



2018

Do you still need CIM?

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eSynergySolutions





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Slides and code will be available
from:

<https://github.com/RichardSiddaway>



Background

CIM = WMI = CIM - Common Information Model

Windows Management Instrumentation

≥ Windows NT 4 SP4 out-of-band download

PowerShell v1 – Get-WMIobject

≥ DCOM

PowerShell v2 – WMI cmdlets

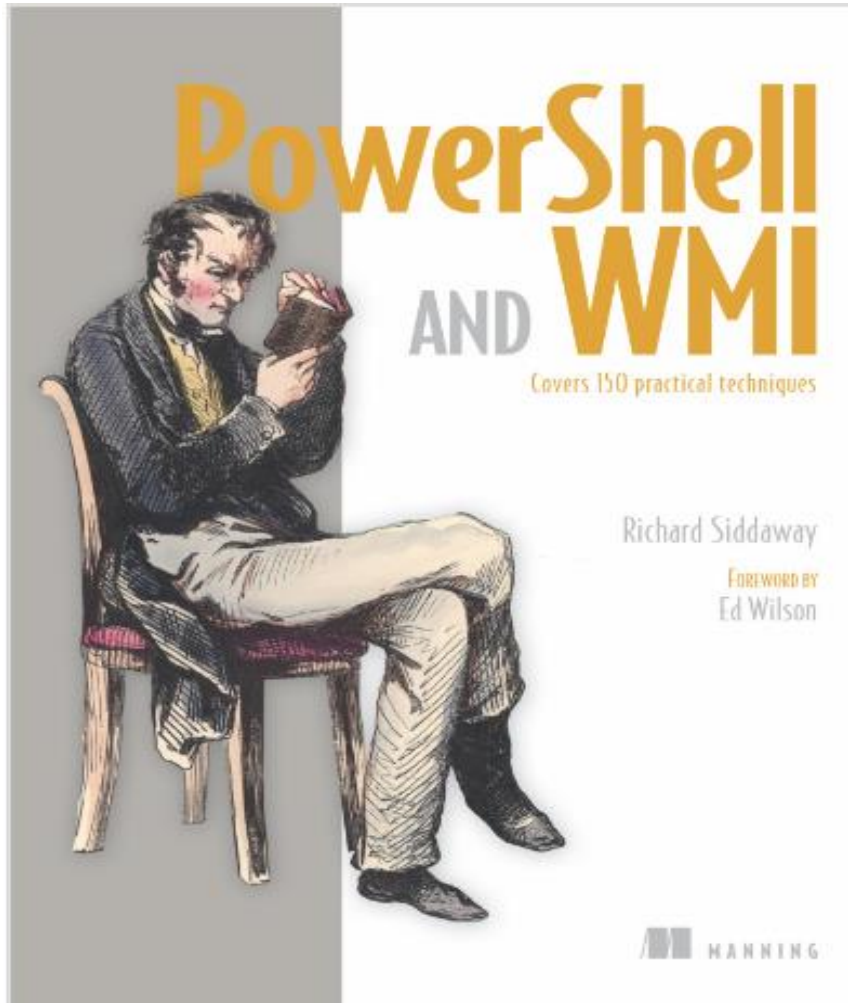
PowerShell v3 – CIM cmdlets, CIM sessions, CDXML

≥ WSMAN

Some cmdlets use WMI directly e.g. Get-Hotfix

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Essential Reference



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CIM structure

“Database”

Providers

NameSpaces

Classes

Methods

Properties

≥ Most read only

Instances

Events

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Demo:
CimStructure.ps1





I'll be using CIM and WMI interchangeably unless referring to the WMI or CIM cmdlets





The Pain Joy of WMI

Originally accessed WMI classes through VBScript

≥ Still see bad code based on VBscript examples

Poor or no documentation

Classes CHANGE with Windows version

WMI cmdlets use DCOM

Dates in WMI cmdlets

CIM cmdlets return inert objects

≥ Serialised / de-serialised



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Demo:
Demo.ps1



CDXML to the rescue?

