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**Introducing CIM**

- WMI data is an important part of managing Windows networks
- WMI as we know it is not very firewall or cloud friendly
- Microsoft's WMI implementation is proprietary and closed
- The future is about open standards

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**Introducing CIM**

WMF 3.0 now supports CIM standards using the latest WS-Management protocol (WSMan)

Query WMI over single, secure and encrypted port

CIM cmdlets use a CIMSession

- Relies on PowerShell remoting protocol - WSMan
- Results are deserialized objects

Many new cmdlets in Windows Server 2012 are based on CIM, new namespaces and classes

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## CIM Sessions

Similar to a PSSession

Directed at WMI connections

Default protocol is WSMAN

Some CIM-based cmdlets create CIM sessions "on-the-fly"

You can pre-configure a session to use DCOM for legacy systems

You can configure a session to use alternate credentials

- Works with local computers!

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## Creating CIMSessions

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## CIM Cmdlets



Default to local computer



If you specify a computer name, a temporary CIMSession (using WSMAN) will be created

- Will fail for PowerShell 2.0 systems
- Slow performing over many machines



Re-use existing (previously created CIMSessions)



Pipe CIMSessions to CIM cmdlets for instant connectivity



Query \*any\* device that supports CIM and WSMAN

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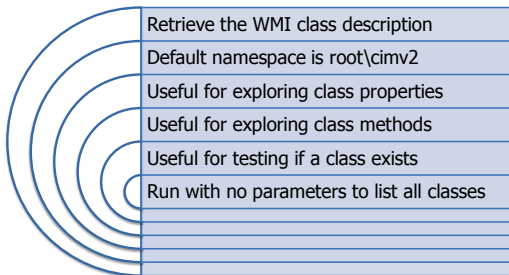
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## Get-CIMClass



```
PS C:\ get-cimclass win32* -property size
```

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## Get-CIMInstance

CIM equivalent to Get-WmiObject

- Use same select queries
- Use same filter queries

Default namespace is root\cimv2

Uses COM locally

Uses (or creates) CIMSessions

Can retrieve key property only

```
PS C:\> get-ciminstance win32_volume  
-filter "drivetype=3 AND Name like '[a-z]:%'" | Select name
```

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## CIM in Action

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### Invoke CIM Methods

- CIM objects are deserialized so there are no methods
- Must use Invoke-CIMMethod
- Get or specify references to CIM objects
- Specify method name
- Pass a hashtable of method parameters
- ReturnValue indicates success or failure

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## CIM Methods in Action

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### CIM or WMI?

WMI as we know it will exist for a while

Microsoft's long term strategy is based on CIM and open standards

Begin using CIM cmdlets today

- Same classes and namespaces
- Same filtering techniques
- Often performs faster

Create DCOM-based CIMSessions for legacy systems

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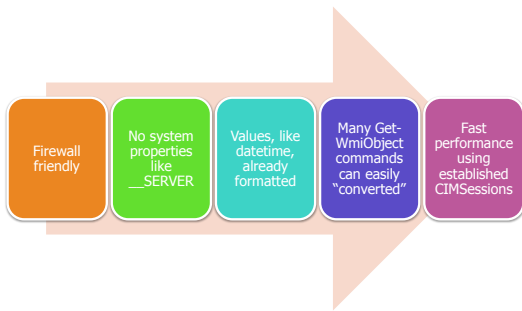
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## CIM Benefits



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## Lab

1. Get all instances of the Win32\_Volume class on your computer for fixed volumes and select its name, size, freespace and the filesystem. Format the sizes in MB.
2. Get the Win32\_OperatingSystem class and display the computer name, the name of the operating system, when it was installed, last booted, a calculated property for the uptime and a property that indicates if it is 64 bit or not.
3. Use CIMSessions to remote computers if you can.

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