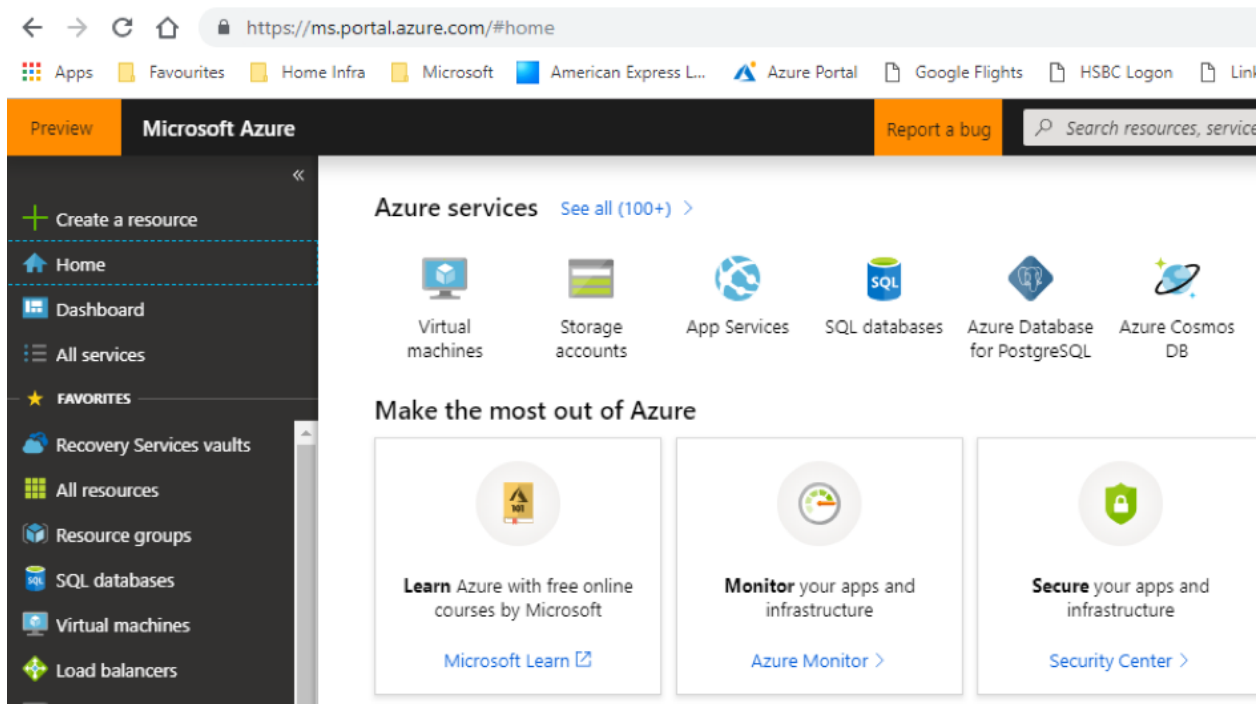


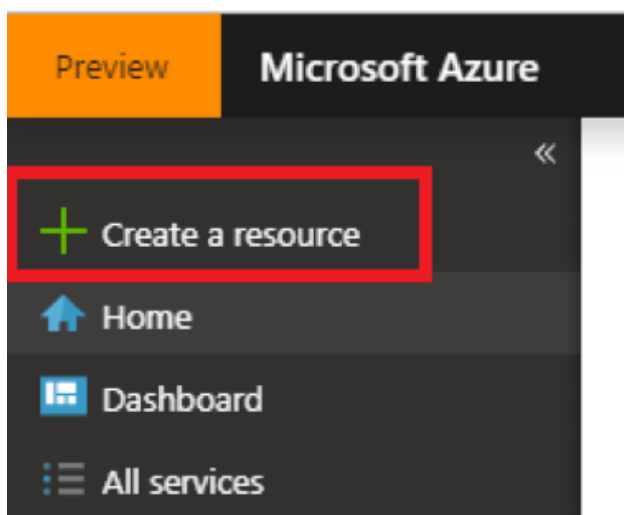
# Lab 1: Provision a server via the Azure Portal and use DSC to configure the IIS role

[<- Introduction](#) | [Home](#) | [Lab 2: Work with an ARM template from an existing resource](#) ->