Cmdlets over objects

New CIM classes

≥ Microsoft.Management.Infrastructure.CimInstance#ROOT/StandardCimv2/MSFT_NetAdapter

Manage:

- ≥ Storage
- ≥ Networking
- ≥ DNS client
- ≥ Defender
- ≥ iSCSI
- ≥ Print Management
- ≥ etc



Demo:
CDXMLdemo.ps1



Then along came OMI

Originally with Open Group

Open Management Infrastructure

- ≥ Lightweight, portable CIM
- ≥ Linux and network switches
- ≥ Required for DSC on Linux
- ≥ No classes on Linux

<https://github.com/Microsoft/omi>

<https://github.com/PowerShell/psl-omi-provider/releases>

<https://github.com/Microsoft/PowerShell-DSC-for-Linux/releases>



Demo:
NetworkSwitch.ps1





CIM eventing

CIM Indications

CIM_Inst* classes (generic)

Specific event classes

Register events

Uses PowerShell event engine

Specify Action -> PowerShell job

Permanent WMI events?

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Demo:
autocopy.ps1





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So
Is CIM still needed?





Yes indeed

Fill the cmdlet gaps

PowerShell v6?

Associated Instances

DSC

OMI

≥ Network switches etc

Windows Admin Center

SCCM

GPO – WMI filters

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Thank you

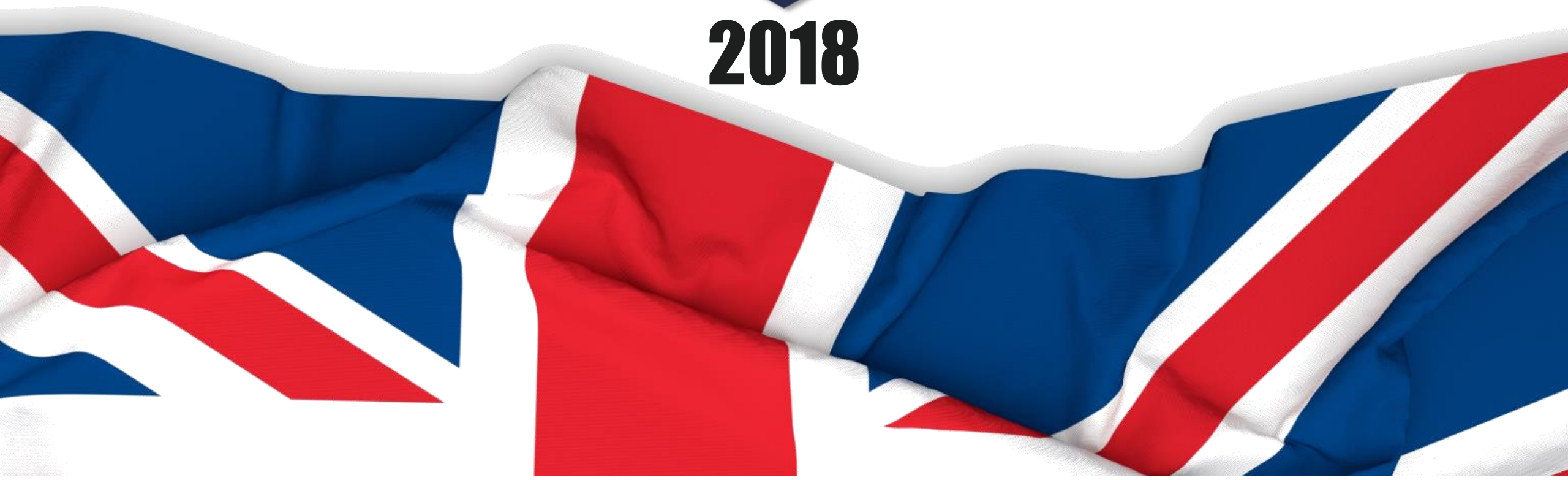


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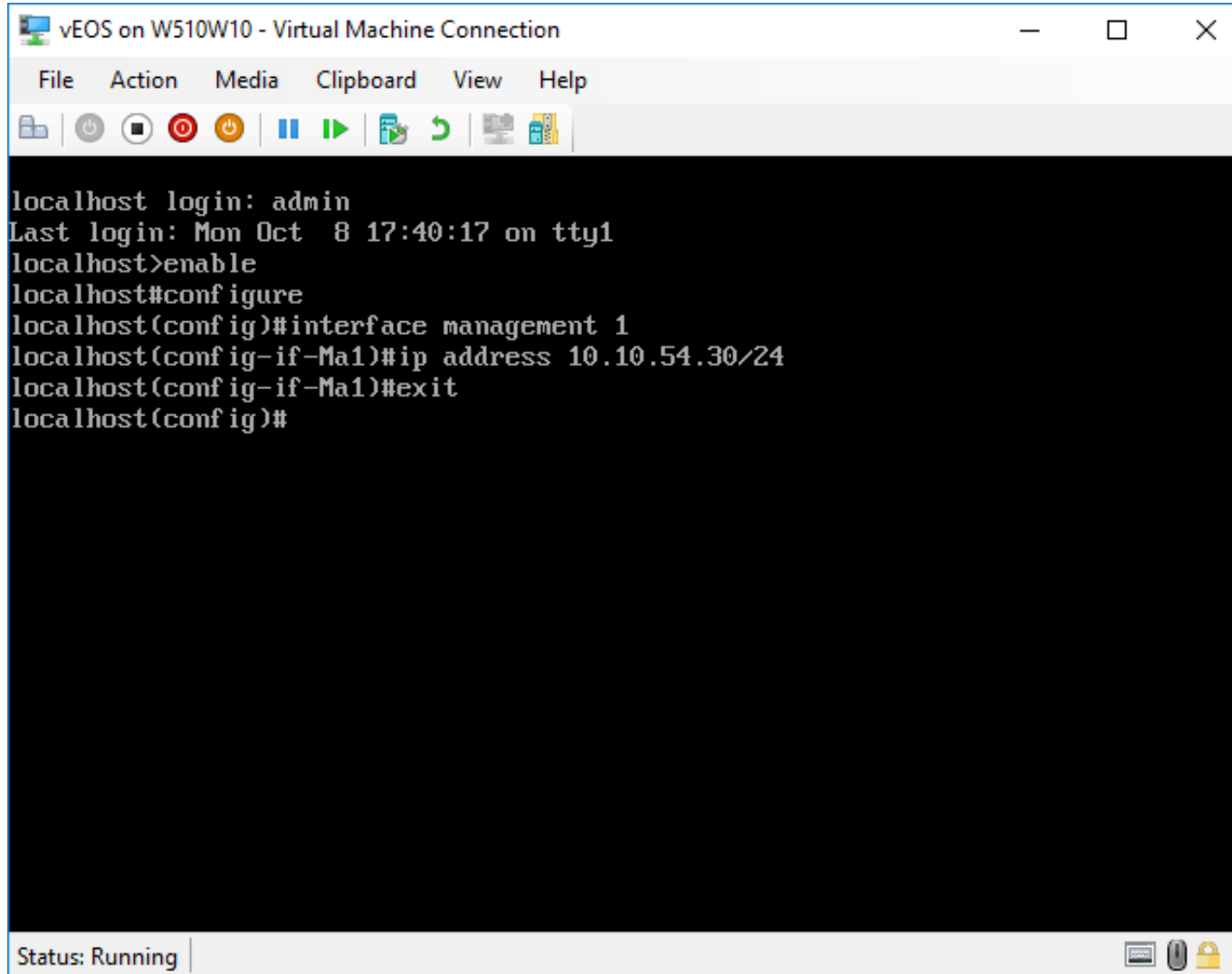




