完了したら、ゲスト シェルは有効化されたままになります。詳細については、「ゲスト シェル」の章を参照してください。

（注） ゼロ タッチ プロビジョニングが失敗した場合、デバイスは自動インストールにフォールバックして、コンフィギュレーション ファイルをロードします。詳細については、「Using AutoInstall and Setup」を参照してください。

ゼロ タッチ プロビジョニングのための DHCP サーバの設定

ゼロ タッチプロビジョニングでは、プロビジョニングされる新しいデバイスと同じネットワークで DHCP サーバを実行する必要があります。ゼロ タッチ プロビジョニングは、管理用ポートとインバンド ポートの両方でサポートされます。

新しいデバイスをオンにすると、そのデバイスは、Python スクリプトが存在する HTTP/TFTP サーバの IP アドレス情報と Python スクリプトのフォルダ パスを DHCP サーバから取得します。Python スクリプトの詳細については、「Python API」および「Python CLI モジュール」の各章を参照してください。

DHCP サーバは、次のオプションで DHCP 検出イベントに応答します。

- オプション 150：（任意）管理ネットワーク上の、実行される Python スクリプトをホストしている HTTP/TFTP サーバを指す IP アドレスの一覧が含まれます。
- オプション 67：HTTP/TFTP サーバ上の Python スクリプトのファイル パスが含まれます。

これらの DHCP オプションを受信すると、デバイスは、HTTP/TFTP サーバに接続して Python スクリプトをダウンロードします。この時点で、デバイスはHTTP/TFTP サーバに到達するルートを持たないため、DHCP サーバによって提供されるデフォルトのルートを使用します。

DHCPv6 のサポート

Cisco IOS XE Fuji 16.9.1 では、Dynamic Host Control Protocol バージョン 6（DHCPv6）のサポートがゼロタッチプロビジョニング機能に追加されました。DHCPv6 はデフォルトで有効になっており、スタートアップ コンフィギュレーションなしでブートするすべてのデバイスで機能します。

（注） DHCPv6 は Catalyst 9300 および 9500 シリーズ スイッチでのみサポートされます。

DHCPv6 は、Python スクリプトの TFTP と HTTP の両方のダウンロードによってサポートされています。Python スクリプトの HTTP または TFTP のダウンロードが失敗した場合、デバイスは開始時点（設定なしの状態）に戻ります。DHCPv4 と DHCPv6 の両方が機能するためには、正しい HTTP ファイル パスが DHCP 設定で使用できる必要があります。

同じインターフェイスに IPv4 と IPv6 の両方のアドレスがあるか、またはネットワーク内に 2 つの異なるインターフェイスがあることが考えられます。つまり、一方は IPv4 トラフィックを受信でき、他方は IPv6 トラフィックを受信できます。導入環境では DHCPv4 または DHCPv6 オプションのいずれかを使用することをお勧めします。

次に、DHCPv4: /etc/dhcp/dhcpd.conf の例を示します。

```
host <hostname> {
  hardware ethernet xx:xx:xx:xx:xx:xx;
  option dhcp-client-identifier "xxxxxxxxxxxxx";
  option host-name "<hostname>".
  option log-servers x.x.x.x;
  fixed-address x.x.x.x;
  if option vendor-class-identifier = "..." {
    option vendor-class-identifier "...";
    if exists user-class and option user-class = "iPXE" {
      filename "http://x.x.x.x/…/<image>";
    } else {
      filename "http://x.x.x.x/…/<script-name>";
    }
  }
}
```

次に、ISC DHCPv6 サーバの設定例を示します。

```
 option dhcp6.bootfile-url  "http://[2001:DB8::21]/sample_day0_script.py";
```

ゼロ タッチ プロビジョニングの構成例

TFTP コピーを使用しての管理ポートにおける DHCP サーバ設定の例

次に、デバイスの管理ポート経由で接続されている場合に TFTP コピーを使用して行う DHCP サーバ設定の例を示します。

```
Device> enable
Device# configure terminal
Device(config)# ip dhcp excluded-address 10.1.1.1
Device(config)# ip dhcp excluded-address vrf Mgmt-vrf 10.1.1.1 10.1.1.10
Device(config)# ip dhcp pool pnp_device_pool
Device(config-dhcp)# vrf Mgmt-vrf
Device(config-dhcp)# network 10.1.1.0 255.255.255.0
Device(config-dhcp)# default-router 10.1.1.1
Device(config-dhcp)# option 150 ip 203.0.113.254
Device(config-dhcp)# option 67 ascii /sample_python_dir/python_script.py
Device(config-dhcp)# exit
Device(config)# interface gigabitethernet 1/0/2
Device(config-if)# no ip dhcp client request tftp-server-address
```

```
Device(config-if)# end
```

HTTP コピーを使用しての管理ポートにおける DHCP サーバ設定の例

次に、デバイスの管理ポート経由で接続されている場合に HTTP コピーを使用して行う DHCP サーバ設定の例を示します。

```
Device> enable
Device# configure terminal
Device(config)# ip dhcp pool pnp_device_pool
Device(config-dhcp)# vrf Mgmt-vrf
Device(config-dhcp)# network 10.1.1.0 255.255.255.0
Device(config-dhcp)# default-router 10.1.1.1
Device(config-dhcp)# option 67 ascii http://198.51.100.1:8000/sample_python_2.py
Device(config-dhcp)# end
```

TFTP コピーを使用したインバンド ポートでのサンプル DHCP サーバ構成

次に示すのは、デバイスのインバンド ポート経由で接続されている場合の、TFTP コピーを使用したサンプル DHCP サーバ構成です。

```
Device> enable
Device# configure terminal
Device(config)# ip dhcp excluded-address 10.1.1.1
Device(config)# ip dhcp pool pnp_device_pool
Device(config-dhcp)# network 10.1.1.0 255.255.255.0
Device(config-dhcp)# default-router 10.1.1.1
Device(config-dhcp)# option 150 ip 203.0.113.254
Device(config-dhcp)# option 67 ascii /sample_python_dir/python_script.py
Device(config-dhcp)# exit
Device(config)# interface gigabitethernet 1/0/2
Device(config-if)# no ip dhcp client request tftp-server-address
Device(config-if)# end
```

HTTP コピーを使用したインバンド ポートでのサンプル DHCP サーバ構成

次に示すのは、デバイスのインバンド ポート経由で接続されている場合の、HTTP コピーを使用したサンプル DHCP サーバ構成です。

```
Device> enable
Device# configure terminal
Device(config)# ip dhcp excluded-address 10.1.1.1
Device(config)# ip dhcp pool pnp_device_pool
Device(config-dhcp)# network 10.1.1.0 255.255.255.0
```

```
Device(config-dhcp)# default-router 10.1.1.1
Device(config-dhcp)# option 67 ascii http://192.0.2.1:8000/sample_python_2.py
Device(config-dhcp)# end
```

Linux Ubuntu デバイス上でのサンプル DHCP サーバの構成

次の DHCP サーバ構成例は、サーバがデバイスの管理ポートまたはインバンド ポートのどちらかに接続されていることと、Python スクリプトが TFTP サーバからコピーされることを示しています。

```
root@ubuntu-server:/etc/dhcp# more dhcpd.conf
subnet 10.1.1.0 netmask 255.255.255.0 {
range 10.1.1.2  10.1.1.255;
      host 3850 {
          fixed-address                      10.1.1.246 ;
          hardware ethernet                  CC:D8:C1:85:6F:00;
          option bootfile-name !<opt 67>     " /python_dir/python_script.py";
         option tftp-server-name !<opt 150>  "203.0.113.254";
      }
  }
```

次のサンプル DHCP 構成は、Python スクリプトが HTTP サーバからデバイスにコピーされることを示しています。

```
Day0_with_mgmt_port_http
------------------------
subnet 192.168.1.0 netmask 255.255.255.0 {
 range 192.168.1.2 192.168.1.255;
      host C2-3850 {
          fixed-address                   192.168.1.246 ;
          hardware ethernet               CC:D8:C1:85:6F:00;
          option bootfile-name            "http://192.168.1.46/sample_python_2.py";
      }
  }
```

DHCP サーバが実行状態になったら、管理ネットワーク接続デバイスを起動します。これにより構成の残りの部分は自動的に実行されます。

TFTP コピーを使用する管理ポートでの DHCPv6 サーバ設定の例

次に、デバイスの管理ポート経由で接続されている場合に TFTP コピーを使用して行う DHCPv6 サーバ設定の例を示します。

```
Device> enable
Device# configure terminal
Device(config)# ipv6 dhcp pool ztp
Device(config-dhcpv6)# address prefix 2001:DB8::1/64
Device(config-dhcpv6)# domain-name cisco.com
Device(config-dhcpv6)# bootfile-url tftp://[2001:db8::46]/sample_day0_script.py
```

```
Device(config-dhcpv6)# exit
Device(config)# interface vlan 20
Device(config-if)# ipv6 dhcp server ztp
Device(config-if)# end
```