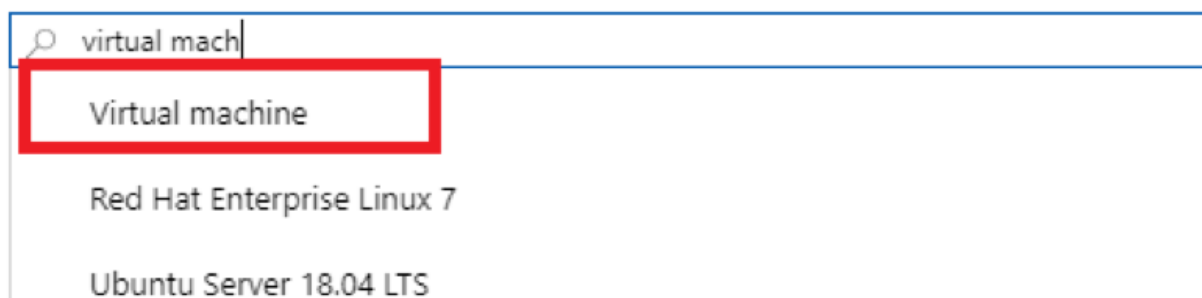
1. Log onto the [Azure Portal](https://portal.azure.com) (<https://portal.azure.com>):



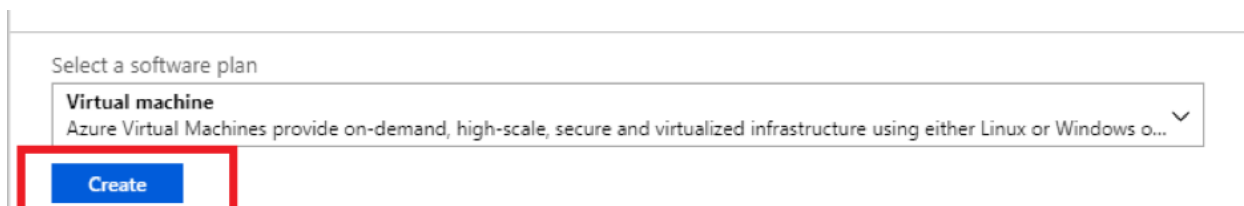
2. Choose 'Create a resource':



3. Start typing 'Virtual Machine' until the option to create a Virtual Machine is displayed and then click on it:



4. Click the blue 'Create' button at the bottom of the screen:



5. Fill in the parameters as per the screenshot below for your virtual machine:

\* Subscription ⓘ Microsoft Azure Internal Consumption (Your own Azure Subscription) ✓

\* Resource group ⓘ S77TAS Resource Group name of your choice ✓

[Create new](#)

## INSTANCE DETAILS

\* Virtual machine name ⓘ vmname ✓

\* Region ⓘ UK South ✓

Availability options ⓘ No infrastructure redundancy required ✓

\* Image ⓘ [smalldisk] Windows Server 2016 Datacenter ✓

[Browse all images](#)

\* Size ⓘ **Standard DS2 v2**  
2 vcpus, 7 GB memory [Change size](#)

## ADMINISTRATOR ACCOUNT

\* Username ⓘ vmadmin ✓

\* Password ⓘ ..... Password of your choice ✓


\* Confirm password ⓘ ..... ✓

## INBOUND PORT RULES

Select which virtual machine network ports are accessible from the public internet. You can specify more limited or granular network access on the Networking tab.

\* Public inbound ports ⓘ ☐ None ☒ Allow selected ports



\* Select inbound ports RDP ✓


 These ports will be exposed to the internet. Use the Advanced controls to limit inbound traffic to known IP addresses. You can also update inbound traffic rules later.

## SAVE MONEY

Save up to 49% with a license you already own using Azure Hybrid Benefit. [Learn more](#)

\* Already have a Windows license? ⓘ ☐ Yes ☒ No

\* OS disk type  Premium SSD 

Enable Ultra SSD compatibility (Preview)  ☐ Yes ☒ No


Ultra SSD compatibility is not available for this VM size and location.

**DATA DISKS**

You can add and configure additional data disks for your virtual machine or attach existing disks. This VM also comes with a temporary disk.