REFERENCE:
Configuring Arista switch



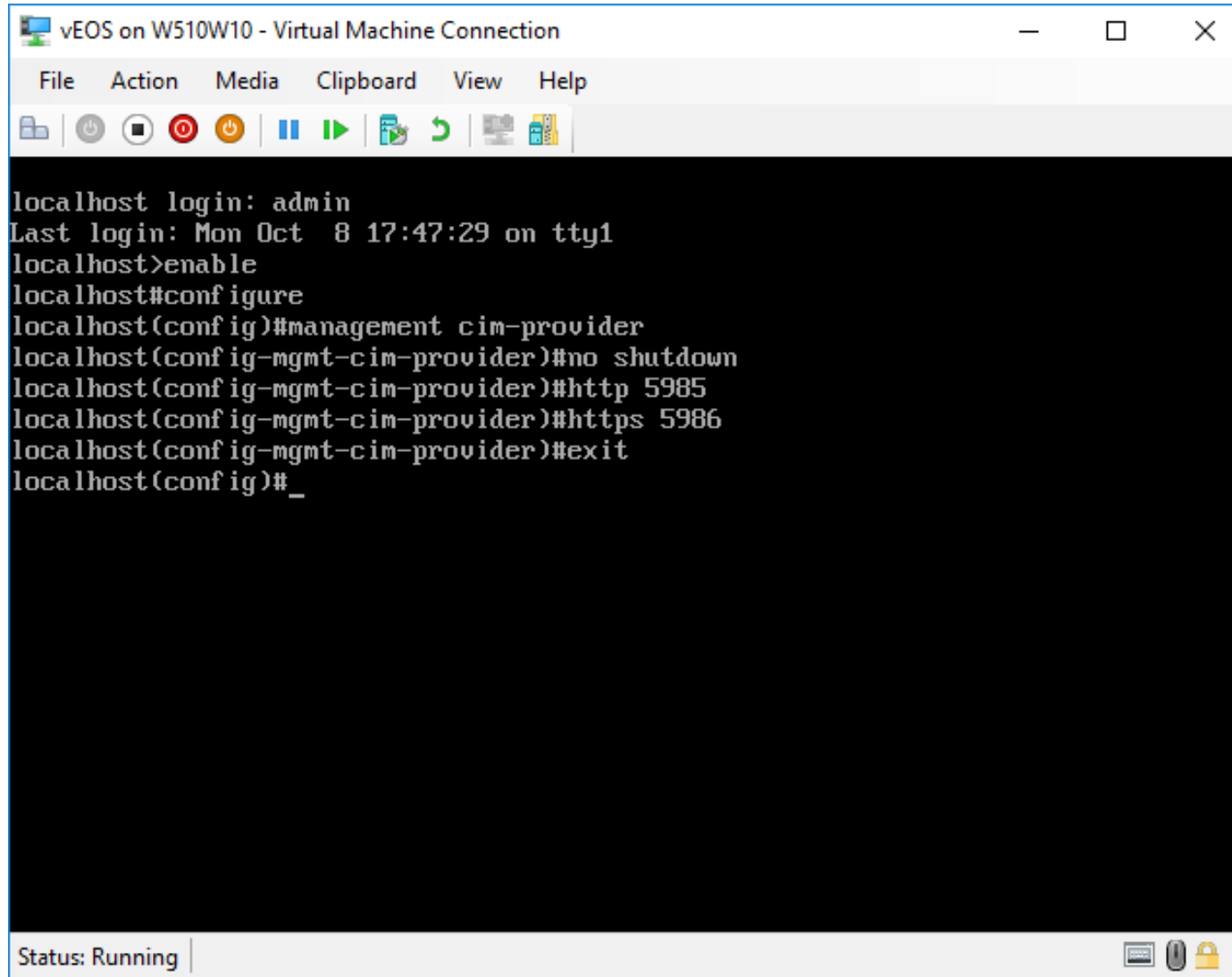
Configure IP address



```
vEOS on W510W10 - Virtual Machine Connection
File Action Media Clipboard View Help
localhost login: admin
Last login: Mon Oct 8 17:40:17 on tty1
localhost>enable
localhost#configure
localhost(config)#interface management 1
localhost(config-if-Ma1)#ip address 10.10.54.30/24
localhost(config-if-Ma1)#exit
localhost(config)#
```