サンプルの Python プロビジョニング スクリプト

次に示すのは、HTTP サーバまたは TFTP サーバのいずれかから使用できるサンプル Python スクリプトです。

```
print "\n\n *** Sample ZTP Day0 Python Script *** \n\n"

# Importing cli module
import cli


print "\n\n *** Executing show platform  *** \n\n"
cli_command = "show platform"
cli.executep(cli_command)

print "\n\n *** Executing show version *** \n\n"
cli_command = "show version"
cli.executep(cli_command)

print "\n\n *** Configuring a Loopback Interface *** \n\n"
cli.configurep(["interface loop 100", "ip address 10.10.10.10 255.255.255.255", "end"])


print "\n\n *** Executing show ip interface brief  *** \n\n"
cli_command = "sh ip int brief"
cli.executep(cli_command)

print "\n\n *** ZTP Day0 Python Script Execution Complete *** \n\n"
```

Cisco 4000 シリーズ サービス統合型ルータの起動ログ

次のゼロ タッチ プロビジョニングのブート ログでは、ゲスト シェルが正常に有効にされ、Python スクリプトがゲスト シェルにダウンロードされ、ゲスト シェルがダウンロードした Python スクリプトを実行してデバイスをデイ ゼロに設定していることが示されています。

```
% failed to initialize nvram
! <This message indicates that the startup configuration
is absent on the device. This is the first indication that the Day Zero work flow is
going to start.>

This product contains cryptographic features and is subject to United
States and local country laws governing import, export, transfer and
use. Delivery of Cisco cryptographic products does not imply
third-party authority to import, export, distribute or use encryption.
Importers, exporters, distributors and users are responsible for
compliance with U.S. and local country laws. By using this product you
```

```
agree to comply with applicable laws and regulations. If you are unable
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http://www.cisco.com/wwl/export/crypto/tool/stqrg.html

If you require further assistance please contact us by sending email to
export@cisco.com.

cisco ISR4451-X/K9 (2RU) processor with 7941237K/6147K bytes of memory.
Processor board ID FJC1950D091
4 Gigabit Ethernet interfaces
32768K bytes of non-volatile configuration memory.
16777216K bytes of physical memory.
7341807K bytes of flash memory at bootflash:.
0K bytes of WebUI ODM Files at webui:.

%INIT: waited 0 seconds for NVRAM to be available


         --- System Configuration Dialog ---

Would you like to enter the initial configuration dialog? [yes/no]: %
!!<DO NOT TOUCH. This is Zero-Touch Provisioning>>
Generating 2048 bit RSA keys, keys will be non-exportable...
[OK] (elapsed time was 1 seconds)
The process for the command is not responding or is otherwise unavailable
The process for the command is not responding or is otherwise unavailable
The process for the command is not responding or is otherwise unavailable
The process for the command is not responding or is otherwise unavailable
The process for the command is not responding or is otherwise unavailable
The process for the command is not responding or is otherwise unavailable
The process for the command is not responding or is otherwise unavailable
The process for the command is not responding or is otherwise unavailable
The process for the command is not responding or is otherwise unavailable
The process for the command is not responding or is otherwise unavailable
Guestshell enabled successfully


 *** Sample ZTP Day0 Python Script ***


 *** Configuring a Loopback Interface ***


Line 1 SUCCESS: interface loop 100
Line 2 SUCCESS: ip address 10.10.10.10 255.255.255.255
Line 3 SUCCESS: end


 *** Executing show ip interface brief  ***


Interface              IP-Address      OK? Method Status                Protocol
GigabitEthernet0/0/0   unassigned      YES unset  down                  down
GigabitEthernet0/0/1   unassigned      YES unset  down                  down
GigabitEthernet0/0/2   unassigned      YES unset  down                  down
GigabitEthernet0/0/3   192.168.1.246   YES DHCP   up                    up
GigabitEthernet0       192.168.1.246   YES DHCP   up                    up
Loopback100            10.10.10.10     YES TFTP   up                    up


 *** ZTP Day0 Python Script Execution Complete ***
```

```
Press RETURN to get started!
```

デイ ゼロ プロビジョニングが完了すると、IOS プロンプトがアクセス可能になります。

Cisco Catalyst 9000 シリーズ スイッチの起動ログ

次のセクションでは、ゼロタッチプロビジョニングの起動ログのサンプルを表示します。このようなログでは、ゲストシェルが正常に有効にされ、Python スクリプトがゲストシェルにダウンロードされ、ゲストシェルがダウンロードした Python スクリプトを実行してデバイスをデイゼロに設定していることが示されています。

```
% Checking backup nvram
% No config present. Using default config

FIPS: Flash Key Check : Begin
FIPS: Flash Key Check : End, Not Found, FIPS Mode Not Enabled

! <This message indicates that the startup configuration
is absent on the device. This is the first indication that the Day Zero
 work flow is
going to start.>
```

Cisco IOS XE Everest 16.6.x から Cisco IOS XE Fuji 16.8.x へ

このセクションでは、.py スクリプトを実行する前の起動ログのサンプルを表示します。

```
Press RETURN to get started!

The process for the command is not responding or is otherwise unavailable
The process for the command is not responding or is otherwise unavailable
The process for the command is not responding or is otherwise unavailable
The process for the command is not responding or is otherwise unavailable
The process for the command is not responding or is otherwise unavailable


 *** Sample ZTP Day0 Python Script ***

...

 *** ZTP Day0 Python Script Execution Complete ***
```