LUN	NAME	SIZE (GIB)	DISK TYPE	HOST CACHING
<a href="#">Create and attach a new disk</a> <a href="#">Attach an existing disk</a>				

^ ADVANCED


Use managed disks  ☐ No ☒ Yes

6. On the 'Networking' tab, if you do not have a demo / test virtual network (VNET) already provisioned then choose 'Create new' and fill in the parameters as per screenshot below:

**CONFIGURE VIRTUAL NETWORKS**




\* Virtual network  LAB VNET 

Create new

\* Name LAB-VNET 





**ADDRESS SPACE**

The virtual network's address space, specified as one or more address prefixes in CIDR notation (e.g. 192.168.1.0/24).


<input type="checkbox"/>	ADDRESS RANGE	ADDRESSES	OVERLAP	
<input type="checkbox"/>	172.18.0.0/16 	172.18.0.0 - 172.18.255.255 (65536 addresses)	None	 
<input type="checkbox"/>		(0 Addresses)	None	

**SUBNETS**

The subnet's address range in CIDR notation. It must be contained by the address space of the virtual network.


<input type="checkbox"/>	SUBNET NAME	ADDRESS RANGE	ADDRESSES	
<input type="checkbox"/>	LAB-SN1 	172.18.1.0/24 	172.18.1.0 - 172.18.1.255 (256 addresses)	 
<input type="checkbox"/>			(0 Addresses)	


7. The remainder of the 'Networking' settings can be left as default including the creation of a new public IP Address for your VM:

Public IP ⓘ (new) labadmindemo-ip  [Create new](#)

NIC network security group ⓘ ☐ None ☒ Basic ☐ Advanced

\* Public inbound ports ⓘ ☐ None ☒ Allow selected ports

\* Select inbound ports RDP 

 These ports will be exposed to the internet. Use the Advanced controls to limit inbound traffic to known IP addresses. You can also update inbound traffic rules later.

Accelerated networking ⓘ ☒ On ☐ Off

**LOAD BALANCING**

You can place this virtual machine in the backend pool of an existing Azure load balancing solution. [Learn more](#)

Place this virtual machine behind an existing load balancing solution? ☐ Yes ☒ No

8. Click 'Review + create' and then 'Create' once the validation has passed:

Review + create

Previous

Next : Management >

✓ Validation passed

Basics

Disks

Networking

Management

Advanced

Tags

Review + create

PRODUCT DETAILS

Standard DS2 v2  
by Microsoft  
[Terms of use](#) | [Privacy policy](#)

Subscription credits apply ⓘ  
**0.2191 GBP/hr**  
<a href="https://azure.microsoft.com/pricing/details/virtual-ma

TERMS

By clicking "Create", I (a) agree to the legal terms and privacy statement(s) associated with the Marketplace offering(s) I: authorize Microsoft to bill my current payment method for the fees associated with the offering(s), with the same billing my Azure subscription; and (c) agree that Microsoft may share my contact, usage and transactional information with the the offering(s) for support, billing and other transactional activities. Microsoft does not provide rights for third-party offe

[Azure Marketplace Terms](#) for additional details.

BASICS

Subscription	Microsoft Azure Internal Consumption
Resource group	S77TAS
Virtual machine name	labadmindemo
Region	UK South
Availability options	No infrastructure redundancy required
Username	vmadmin
Public inbound ports	RDP
Already have a Windows license?	No