Status: Running

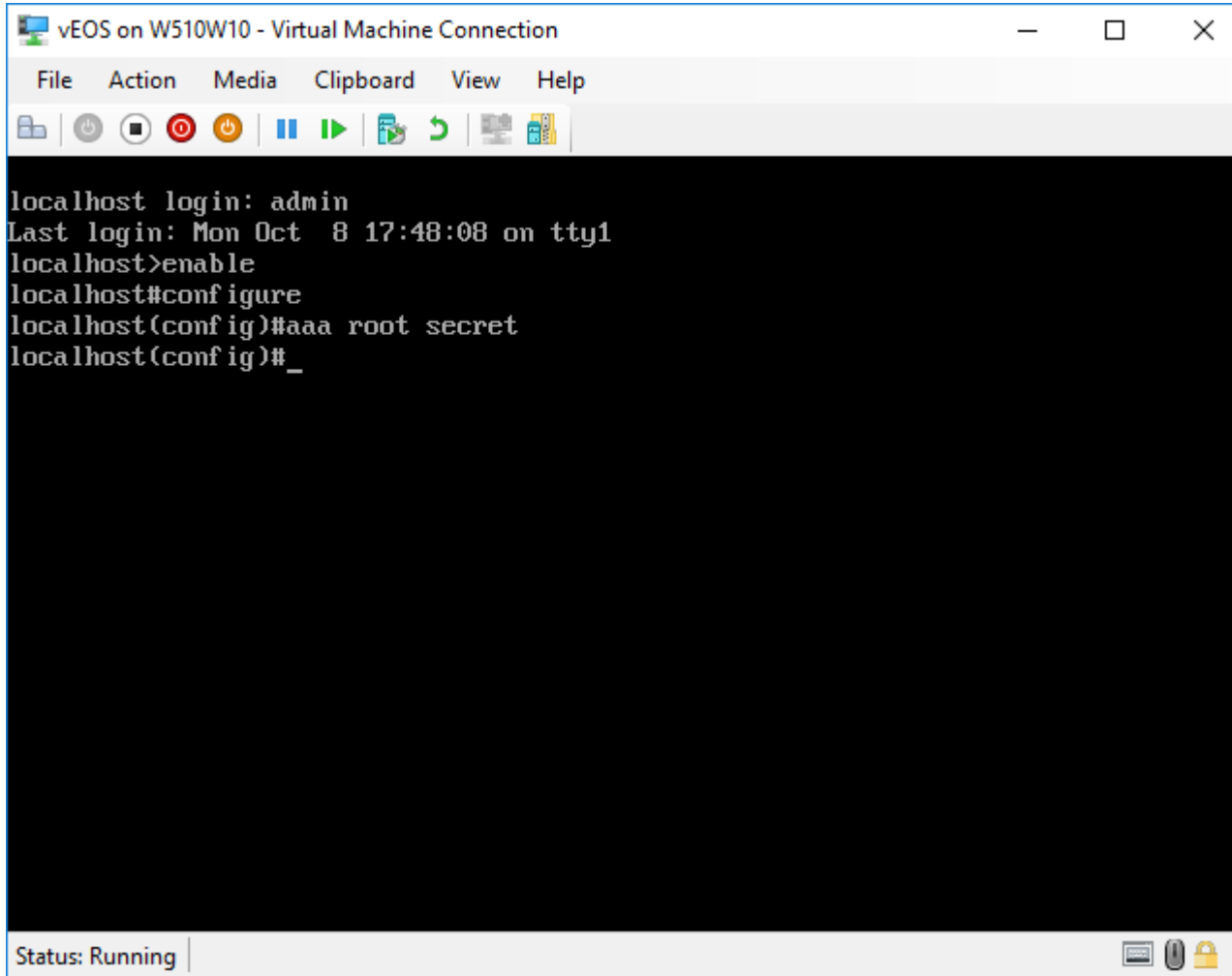
Configure OMI



```
localhost login: admin
Last login: Mon Oct  8 17:47:29 on tty1
localhost>enable
localhost#configure
localhost(config)#management cim-provider
localhost(config-mgmt-cim-provider)#no shutdown
localhost(config-mgmt-cim-provider)#http 5985
localhost(config-mgmt-cim-provider)#https 5986
localhost(config-mgmt-cim-provider)#exit
localhost(config)#_

Status: Running
```