このセクションでは、デイゼロプロビジョニング用にデバイスを設定する方法を示します。

```
Initializing Hardware...

System Bootstrap, Version 17.2.1r[FC1], RELEASE SOFTWARE (P)
Compiled Thu 02/20/2020 23:47:51.50 by rel
```

```
Current ROMMON image : Primary
Last reset cause     : SoftwareReload
C9300-48UXM platform with 8388608 Kbytes of main memory

Preparing to autoboot. [Press Ctrl-C to interrupt]  0
boot: attempting to boot from [flash:cat9k_iosxe.16.06.05.SPA.bin]
boot: reading file cat9k_iosxe.16.06.05.SPA.bin
###############################################################################################


Both links down, not waiting for other switches
Switch number is 1

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           cisco Systems, Inc.
           170 West Tasman Drive
           San Jose, California 95134-1706



Cisco IOS Software [Everest], Catalyst L3 Switch Software (CAT9K_IOSXE),
Version 16.6.5, RELEASE SOFTWARE (fc3)
Technical Support: http://www.cisco.com/techsupport
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Compiled Mon 10-Dec-18 12:52 by mcpre



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software.


% Checking backup nvram
% No config present. Using default config


FIPS: Flash Key Check : Begin
FIPS: Flash Key Check : End, Not Found, FIPS Mode Not Enabled

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A summary of U.S. laws governing Cisco cryptographic products may be found at:
```

```
http://www.cisco.com/wwl/export/crypto/tool/stqrg.html

If you require further assistance please contact us by sending email to
export@cisco.com.

cisco C9300-48UXM (X86) processor with 1392780K/6147K bytes of memory.
Processor board ID FCW2144L045
2048K bytes of non-volatile configuration memory.
8388608K bytes of physical memory.
1638400K bytes of Crash Files at crashinfo:.
11264000K bytes of Flash at flash:.
0K bytes of WebUI ODM Files at webui:.

Base Ethernet MAC Address          : ec:1d:8b:0a:68:00
Motherboard Assembly Number        : 73-17959-06
Motherboard Serial Number          : FOC21418FPQ
Model Revision Number              : B0
Motherboard Revision Number        : A0
Model Number                       : C9300-48UXM
System Serial Number               : FCW2144L045


%INIT: waited 0 seconds for NVRAM to be available

SETUP: new interface Vlan1 placed in "shutdown" state


Press RETURN to get started!


*Sep  4 20:35:07.330: %SMART_LIC-6-AGENT_READY: Smart Agent for Licensing is initialized
*Sep  4 20:35:07.493: %IOSXE_RP_NV-3-NV_ACCESS_FAIL: Initial read of NVRAM contents
failed
*Sep  4 20:35:07.551: %IOSXE_RP_NV-3-BACKUP_NV_ACCESS_FAIL: Initial read of backup NVRAM
 contents failed
*Sep  4 20:35:10.932: dev_pluggable_optics_selftest attribute table internally inconsistent
 @ 0x1D4

*Sep  4 20:35:13.406: %CRYPTO-4-AUDITWARN: Encryption audit check could not be performed
*Sep  4 20:35:13.480: %SPANTREE-5-EXTENDED_SYSID: Extended SysId enabled for type vlan
*Sep  4 20:35:13.715: %LINK-3-UPDOWN: Interface Lsmpi18/3, changed state to up
*Sep  4 20:35:13.724: %LINK-3-UPDOWN: Interface EOBC18/1, changed state to up
*Sep  4 20:35:13.724: %LINEPROTO-5-UPDOWN: Line protocol on Interface LI-Null0, changed
 state to up
*Sep  4 20:35:13.724: %LINK-3-UPDOWN: Interface GigabitEthernet0/0, changed state to
down
*Sep  4 20:35:13.725: %LINK-3-UPDOWN: Interface LIIN18/2, changed state to up
*Sep  4 20:35:13.749: WCM-PKI-SHIM: buffer allocation failed for SUDI support check
*Sep  4 20:35:13.749: PKI/SSL unable to send Sudi support to WCM
*Sep  4 20:35:14.622: %IOSXE_MGMTVRF-6-CREATE_SUCCESS_INFO: Management vrf Mgmt-vrf
created with ID 1,
    ipv4 table-id 0x1, ipv6 table-id 0x1E000001
*Sep  4 20:34:42.022: %STACKMGR-6-STACK_LINK_CHANGE: Switch 1 R0/0: stack_mgr:  Stack
port 1 on Switch 1 is nocable
*Sep  4 20:34:42.022: %STACKMGR-6-STACK_LINK_CHANGE: Switch 1 R0/0: stack_mgr:  Stack
port 2 on Switch 1 is down
*Sep  4 20:34:42.022: %STACKMGR-6-STACK_LINK_CHANGE: Switch 1 R0/0: stack_mgr:  Stack
port 2 on Switch 1 is nocable
*Sep  4 20:34:42.022: %STACKMGR-6-SWITCH_ADDED: Switch 1 R0/0: stack_mgr:  Switch 1 has
 been added to the stack.
*Sep  4 20:34:42.022: %STACKMGR-6-SWITCH_ADDED: Switch 1 R0/0: stack_mgr:  Switch 1 has
 been added to the stack.
*Sep  4 20:34:42.022: %STACKMGR-6-SWITCH_ADDED: Switch 1 R0/0: stack_mgr:  Switch 1 has
 been added to the stack.
```

```
*Sep  4 20:34:42.022: %STACKMGR-6-ACTIVE_ELECTED: Switch 1 R0/0: stack_mgr:  Switch 1
has been elected ACTIVE.
*Sep  4 20:35:14.728: %LINEPROTO-5-UPDOWN: Line protocol on Interface Lsmpi18/3, changed
 state to up
*Sep  4 20:35:14.728: %LINEPROTO-5-UPDOWN: Line protocol on Interface EOBC18/1, changed
 state to up
*Sep  4 20:35:15.506: %HMANRP-6-HMAN_IOS_CHANNEL_INFO: HMAN-IOS channel event for switch
 1: EMP_RELAY: Channel UP!
*Sep  4 20:35:15.510: %LINEPROTO-5-UPDOWN: Line protocol on Interface Vlan1, changed
state to down
*Sep  4 20:35:34.501: %LINK-5-CHANGED: Interface Vlan1, changed state to administratively
 down
*Sep  4 20:35:34.717: %SYS-5-RESTART: System restarted --
Cisco IOS Software [Everest], Catalyst L3 Switch Software (CAT9K_IOSXE), Version 16.6.5,
 RELEASE SOFTWARE (fc3)
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Compiled Mon 10-Dec-18 12:52 by mcpre
*Sep  4 20:35:34.796: %LINK-3-UPDOWN: Interface GigabitEthernet0/0, changed state to up
*Sep  4 20:35:35.266: %SYS-6-BOOTTIME: Time taken to reboot after reload =  283 seconds
*Sep  4 20:35:35.796: %LINEPROTO-5-UPDOWN: Line protocol on Interface GigabitEthernet0/0,
 changed state to up
*Sep  4 20:35:36.607: %LINK-3-UPDOWN: Interface GigabitEthernet1/1/1, changed state to
down
*Sep  4 20:35:36.607: %LINK-3-UPDOWN: Interface GigabitEthernet1/1/2, changed state to
down
*Sep  4 20:35:36.607: %LINK-3-UPDOWN: Interface GigabitEthernet1/1/3, changed state to
down
*Sep  4 20:35:36.608: %LINK-3-UPDOWN: Interface GigabitEthernet1/1/4, changed state to
down
*Sep  4 20:35:36.608: %LINK-3-UPDOWN: Interface TenGigabitEthernet1/1/1, changed state
to down
*Sep  4 20:35:36.608: %LINK-3-UPDOWN: Interface TenGigabitEthernet1/1/2, changed state
to down
*Sep  4 20:35:36.608: %LINK-3-UPDOWN: Interface TenGigabitEthernet1/1/3, changed state
to down
*Sep  4 20:35:36.608: %LINK-3-UPDOWN: Interface TenGigabitEthernet1/1/4, changed state
to down
*Sep  4 20:35:36.608: %LINK-3-UPDOWN: Interface TenGigabitEthernet1/1/5, changed state
to down
*Sep  4 20:35:36.609: %LINK-3-UPDOWN: Interface TenGigabitEthernet1/1/6, changed state
to down
*Sep  4 20:35:36.609: %LINK-3-UPDOWN: Interface TenGigabitEthernet1/1/7, changed state
to down
*Sep  4 20:35:36.609: %LINK-3-UPDOWN: Interface TenGigabitEthernet1/1/8, changed state
to down
*Sep  4 20:35:36.609: %LINK-3-UPDOWN: Interface FortyGigabitEthernet1/1/1, changed state
 to down
*Sep  4 20:35:36.609: %LINK-3-UPDOWN: Interface FortyGigabitEthernet1/1/2, changed state
 to down
*Sep  4 20:35:37.607: %LINEPROTO-5-UPDOWN: Line protocol on Interface GigabitEthernet1/1/1,
 changed state to down
*Sep  4 20:35:37.608: %LINEPROTO-5-UPDOWN: Line protocol on Interface GigabitEthernet1/1/2,
 changed state to down
*Sep  4 20:35:37.608: %LINEPROTO-5-UPDOWN: Line protocol on Interface GigabitEthernet1/1/3,
 changed state to down
*Sep  4 20:35:37.609: %LINEPROTO-5-UPDOWN: Line protocol on Interface GigabitEthernet1/1/4,
 changed state to down
*Sep  4 20:35:37.609: %LINEPROTO-5-UPDOWN: Line protocol on Interface
TenGigabitEthernet1/1/1, changed state to down
*Sep  4 20:35:37.609: %LINEPROTO-5-UPDOWN: Line protocol on Interface
TenGigabitEthernet1/1/2, changed state to down
*Sep  4 20:35:37.609: %LINEPROTO-5-UPDOWN: Line protocol on Interface
TenGigabitEthernet1/1/3, changed state to down
```

```
*Sep  4 20:35:37.609: %LINEPROTO-5-UPDOWN: Line protocol on Interface
TenGigabitEthernet1/1/4, changed state to down
*Sep  4 20:35:37.609: %LINEPROTO-5-UPDOWN: Line protocol on Interface
TenGigabitEthernet1/1/5, changed state to down
*Sep  4 20:35:37.609: %LINEPROTO-5-UPDOWN: Line protocol on Interface
TenGigabitEthernet1/1/6, changed state to down
*Sep  4 20:35:43.511: AUTOINSTALL: Obtain tftp server address (opt 150) 159.14.27.2
*Sep  4 20:35:43.511: PNPA: Setting autoinstall complete to true for 159.14.27.2
*Sep  4 20:35:57.673: %PLATFORM_PM-6-FRULINK_INSERTED: 8x10G uplink module inserted in
the switch 1 slot 1
*Sep  4 20:36:19.562: [IOX DEBUG] Guestshell start API is being invoked

*Sep  4 20:36:19.562: [IOX DEBUG] provided idb is mgmt interface

*Sep  4 20:36:19.562: [IOX DEBUG] Setting up guestshell to use mgmt-intf

*Sep  4 20:36:19.562: [IOX DEBUG] Setting up chasfs for iox related activity

*Sep  4 20:36:19.562: [IOX DEBUG] Setting up for iox pre-clean activity if needed

*Sep  4 20:36:19.562: [IOX DEBUG] Waiting for iox pre-clean setup to take affect

*Sep  4 20:36:19.562: [IOX DEBUG] Waited for 1 sec(s) for iox pre-clean setup to take
affect

*Sep  4 20:36:19.562: [IOX DEBUG] Auto-configuring iox feature

*Sep  4 20:36:19.563: [IOX DEBUG] Waiting for CAF and ioxman to be up, in that order

*Sep  4 20:36:20.076: %UICFGEXP-6-SERVER_NOTIFIED_START: Switch 1 R0/0: psd:  Server iox
 has been notified to start
*Sep  4 20:36:23.564: [IOX DEBUG] Waiting for another 5 secs

*Sep  4 20:36:28.564: [IOX DEBUG] Waiting for another 5 secs
The process for the command is not responding or is otherwise unavailable

*Sep  4 20:36:33.564: [IOX DEBUG] Waiting for another 5 secs
The process for the command is not responding or is otherwise unavailable

*Sep  4 20:36:34.564: [IOX DEBUG] Waited for 16 sec(s) for CAF and ioxman to come up

*Sep  4 20:36:34.564: [IOX DEBUG] Validating if CAF and ioxman are running

*Sep  4 20:36:34.564: [IOX DEBUG] CAF and ioxman are up and running

*Sep  4 20:36:34.564: [IOX DEBUG] Building the simple mgmt-intf enable command string

*Sep  4 20:36:34.564: [IOX DEBUG] Enable command is: request platform software iox-manager

    app-hosting guestshell enable

*Sep  4 20:36:34.564: [IOX DEBUG] Issuing guestshell enable command and waiting for it
to be up
The process for the command is not responding or is otherwise unavailable
The process for the command is not responding or is otherwise unavailable
The process for the command is not responding or is otherwise unavailable
The process for the command is not responding or is otherwise unavailable

*Sep  4 20:36:38.578: [IOX DEBUG] Waiting for another 5 secs
The process for the command is not responding or is otherwise unavailable

*Sep  4 20:36:39.416: %LINK-3-UPDOWN: Interface TenGigabitEthernet1/0/48, changed state
 to up
*Sep  4 20:36:40.416: %LINEPROTO-5-UPDOWN: Line protocol on Interface
```

```
TenGigabitEthernet1/0/48,
    changed state to upThe process for the command is not responding or is otherwise
unavailable
The process for the command is not responding or is otherwise unavailable
The process for the command is not responding or is otherwise unavailable

*Sep  4 20:36:43.586: [IOX DEBUG] Waiting for another 5 secs
Guestshell enabled successfully

*Sep  4 20:37:45.321: [IOX DEBUG] Checking for guestshell mount path

*Sep  4 20:37:45.321: [IOX DEBUG] Validating if guestshell is ready for use

*Sep  4 20:37:45.321: [IOX DEBUG] Guestshell enabled successfully


 *** Sample ZTP Day0 Python Script ***



 *** Executing show platform  ***


Switch  Ports    Model                Serial No.   MAC address     Hw Ver.       Sw Ver.

------  -----   ---------            -----------  --------------  -------       --------

 1       62     C9300-48UXM           FCW2144L045  ec1d.8b0a.6800  V01           16.6.5

Switch/Stack Mac Address : ec1d.8b0a.6800 - Local Mac Address
Mac persistency wait time: Indefinite
                                     Current
Switch#   Role        Priority      State
-------------------------------------------
*1       Active          1          Ready


 *** Executing show version ***


Cisco IOS XE Software, Version 16.06.05
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GPL code under the terms of GPL Version 2.0.  For more details, see the
documentation or "License Notice" file accompanying the IOS-XE software,
or the applicable URL provided on the flyer accompanying the IOS-XE
software.
ROM: IOS-XE ROMMON
BOOTLDR: System Bootstrap, Version 17.2.1r[FC1], RELEASE SOFTWARE (P)
Switch uptime is 2 minutes
Uptime for this control processor is 4 minutes
System returned to ROM by Reload Command
System image file is "flash:cat9k_iosxe.16.06.05.SPA.bin"
Last reload reason: Reload Command
This product contains cryptographic features and is subject to United
```

```
States and local country laws governing import, export, transfer and
use. Delivery of Cisco cryptographic products does not imply
third-party authority to import, export, distribute or use encryption.
Importers, exporters, distributors and users are responsible for
compliance with U.S. and local country laws. By using this product you
agree to comply with applicable laws and regulations. If you are unable
to comply with U.S. and local laws, return this product immediately.
A summary of U.S. laws governing Cisco cryptographic products may be found at:
http://www.cisco.com/wwl/export/crypto/tool/stqrg.html
If you require further assistance please contact us by sending email to
export@cisco.com.
Technology Package License Information:
------------------------------------------------------------------
Technology-package                  Technology-package
Current             Type            Next reboot
------------------------------------------------------------------
network-advantage   Permanent       network-advantage
cisco C9300-48UXM (X86) processor with 1392780K/6147K bytes of memory.
Processor board ID FCW2144L045
36 Ethernet interfaces
1 Virtual Ethernet interface
4 Gigabit Ethernet interfaces
20 Ten Gigabit Ethernet interfaces
2 Forty Gigabit Ethernet interfaces
2048K bytes of non-volatile configuration memory.
8388608K bytes of physical memory.
1638400K bytes of Crash Files at crashinfo:.
11264000K bytes of Flash at flash:.
0K bytes of WebUI ODM Files at webui:.
Base Ethernet MAC Address          : ec:1d:8b:0a:68:00
Motherboard Assembly Number        : 73-17959-06
Motherboard Serial Number          : FOC21418FPQ
Model Revision Number              : B0
Motherboard Revision Number        : A0
Model Number                       : C9300-48UXM
System Serial Number               : FCW2144L045
Switch Ports Model              SW Version        SW Image              Mode
------ ----- -----              ----------        ----------            ----
*    1 62    C9300-48UXM        16.6.5            CAT9K_IOSXE           BUNDLE
Configuration register is 0x102


 *** Configuring a Loopback Interface ***


Line 1 SUCCESS: interface loop 100
Line 2 SUCCESS: ip address 10.10.10.10 255.255.255.255
Line 3 SUCCESS: end


 *** Executing show ip interface brief  ***


Interface              IP-Address      OK? Method Status                Protocol
Vlan1                  unassigned      YES unset  administratively down down
GigabitEthernet0/0     10.127.128.3    YES DHCP   up                    up
Tw1/0/1                unassigned      YES unset  down                  down
Tw1/0/2                unassigned      YES unset  down                  down
Tw1/0/3                unassigned      YES unset  down                  down
Tw1/0/4                unassigned      YES unset  down                  down
Tw1/0/5                unassigned      YES unset  down                  down
Tw1/0/6                unassigned      YES unset  down                  down
Tw1/0/7                unassigned      YES unset  down                  down
Tw1/0/8                unassigned      YES unset  down                  down
```

```
Tw1/0/9                unassigned      YES unset  down                  down
Tw1/0/10               unassigned      YES unset  down                  down
Tw1/0/11               unassigned      YES unset  down                  down
Tw1/0/12               unassigned      YES unset  down                  down
Tw1/0/13               unassigned      YES unset  down                  down
Tw1/0/14               unassigned      YES unset  down                  down
Tw1/0/15               unassigned      YES unset  down                  down
Tw1/0/16               unassigned      YES unset  down                  down
Tw1/0/17               unassigned      YES unset  down                  down
Tw1/0/18               unassigned      YES unset  down                  down
Tw1/0/19               unassigned      YES unset  down                  down
Tw1/0/20               unassigned      YES unset  down                  down
Tw1/0/21               unassigned      YES unset  down                  down
Tw1/0/22               unassigned      YES unset  down                  down
Tw1/0/23               unassigned      YES unset  down                  down
Tw1/0/24               unassigned      YES unset  down                  down
Tw1/0/25               unassigned      YES unset  down                  down
Tw1/0/26               unassigned      YES unset  down                  down
Tw1/0/27               unassigned      YES unset  down                  down
Tw1/0/28               unassigned      YES unset  down                  down
Tw1/0/29               unassigned      YES unset  down                  down
Tw1/0/30               unassigned      YES unset  down                  down
Tw1/0/31               unassigned      YES unset  down                  down
Tw1/0/32               unassigned      YES unset  down                  down
Tw1/0/33               unassigned      YES unset  down                  down
Tw1/0/34               unassigned      YES unset  down                  down
Tw1/0/35               unassigned      YES unset  down                  down
Tw1/0/36               unassigned      YES unset  down                  down
Te1/0/37               unassigned      YES unset  down                  down
Te1/0/38               unassigned      YES unset  down                  down
Te1/0/39               unassigned      YES unset  down                  down
Te1/0/40               unassigned      YES unset  down                  down
Te1/0/41               unassigned      YES unset  down                  down
Te1/0/42               unassigned      YES unset  down                  down
Te1/0/43               unassigned      YES unset  down                  down
Te1/0/44               unassigned      YES unset  down                  down
Te1/0/45               unassigned      YES unset  down                  down
Te1/0/46               unassigned      YES unset  down                  down
Te1/0/47               unassigned      YES unset  down                  down
Te1/0/48               unassigned      YES unset  up                    up
GigabitEthernet1/1/1   unassigned      YES unset  down                  down
GigabitEthernet1/1/2   unassigned      YES unset  down                  down
GigabitEthernet1/1/3   unassigned      YES unset  down                  down
GigabitEthernet1/1/4   unassigned      YES unset  down                  down
Te1/1/1                unassigned      YES unset  down                  down
Te1/1/2                unassigned      YES unset  down                  down
Te1/1/3                unassigned      YES unset  down                  down
Te1/1/4                unassigned      YES unset  down                  down
Te1/1/5                unassigned      YES unset  down                  down
Te1/1/6                unassigned      YES unset  down                  down
Te1/1/7                unassigned      YES unset  down                  down
Te1/1/8                unassigned      YES unset  down                  down
Fo1/1/1                unassigned      YES unset  down                  down
Fo1/1/2                unassigned      YES unset  down                  down
Loopback100            10.10.10.10     YES TFTP   up                    up


 *** Configuring username, password, SSH  ***


Line 1 SUCCESS: username cisco privilege 15 password cisco
Line 2 SUCCESS: ip domain name domain
Line 3 SUCCESS: line vty 0 15
Line 4 SUCCESS: login local
```

```
Line 5 SUCCESS: transport input all
Line 6 SUCCESS: end


 *** ZTP Day0 Python Script Execution Complete ***
```