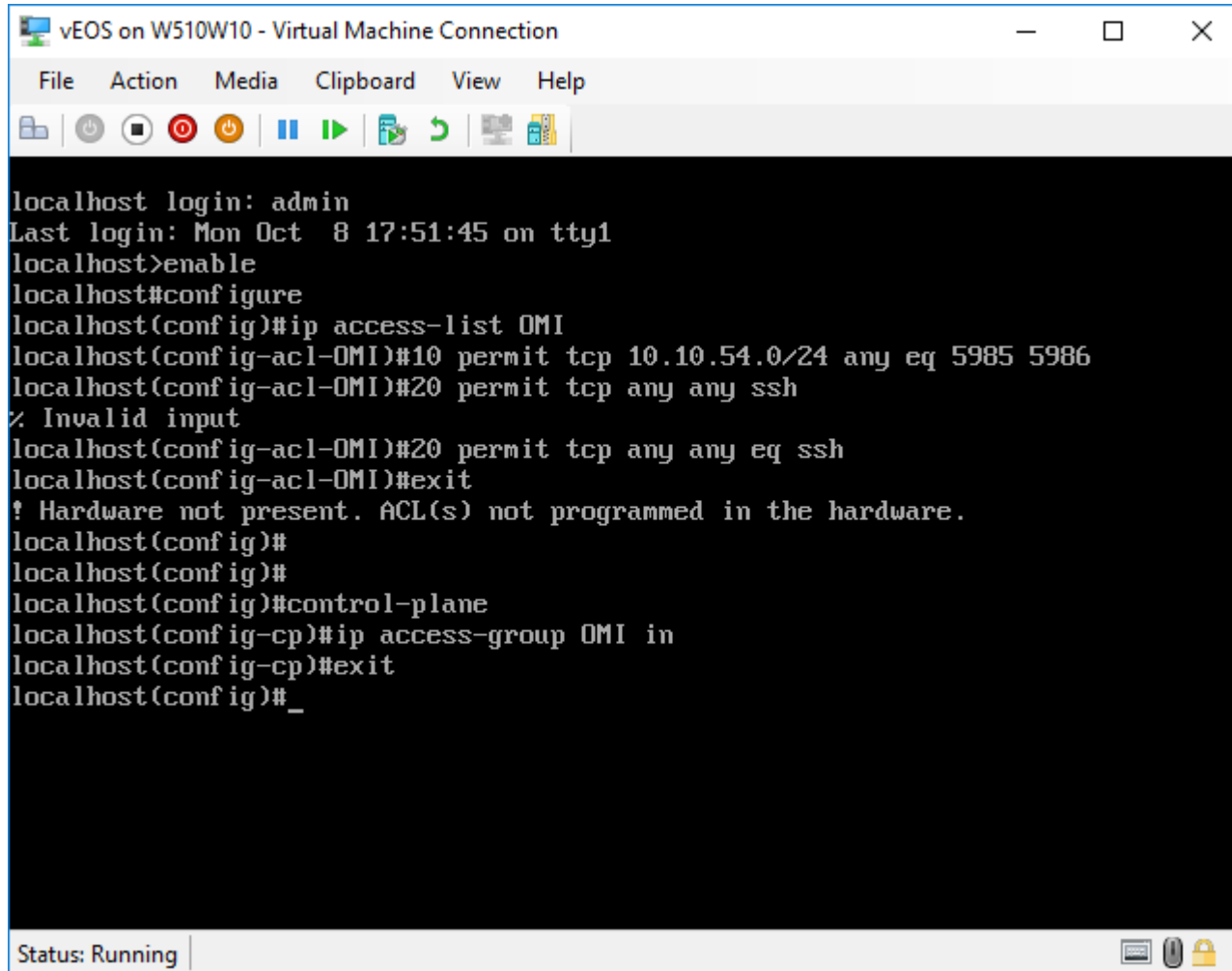
Set root password

A screenshot of a virtual machine connection window titled 'vEOS on W510W10 - Virtual Machine Connection'. The window has a menu bar with 'File', 'Action', 'Media', 'Clipboard', 'View', and 'Help'. Below the menu bar is a toolbar with various icons. The main area is a black terminal window with white text. The text shows a login sequence: 'localhost login: admin', 'Last login: Mon Oct 8 17:48:08 on tty1', 'localhost>enable', 'localhost#configure', 'localhost(config)#aaa root secret', and 'localhost(config)#_'. At the bottom of the window, there is a status bar that says 'Status: Running' and some icons on the right.

```
localhost login: admin
Last login: Mon Oct 8 17:48:08 on tty1
localhost>enable
localhost#configure
localhost(config)#aaa root secret
localhost(config)#_
```

Status: Running

Access control



```
vEOS on W510W10 - Virtual Machine Connection
File Action Media Clipboard View Help
localhost login: admin
Last login: Mon Oct 8 17:51:45 on tty1
localhost>enable
localhost#configure
localhost(config)#ip access-list OMI
localhost(config-acl-OMI)#10 permit tcp 10.10.54.0/24 any eq 5985 5986
localhost(config-acl-OMI)#20 permit tcp any any ssh
% Invalid input
localhost(config-acl-OMI)#20 permit tcp any any eq ssh
localhost(config-acl-OMI)#exit
! Hardware not present. ACL(s) not programmed in the hardware.
localhost(config)#
localhost(config)#
localhost(config)#control-plane
localhost(config-cp)#ip access-group OMI in
localhost(config-cp)#exit
localhost(config)#_

Status: Running
```