Cisco IOS XE Fuji 16.9.x から Cisco IOS XE Gibraltar 16.11.x へ

このセクションでは、.py スクリプトを実行する前の起動ログのサンプルを表示します。

```
--- System Configuration Dialog ---

Would you like to enter the initial configuration dialog? [yes/no]: The process for the
 command is not
responding or is otherwise unavailable
The process for the command is not responding or is otherwise unavailable
The process for the command is not responding or is otherwise unavailable
The process for the command is not responding or is otherwise unavailable
The process for the command is not responding or is otherwise unavailable
The process for the command is not responding or is otherwise unavailable
guestshell installed successfully
Current state is: DEPLOYED
guestshell activated successfully
Current state is: ACTIVATED
guestshell started successfully
Current state is: RUNNING
Guestshell enabled successfully
```

このセクションでは、デイゼロプロビジョニング用にデバイスを設定する方法を示します。

```
Both links down, not waiting for other switches
Switch number is 1

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Software feature.


% Checking backup nvram
% No config present. Using default config

FIPS: Flash Key Check : Key Not Found, FIPS Mode Not Enabled
cisco C9300-48UXM (X86) processor with 1419044K/6147K bytes of memory.
Processor board ID FCW2144L045
2048K bytes of non-volatile configuration memory.
8388608K bytes of physical memory.
1638400K bytes of Crash Files at crashinfo:.
11264000K bytes of Flash at flash:.
0K bytes of WebUI ODM Files at webui:.

Base Ethernet MAC Address          : ec:1d:8b:0a:68:00
Motherboard Assembly Number        : 73-17959-06
Motherboard Serial Number          : FOC21418FPQ
Model Revision Number              : B0
Motherboard Revision Number        : A0
Model Number                       : C9300-48UXM
System Serial Number               : FCW2144L045


%INIT: waited 0 seconds for NVRAM to be available


         --- System Configuration Dialog ---

Would you like to enter the initial configuration dialog? [yes/no]: The process for the
 command is not
    responding or is otherwise unavailable
The process for the command is not responding or is otherwise unavailable
The process for the command is not responding or is otherwise unavailable
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The process for the command is not responding or is otherwise unavailable
The process for the command is not responding or is otherwise unavailable
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```
The process for the command is not responding or is otherwise unavailable
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The process for the command is not responding or is otherwise unavailable
The process for the command is not responding or is otherwise unavailable
The process for the command is not responding or is otherwise unavailable
The process for the command is not responding or is otherwise unavailable
The process for the command is not responding or is otherwise unavailable
guestshell installed successfully
Current state is: DEPLOYED
guestshell activated successfully
Current state is: ACTIVATED
guestshell started successfully
Current state is: RUNNING
Guestshell enabled successfully


HTTP server statistics:
Accepted connections total: 0

 *** Sample ZTP Day0 Python Script ***



 *** Executing show platform  ***


Switch  Ports    Model                Serial No.   MAC address     Hw Ver.       Sw Ver.

------  -----   ---------            -----------  --------------  -------       --------
```

```
 1       64     C9300-48UXM           FCW2144L045  ec1d.8b0a.6800  V01           16.9.4

Switch/Stack Mac Address : ec1d.8b0a.6800 - Local Mac Address
Mac persistency wait time: Indefinite
                                     Current
Switch#   Role        Priority      State
-----------------------------------------
*1       Active          1          Ready


 *** Executing show version ***


Cisco IOS XE Software, Version 16.09.04
Cisco IOS Software [Fuji], Catalyst L3 Switch Software (CAT9K_IOSXE), Version 16.9.4,
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or the applicable URL provided on the flyer accompanying the IOS-XE
software.
ROM: IOS-XE ROMMON
BOOTLDR: System Bootstrap, Version 17.2.1r[FC1], RELEASE SOFTWARE (P)
Switch uptime is 4 minutes
Uptime for this control processor is 5 minutes
System returned to ROM by Reload Command
System image file is "flash:cat9k_iosxe.16.09.04.SPA.bin"
Last reload reason: Reload Command
This product contains cryptographic features and is subject to United
States and local country laws governing import, export, transfer and
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third-party authority to import, export, distribute or use encryption.
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http://www.cisco.com/wwl/export/crypto/tool/stqrg.html
If you require further assistance please contact us by sending email to
export@cisco.com.
Technology Package License Information:
------------------------------------------------------------------------------
Technology-package                                      Technology-package
Current                       Type                         Next reboot
------------------------------------------------------------------------------
network-advantage       Smart License                    network-advantage
None                    Subscription Smart License       None
Smart Licensing Status: UNREGISTERED/EVAL EXPIRED
cisco C9300-48UXM (X86) processor with 1419044K/6147K bytes of memory.
Processor board ID FCW2144L045
36 Ethernet interfaces
1 Virtual Ethernet interface
4 Gigabit Ethernet interfaces
20 Ten Gigabit Ethernet interfaces
2 TwentyFive Gigabit Ethernet interfaces
2 Forty Gigabit Ethernet interfaces
2048K bytes of non-volatile configuration memory.
```

```
8388608K bytes of physical memory.
1638400K bytes of Crash Files at crashinfo:.
11264000K bytes of Flash at flash:.
0K bytes of WebUI ODM Files at webui:.
Base Ethernet MAC Address          : ec:1d:8b:0a:68:00
Motherboard Assembly Number        : 73-17959-06
Motherboard Serial Number          : FOC21418FPQ
Model Revision Number              : B0
Motherboard Revision Number        : A0
Model Number                       : C9300-48UXM
System Serial Number               : FCW2144L045
Switch Ports Model              SW Version        SW Image              Mode
------ ----- -----              ----------        ----------            ----
*    1 64    C9300-48UXM        16.9.4            CAT9K_IOSXE           BUNDLE
Configuration register is 0x102


 *** Configuring a Loopback Interface ***


Line 1 SUCCESS: interface loop 100
Line 2 SUCCESS: ip address 10.10.10.10 255.255.255.255
Line 3 SUCCESS: end


 *** Executing show ip interface brief  ***


Any interface listed with OK? value "NO" does not have a valid configuration
Interface              IP-Address      OK? Method Status                Protocol
Vlan1                  unassigned      NO  unset  up                    up
GigabitEthernet0/0     10.127.128.5    YES DHCP   up                    up
Tw1/0/1                unassigned      YES unset  down                  down
Tw1/0/2                unassigned      YES unset  down                  down
Tw1/0/3                unassigned      YES unset  down                  down
Tw1/0/4                unassigned      YES unset  down                  down
Tw1/0/5                unassigned      YES unset  down                  down
Tw1/0/6                unassigned      YES unset  down                  down
Tw1/0/7                unassigned      YES unset  down                  down
Tw1/0/8                unassigned      YES unset  down                  down
Tw1/0/9                unassigned      YES unset  down                  down
Tw1/0/10               unassigned      YES unset  down                  down
Tw1/0/11               unassigned      YES unset  down                  down
Tw1/0/12               unassigned      YES unset  down                  down
Tw1/0/13               unassigned      YES unset  down                  down
Tw1/0/14               unassigned      YES unset  down                  down
Tw1/0/15               unassigned      YES unset  down                  down
Tw1/0/16               unassigned      YES unset  down                  down
Tw1/0/17               unassigned      YES unset  down                  down
Tw1/0/18               unassigned      YES unset  down                  down
Tw1/0/19               unassigned      YES unset  down                  down
Tw1/0/20               unassigned      YES unset  down                  down
Tw1/0/21               unassigned      YES unset  down                  down
Tw1/0/22               unassigned      YES unset  down                  down
Tw1/0/23               unassigned      YES unset  down                  down
Tw1/0/24               unassigned      YES unset  down                  down
Tw1/0/25               unassigned      YES unset  down                  down
Tw1/0/26               unassigned      YES unset  down                  down
Tw1/0/27               unassigned      YES unset  down                  down
Tw1/0/28               unassigned      YES unset  down                  down
Tw1/0/29               unassigned      YES unset  down                  down
Tw1/0/30               unassigned      YES unset  down                  down
Tw1/0/31               unassigned      YES unset  down                  down
Tw1/0/32               unassigned      YES unset  down                  down
```

```
Tw1/0/33               unassigned      YES unset  down                  down
Tw1/0/34               unassigned      YES unset  down                  down
Tw1/0/35               unassigned      YES unset  down                  down
Tw1/0/36               unassigned      YES unset  down                  down
Te1/0/37               unassigned      YES unset  down                  down
Te1/0/38               unassigned      YES unset  down                  down
Te1/0/39               unassigned      YES unset  down                  down
Te1/0/40               unassigned      YES unset  down                  down
Te1/0/41               unassigned      YES unset  down                  down
Te1/0/42               unassigned      YES unset  down                  down
Te1/0/43               unassigned      YES unset  down                  down
Te1/0/44               unassigned      YES unset  down                  down
Te1/0/45               unassigned      YES unset  down                  down
Te1/0/46               unassigned      YES unset  down                  down
Te1/0/47               unassigned      YES unset  down                  down
Te1/0/48               unassigned      YES unset  up                    up
GigabitEthernet1/1/1   unassigned      YES unset  down                  down
GigabitEthernet1/1/2   unassigned      YES unset  down                  down
GigabitEthernet1/1/3   unassigned      YES unset  down                  down
GigabitEthernet1/1/4   unassigned      YES unset  down                  down
Te1/1/1                unassigned      YES unset  down                  down
Te1/1/2                unassigned      YES unset  down                  down
Te1/1/3                unassigned      YES unset  down                  down
Te1/1/4                unassigned      YES unset  down                  down
Te1/1/5                unassigned      YES unset  down                  down
Te1/1/6                unassigned      YES unset  down                  down
Te1/1/7                unassigned      YES unset  down                  down
Te1/1/8                unassigned      YES unset  down                  down
Fo1/1/1                unassigned      YES unset  down                  down
Fo1/1/2                unassigned      YES unset  down                  down
TwentyFiveGigE1/1/1    unassigned      YES unset  down                  down
TwentyFiveGigE1/1/2    unassigned      YES unset  down                  down
Loopback100            10.10.10.10     YES TFTP   up                    up


 *** Configuring username, password, SSH  ***


Line 1 SUCCESS: username cisco privilege 15 password cisco
**CLI Line # 1:  WARNING: Command has been added to the configuration using a type 0
password.
    However, type 0 passwords will soon be deprecated. Migrate to a supported password
type
Line 2 SUCCESS: ip domain name domain
Line 3 SUCCESS: line vty 0 15
Line 4 SUCCESS: login local
Line 5 SUCCESS: transport input all
Line 6 SUCCESS: end


 *** ZTP Day0 Python Script Execution Complete ***




Press RETURN to get started!
```

Cisco IOS XE Gibraltar 16.12.x から Cisco IOS XE Amsterdam 17.1.x へ

このセクションでは、.py スクリプトを実行する前の起動ログのサンプルを表示します。

```
--- System Configuration Dialog ---

Would you like to enter the initial configuration dialog? [yes/no]: day0guestshell
installed successfully
Current state is: DEPLOYED
day0guestshell activated successfully
Current state is: ACTIVATED
day0guestshell started successfully
Current state is: RUNNING
Guestshell enabled successfully


 *** Sample ZTP Day0 Python Script ***

...

 *** ZTP Day0 Python Script Execution Complete ***


Guestshell destroyed successfully
```

このセクションでは、デイゼロプロビジョニング用にデバイスを設定する方法を示します。

```
Both links down, not waiting for other switches
Switch number is 1

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           170 West Tasman Drive
           San Jose, California 95134-1706



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Software feature.


% Checking backup nvram
% No config present. Using default config

FIPS: Flash Key Check : Key Not Found, FIPS Mode Not Enabled

All TCP AO KDF Tests Pass
cisco C9300-48UXM (X86) processor with 1343703K/6147K bytes of memory.
Processor board ID FCW2144L045
2048K bytes of non-volatile configuration memory.
8388608K bytes of physical memory.
1638400K bytes of Crash Files at crashinfo:.
11264000K bytes of Flash at flash:.
0K bytes of WebUI ODM Files at webui:.

Base Ethernet MAC Address          : ec:1d:8b:0a:68:00
Motherboard Assembly Number        : 73-17959-06
Motherboard Serial Number          : FOC21418FPQ
Model Revision Number              : B0
Motherboard Revision Number        : A0
Model Number                       : C9300-48UXM
System Serial Number               : FCW2144L045


         --- System Configuration Dialog ---

Would you like to enter the initial configuration dialog? [yes/no]: day0guestshell
installed successfully
Current state is: DEPLOYED
day0guestshell activated successfully
Current state is: ACTIVATED
day0guestshell started successfully
Current state is: RUNNING
Guestshell enabled successfully


HTTP server statistics:
Accepted connections total: 0

 *** Sample ZTP Day0 Python Script ***



 *** Executing show platform  ***
```

```
Switch  Ports    Model               Serial No.   MAC address     Hw Ver.       Sw Ver.
------  -----   ---------           -----------  --------------  -------       --------
 1       65     C9300-48UXM          FCW2144L045  ec1d.8b0a.6800  V01           16.12.3a

Switch/Stack Mac Address : ec1d.8b0a.6800 - Local Mac Address
Mac persistency wait time: Indefinite
                                     Current
Switch#   Role        Priority      State
-----------------------------------------
*1       Active          1          Ready


 *** Executing show version ***


Cisco IOS XE Software, Version 16.12.03a
Cisco IOS Software [Gibraltar], Catalyst L3 Switch Software (CAT9K_IOSXE), Version
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documentation or "License Notice" file accompanying the IOS-XE software,
or the applicable URL provided on the flyer accompanying the IOS-XE
software.
ROM: IOS-XE ROMMON
BOOTLDR: System Bootstrap, Version 17.2.1r[FC1], RELEASE SOFTWARE (P)
Switch uptime is 4 minutes
Uptime for this control processor is 9 minutes
System returned to ROM by Reload Command
System image file is "flash:cat9k_iosxe.16.12.03a.SPA.bin"
Last reload reason: Reload Command
This product contains cryptographic features and is subject to United
States and local country laws governing import, export, transfer and
use. Delivery of Cisco cryptographic products does not imply
third-party authority to import, export, distribute or use encryption.
Importers, exporters, distributors and users are responsible for
compliance with U.S. and local country laws. By using this product you
agree to comply with applicable laws and regulations. If you are unable
to comply with U.S. and local laws, return this product immediately.
A summary of U.S. laws governing Cisco cryptographic products may be found at:
http://www.cisco.com/wwl/export/crypto/tool/stqrg.html
If you require further assistance please contact us by sending email to
export@cisco.com.
Technology Package License Information:
------------------------------------------------------------------------------
Technology-package                                  Technology-package
Current                       Type                     Next reboot
------------------------------------------------------------------------------
network-advantage       Smart License                 network-advantage
None                    Subscription Smart License    None
AIR License Level: AIR DNA Advantage
Next reload AIR license Level: AIR DNA Advantage
Smart Licensing Status: UNREGISTERED/EVAL EXPIRED
cisco C9300-48UXM (X86) processor with 1343703K/6147K bytes of memory.
Processor board ID FCW2144L045
```

```
1 Virtual Ethernet interface
4 Gigabit Ethernet interfaces
36 2.5 Gigabit Ethernet interfaces
20 Ten Gigabit Ethernet interfaces
2 TwentyFive Gigabit Ethernet interfaces
2 Forty Gigabit Ethernet interfaces
2048K bytes of non-volatile configuration memory.
8388608K bytes of physical memory.
1638400K bytes of Crash Files at crashinfo:.
11264000K bytes of Flash at flash:.
0K bytes of WebUI ODM Files at webui:.
Base Ethernet MAC Address          : ec:1d:8b:0a:68:00
Motherboard Assembly Number        : 73-17959-06
Motherboard Serial Number          : FOC21418FPQ
Model Revision Number              : B0
Motherboard Revision Number        : A0
Model Number                       : C9300-48UXM
System Serial Number               : FCW2144L045
Switch Ports Model              SW Version        SW Image              Mode
------ ----- -----              ----------        ----------            ----
*    1 65    C9300-48UXM        16.12.3a          CAT9K_IOSXE           BUNDLE
Configuration register is 0x102


 *** Configuring a Loopback Interface ***


Line 1 SUCCESS: interface loop 100
Line 2 SUCCESS: ip address 10.10.10.10 255.255.255.255
Line 3 SUCCESS: end


 *** Executing show ip interface brief  ***


Interface              IP-Address      OK? Method Status                Protocol
Vlan1                  unassigned      YES unset  up                    up
GigabitEthernet0/0     10.127.128.10   YES DHCP   up                    up
Tw1/0/1                unassigned      YES unset  down                  down
Tw1/0/2                unassigned      YES unset  down                  down
Tw1/0/3                unassigned      YES unset  down                  down
Tw1/0/4                unassigned      YES unset  down                  down
Tw1/0/5                unassigned      YES unset  down                  down
Tw1/0/6                unassigned      YES unset  down                  down
Tw1/0/7                unassigned      YES unset  down                  down
Tw1/0/8                unassigned      YES unset  down                  down
Tw1/0/9                unassigned      YES unset  down                  down
Tw1/0/10               unassigned      YES unset  down                  down
Tw1/0/11               unassigned      YES unset  down                  down
Tw1/0/12               unassigned      YES unset  down                  down
Tw1/0/13               unassigned      YES unset  down                  down
Tw1/0/14               unassigned      YES unset  down                  down
Tw1/0/15               unassigned      YES unset  down                  down
Tw1/0/16               unassigned      YES unset  down                  down
Tw1/0/17               unassigned      YES unset  down                  down
Tw1/0/18               unassigned      YES unset  down                  down
Tw1/0/19               unassigned      YES unset  down                  down
Tw1/0/20               unassigned      YES unset  down                  down
Tw1/0/21               unassigned      YES unset  down                  down
Tw1/0/22               unassigned      YES unset  down                  down
Tw1/0/23               unassigned      YES unset  down                  down
Tw1/0/24               unassigned      YES unset  down                  down
Tw1/0/25               unassigned      YES unset  down                  down
Tw1/0/26               unassigned      YES unset  down                  down
```

```
Tw1/0/27               unassigned      YES unset  down                  down
Tw1/0/28               unassigned      YES unset  down                  down
Tw1/0/29               unassigned      YES unset  down                  down
Tw1/0/30               unassigned      YES unset  down                  down
Tw1/0/31               unassigned      YES unset  down                  down
Tw1/0/32               unassigned      YES unset  down                  down
Tw1/0/33               unassigned      YES unset  down                  down
Tw1/0/34               unassigned      YES unset  down                  down
Tw1/0/35               unassigned      YES unset  down                  down
Tw1/0/36               unassigned      YES unset  down                  down
Te1/0/37               unassigned      YES unset  down                  down
Te1/0/38               unassigned      YES unset  down                  down
Te1/0/39               unassigned      YES unset  down                  down
Te1/0/40               unassigned      YES unset  down                  down
Te1/0/41               unassigned      YES unset  down                  down
Te1/0/42               unassigned      YES unset  down                  down
Te1/0/43               unassigned      YES unset  down                  down
Te1/0/44               unassigned      YES unset  down                  down
Te1/0/45               unassigned      YES unset  down                  down
Te1/0/46               unassigned      YES unset  down                  down
Te1/0/47               unassigned      YES unset  down                  down
Te1/0/48               unassigned      YES unset  up                    up
GigabitEthernet1/1/1   unassigned      YES unset  down                  down
GigabitEthernet1/1/2   unassigned      YES unset  down                  down
GigabitEthernet1/1/3   unassigned      YES unset  down                  down
GigabitEthernet1/1/4   unassigned      YES unset  down                  down
Te1/1/1                unassigned      YES unset  down                  down
Te1/1/2                unassigned      YES unset  down                  down
Te1/1/3                unassigned      YES unset  down                  down
Te1/1/4                unassigned      YES unset  down                  down
Te1/1/5                unassigned      YES unset  down                  down
Te1/1/6                unassigned      YES unset  down                  down
Te1/1/7                unassigned      YES unset  down                  down
Te1/1/8                unassigned      YES unset  down                  down
Fo1/1/1                unassigned      YES unset  down                  down
Fo1/1/2                unassigned      YES unset  down                  down
TwentyFiveGigE1/1/1    unassigned      YES unset  down                  down
TwentyFiveGigE1/1/2    unassigned      YES unset  down                  down
Ap1/0/1                unassigned      YES unset  up                    up
Loopback100            10.10.10.10     YES TFTP   up                    up


 *** Configuring username, password, SSH  ***


Line 1 SUCCESS: username cisco privilege 15 password cisco
**CLI Line # 1:  WARNING: Command has been added to the configuration using a type 0
password.
However, type 0 passwords will soon be deprecated. Migrate to a supported password type
Line 2 SUCCESS: ip domain name domain
Line 3 SUCCESS: line vty 0 15
Line 4 SUCCESS: login local
Line 5 SUCCESS: transport input all
Line 6 SUCCESS: end


 *** ZTP Day0 Python Script Execution Complete ***



Guestshell destroyed successfully
```

```
Press RETURN to get started!
```

Cisco IOS XE Amsterdam 17.2.x 以降のリリース

このセクションでは、.py スクリプトを実行する前の起動ログのサンプルを表示します。

```
--- System Configuration Dialog ---

Would you like to enter the initial configuration dialog? [yes/no]:
Acquired IPv4 address 10.127.128.8 on Interface GigabitEthernet0/0
Received following DHCPv4 options:
        bootfile        : test.py
        tftp-server-ip  : 159.14.27.2

OK to enter CLI now...

pnp-discovery can be monitored without entering enable mode

Entering enable mode will stop pnp-discovery

Attempting bootfile tftp://159.14.27.2/test.py
day0guestshell activated successfully
Current state is: ACTIVATED
day0guestshell started successfully
Current state is: RUNNING
Guestshell enabled successfully


 *** Sample ZTP Day0 Python Script ***

...

 *** ZTP Day0 Python Script Execution Complete ***

Guestshell destroyed successfully
```

このセクションでは、デイゼロプロビジョニング用にデバイスを設定する方法を示します。

```
Both links down, not waiting for other switches
Switch number is 1

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```

```
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ensure that your systems and networks are prepared for a shutdown of the
Software feature.


% Checking backup nvram
% No config present. Using default config

FIPS: Flash Key Check : Key Not Found, FIPS Mode Not Enabled

All TCP AO KDF Tests Pass
cisco C9300-48UXM (X86) processor with 1338934K/6147K bytes of memory.
Processor board ID FCW2144L045
2048K bytes of non-volatile configuration memory.
8388608K bytes of physical memory.
1638400K bytes of Crash Files at crashinfo:.
11264000K bytes of Flash at flash:.

Base Ethernet MAC Address          : ec:1d:8b:0a:68:00
Motherboard Assembly Number        : 73-17959-06
Motherboard Serial Number          : FOC21418FPQ
Model Revision Number              : B0
Motherboard Revision Number        : A0
Model Number                       : C9300-48UXM
System Serial Number               : FCW2144L045
CLEI Code Number                   :


No startup-config, starting autoinstall/pnp/ztp...

Autoinstall will terminate if any input is detected on console

Autoinstall trying DHCPv4 on GigabitEthernet0/0

Autoinstall trying DHCPv6 on GigabitEthernet0/0


         --- System Configuration Dialog ---
```

```
Would you like to enter the initial configuration dialog? [yes/no]:
Acquired IPv4 address 10.127.128.8 on Interface GigabitEthernet0/0
Received following DHCPv4 options:
        bootfile        : test.py
        tftp-server-ip  : 159.14.27.2

OK to enter CLI now...

pnp-discovery can be monitored without entering enable mode

Entering enable mode will stop pnp-discovery

Attempting bootfile tftp://159.14.27.2/test.py
day0guestshell activated successfully
Current state is: ACTIVATED
day0guestshell started successfully
Current state is: RUNNING
Guestshell enabled successfully


 *** Sample ZTP Day0 Python Script ***



 *** Executing show platform  ***


Switch  Ports    Model               Serial No.   MAC address     Hw Ver.       Sw Ver.

------  -----   ---------           -----------  --------------  -------       --------

 1       65     C9300-48UXM          FCW2144L045  ec1d.8b0a.6800  V01           17.02.01

Switch/Stack Mac Address : ec1d.8b0a.6800 - Local Mac Address
Mac persistency wait time: Indefinite
                                    Current
Switch#   Role        Priority      State
-----------------------------------------
*1       Active          1          Ready


 *** Executing show version ***


Cisco IOS XE Software, Version 17.02.01
Cisco IOS Software [Amsterdam], Catalyst L3 Switch Software (CAT9K_IOSXE), Version 17.2.1,
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documentation or "License Notice" file accompanying the IOS-XE software,
or the applicable URL provided on the flyer accompanying the IOS-XE
software.
ROM: IOS-XE ROMMON
BOOTLDR: System Bootstrap, Version 17.2.1r[FC1], RELEASE SOFTWARE (P)
Switch uptime is 2 minutes
Uptime for this control processor is 8 minutes
```

```
System returned to ROM by Reload Command
System image file is "flash:cat9k_iosxe.17.02.01.SPA.bin"
Last reload reason: Reload Command
This product contains cryptographic features and is subject to United
States and local country laws governing import, export, transfer and
use. Delivery of Cisco cryptographic products does not imply
third-party authority to import, export, distribute or use encryption.
Importers, exporters, distributors and users are responsible for
compliance with U.S. and local country laws. By using this product you
agree to comply with applicable laws and regulations. If you are unable
to comply with U.S. and local laws, return this product immediately.
A summary of U.S. laws governing Cisco cryptographic products may be found at:
http://www.cisco.com/wwl/export/crypto/tool/stqrg.html
If you require further assistance please contact us by sending email to
export@cisco.com.
Technology Package License Information:
------------------------------------------------------------------------------
Technology-package                                      Technology-package
Current                       Type                         Next reboot
------------------------------------------------------------------------------
network-advantage       Smart License                    network-advantage
None                    Subscription Smart License       None
AIR License Level: AIR DNA Advantage
Next reload AIR license Level: AIR DNA Advantage
Smart Licensing Status: UNREGISTERED/EVAL EXPIRED
cisco C9300-48UXM (X86) processor with 1338934K/6147K bytes of memory.
Processor board ID FCW2144L045
1 Virtual Ethernet interface
4 Gigabit Ethernet interfaces
36 2.5 Gigabit Ethernet interfaces
20 Ten Gigabit Ethernet interfaces
2 TwentyFive Gigabit Ethernet interfaces
2 Forty Gigabit Ethernet interfaces
2048K bytes of non-volatile configuration memory.
8388608K bytes of physical memory.
1638400K bytes of Crash Files at crashinfo:.
11264000K bytes of Flash at flash:.
Base Ethernet MAC Address          : ec:1d:8b:0a:68:00
Motherboard Assembly Number        : 73-17959-06
Motherboard Serial Number          : FOC21418FPQ
Model Revision Number              : B0
Motherboard Revision Number        : A0
Model Number                       : C9300-48UXM
System Serial Number               : FCW2144L045
CLEI Code Number                   :
Switch Ports Model              SW Version        SW Image              Mode
------ ----- -----              ----------        ----------            ----
*    1 65    C9300-48UXM        17.02.01          CAT9K_IOSXE           BUNDLE
Configuration register is 0x102


 *** Configuring a Loopback Interface ***


Line 1 SUCCESS: interface loop 100
Line 2 SUCCESS: ip address 10.10.10.10 255.255.255.255
Line 3 SUCCESS: end


 *** Executing show ip interface brief  ***


Interface              IP-Address      OK? Method Status                Protocol
Vlan1                  unassigned      YES unset  up                    up
```

```
GigabitEthernet0/0     10.127.128.8    YES DHCP   up                    up
Tw1/0/1                unassigned      YES unset  down                  down
Tw1/0/2                unassigned      YES unset  down                  down
Tw1/0/3                unassigned      YES unset  down                  down
Tw1/0/4                unassigned      YES unset  down                  down
Tw1/0/5                unassigned      YES unset  down                  down
Tw1/0/6                unassigned      YES unset  down                  down
Tw1/0/7                unassigned      YES unset  down                  down
Tw1/0/8                unassigned      YES unset  down                  down
Tw1/0/9                unassigned      YES unset  down                  down
Tw1/0/10               unassigned      YES unset  down                  down
Tw1/0/11               unassigned      YES unset  down                  down
Tw1/0/12               unassigned      YES unset  down                  down
Tw1/0/13               unassigned      YES unset  down                  down
Tw1/0/14               unassigned      YES unset  down                  down
Tw1/0/15               unassigned      YES unset  down                  down
Tw1/0/16               unassigned      YES unset  down                  down
Tw1/0/17               unassigned      YES unset  down                  down
Tw1/0/18               unassigned      YES unset  down                  down
Tw1/0/19               unassigned      YES unset  down                  down
Tw1/0/20               unassigned      YES unset  down                  down
Tw1/0/21               unassigned      YES unset  down                  down
Tw1/0/22               unassigned      YES unset  down                  down
Tw1/0/23               unassigned      YES unset  down                  down
Tw1/0/24               unassigned      YES unset  down                  down
Tw1/0/25               unassigned      YES unset  down                  down
Tw1/0/26               unassigned      YES unset  down                  down
Tw1/0/27               unassigned      YES unset  down                  down
Tw1/0/28               unassigned      YES unset  down                  down
Tw1/0/29               unassigned      YES unset  down                  down
Tw1/0/30               unassigned      YES unset  down                  down
Tw1/0/31               unassigned      YES unset  down                  down
Tw1/0/32               unassigned      YES unset  down                  down
Tw1/0/33               unassigned      YES unset  down                  down
Tw1/0/34               unassigned      YES unset  down                  down
Tw1/0/35               unassigned      YES unset  down                  down
Tw1/0/36               unassigned      YES unset  down                  down
Te1/0/37               unassigned      YES unset  down                  down
Te1/0/38               unassigned      YES unset  down                  down
Te1/0/39               unassigned      YES unset  down                  down
Te1/0/40               unassigned      YES unset  down                  down
Te1/0/41               unassigned      YES unset  down                  down
Te1/0/42               unassigned      YES unset  down                  down
Te1/0/43               unassigned      YES unset  down                  down
Te1/0/44               unassigned      YES unset  down                  down
Te1/0/45               unassigned      YES unset  down                  down
Te1/0/46               unassigned      YES unset  down                  down
Te1/0/47               unassigned      YES unset  down                  down
Te1/0/48               unassigned      YES unset  up                    up
GigabitEthernet1/1/1   unassigned      YES unset  down                  down
GigabitEthernet1/1/2   unassigned      YES unset  down                  down
GigabitEthernet1/1/3   unassigned      YES unset  down                  down
GigabitEthernet1/1/4   unassigned      YES unset  down                  down
Te1/1/1                unassigned      YES unset  down                  down
Te1/1/2                unassigned      YES unset  down                  down
Te1/1/3                unassigned      YES unset  down                  down
Te1/1/4                unassigned      YES unset  down                  down
Te1/1/5                unassigned      YES unset  down                  down
Te1/1/6                unassigned      YES unset  down                  down
Te1/1/7                unassigned      YES unset  down                  down
Te1/1/8                unassigned      YES unset  down                  down
Fo1/1/1                unassigned      YES unset  down                  down
Fo1/1/2                unassigned      YES unset  down                  down
TwentyFiveGigE1/1/1    unassigned      YES unset  down                  down
```

```
TwentyFiveGigE1/1/2    unassigned      YES unset  down                  down
Ap1/0/1                unassigned      YES unset  up                    up
Loopback100            10.10.10.10     YES TFTP   up                    up


 *** Configuring username, password, SSH  ***


Line 1 SUCCESS: username cisco privilege 15 password cisco
**CLI Line # 1:  WARNING: Command has been added to the configuration using a type 0
password.
However, type 0 passwords will soon be deprecated. Migrate to a supported password type
Line 2 SUCCESS: ip domain name domain
Line 3 SUCCESS: line vty 0 15
Line 4 SUCCESS: login local
Line 5 SUCCESS: transport input all
Line 6 SUCCESS: end


 *** ZTP Day0 Python Script Execution Complete ***



Guestshell destroyed successfully
Script execution success!



Press RETURN to get started!
```

ゼロ タッチ プロビジョニングの機能情報

次の表に、このモジュールで説明した機能に関するリリース情報を示します。この表は、ソフトウェア リリース トレインで各機能のサポートが導入されたときのソフトウェア リリースだけを示しています。その機能は、特に断りがない限り、それ以降の一連のソフトウェア リリースでもサポートされます。

プラットフォームのサポートおよびシスコ ソフトウェアイメージのサポートに関する情報を検索するには、Cisco Feature Navigator を使用します。Cisco Feature Navigator にアクセスするには、www.cisco.com/go/cfn に移動します。Cisco.com のアカウントは必要ありません。

表 *1:* ゼロ タッチ プロビジョニングの機能情報

機能名	リリース	機能情報
ゼロ タッチ プロビジョニング	Cisco IOS XE Everest 16.5.1a Cisco IOS XE Everest 16.5.1b Cisco IOS XE Fuji 16.7.1 Cisco IOS XE Fuji 16.8.2 Cisco IOS XE Gibraltar 16.12.1 Cisco IOS XE Amsterdam 17.2.1 Cisco IOS XE Amsterdam 17.3.1	

機能名	リリース	機能情報
		ネットワーク プロビジョニングの課題に対応するため、シスコは、ゼロ タッチ プロビジョニング モデルを導入しました。 Cisco IOS XE Everest 16.5.1a では、この機能は次のプラットフォームに実装されていました。 • Cisco Catalyst 3650 シリーズ スイッチ • Cisco Catalyst 3850 シリーズ スイッチ • Cisco Catalyst 9300 シリーズ スイッチ • Cisco Catalyst 9500 シリーズ スイッチ Cisco IOS XE Everest 16.5.1b では、この機能は次のプラットフォームに実装されていました。 • ゲストシェルをサポートするための、最低 8 GB の RAM を搭載した Cisco 4000 シリーズ サービス統合型ルータ モデル。 Cisco IOS XE Fuji 16.7.1 では、この機能は次のプラットフォームに実装されていました。 • Cisco ASR 1000 アグリゲーション サービス ルータ（ASR1001-X、ASR1001-HX、ASR1002-X、ASR1002-HX） Cisco IOS XE Fuji 16.8.2 では、この機能は次のプラットフォームに実装されていました。 • Cisco ASR 1000 シリーズ アグリゲーション サービス ルータ（ASR1004、ASR1006、ASR1006-X、ASR1009-X、ASR1013）

機能名	リリース	機能情報
		この機能は、Cisco IOS XE Gibraltar 16.12.1 で次のプラットフォームに実装されました。 • Cisco Catalyst 9200 シリーズ スイッチ （注） この機能は C9200L SKU ではサポートされていません。 • Cisco Catalyst 9300L SKU • Cisco Catalyst 9600 シリーズ スイッチ • Cisco Catalyst 9800-40 ワイヤレスコントローラ • Cisco Catalyst 9800-80 ワイヤレスコントローラ この機能は、Cisco IOS XE Amsterdam 17.2.1で次のプラットフォームに実装されました。 • Cisco Cloud Services Router 1000V シリーズ • Cisco C1100 ターミナル サービス ゲートウェイ（C1100TGX-1N24P32A でのみサポート） この機能は、Cisco IOS XE Amsterdam 17.3.1 で次のプラットフォームに実装されました。 • Cisco Catalyst 8200 シリーズ エッジ プラットフォーム • Cisco Catalyst 8300 シリーズ エッジ プラットフォーム • Cisco Catalyst 8500 および 8500L シリーズ エッジ プラットフォーム

機能名	リリース	機能情報
ゼロ タッチ プロビジョニング：HTTP ダウンロード	Cisco IOS XE Fuji 16.8.1 Cisco IOS XE Fuji 16.8.1a	ゼロ タッチプロビジョニングは、HTTP および TFTP のファイル ダウンロードをサポートします。 Cisco IOS XE Everest 16.8.1 では、この機能は次のプラットフォームに実装されていました。 • Cisco 4000 シリーズ サービス統合型ルータ • Cisco Catalyst 3650 シリーズ スイッチ • Cisco Catalyst 3850 シリーズ スイッチ • Cisco Catalyst 9300 シリーズ スイッチ • Cisco Catalyst 9500 シリーズ スイッチ Cisco IOS XE Fuji 16.8.1a では、この機能は Cisco Catalyst 9500 ハイ パフォーマンス シリーズ スイッチに実装されていました。
ゼロタッチ プロビジョニングのための DHCPv6 のサポート	Cisco IOS XE Fuji 16.9.1 Cisco IOS XE Amsterdam 17.3.2a	Cisco IOS XE Fuji 16.9.1 では、この機能は次のプラットフォームに実装されていました。 • Cisco Catalyst 9300 シリーズ スイッチ • Cisco Catalyst 9500 シリーズ スイッチ Cisco IOS XE Amsterdam 17.3.2a では、この機能は次のプラットフォームに導入されました。 • Cisco Catalyst 9800-40 ワイヤレスコントローラ • Cisco Catalyst 9800-80 ワイヤレスコントローラ

翻訳について
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