DISKS

OS disk type	Premium SSD
Use managed disks	Yes

NETWORKING

Virtual network	LAB_VNET
-----------------	----------

Create

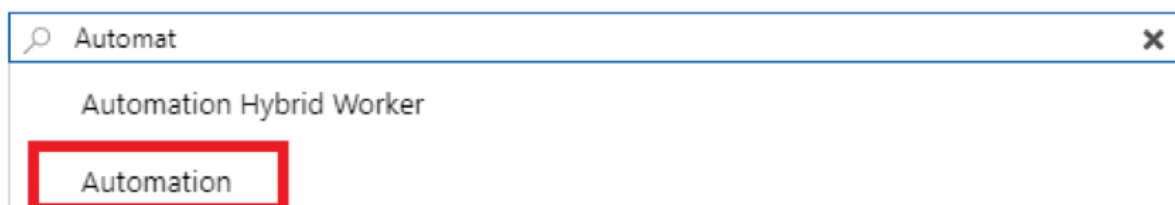
Previous

Next

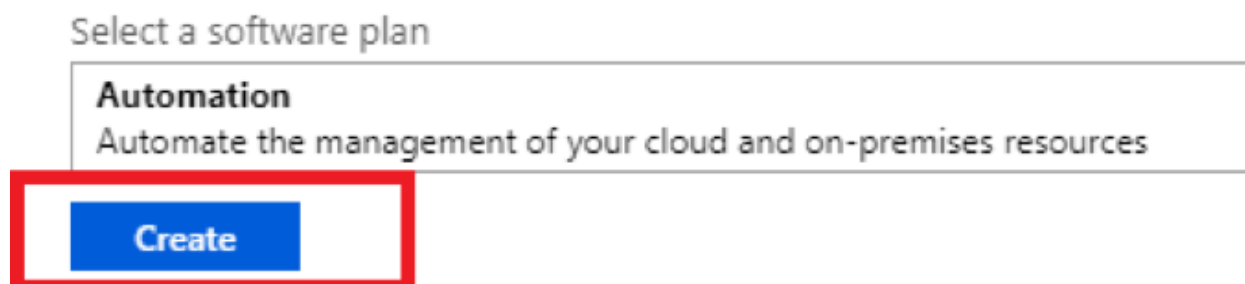
[Download a template for automation](#)

9. Whilst the VM is provisioning, we can create an Azure Automation account which is required to setup and apply DSC profiles.

Click 'Create a resource' and start typing 'Automation' until the option of creating an Automation account appears and then click on it:



10. Click on the blue 'Create' button at the bottom of the screen:



11. Fill in the parameters as per the screenshot below and then click 'Create':

\* Name ⓘ  
labautomation ✓


\* Subscription  
Microsoft Azure Internal Consumption ✓ **Your subscription name**



\* Resource group  
S77TAS **Your resource group name** ▼

[Create new](#)

\* Location  
UK South ▼

\* Create Azure Run As account ⓘ  
☒ Yes ☐ No

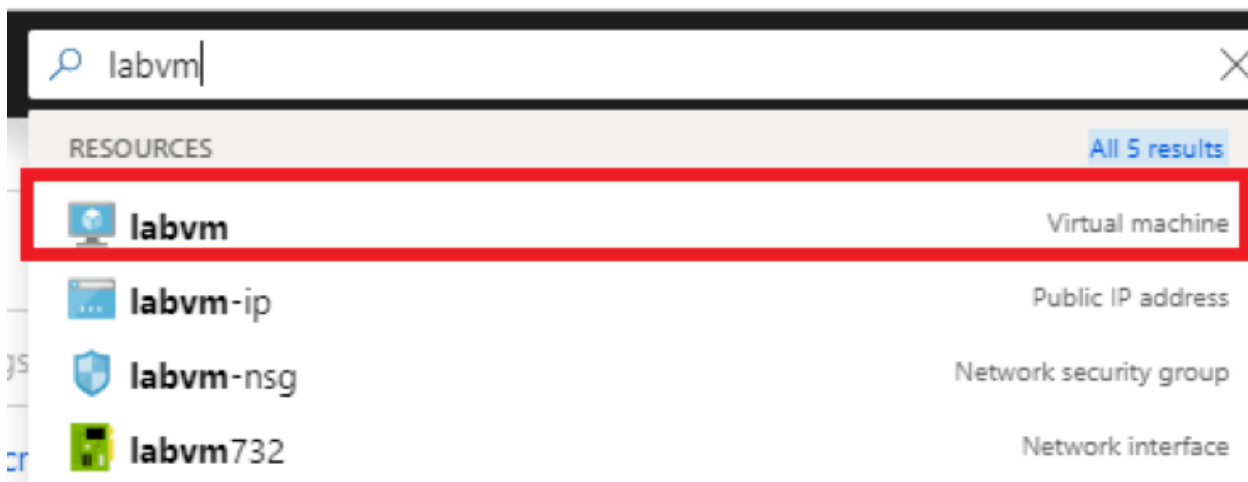
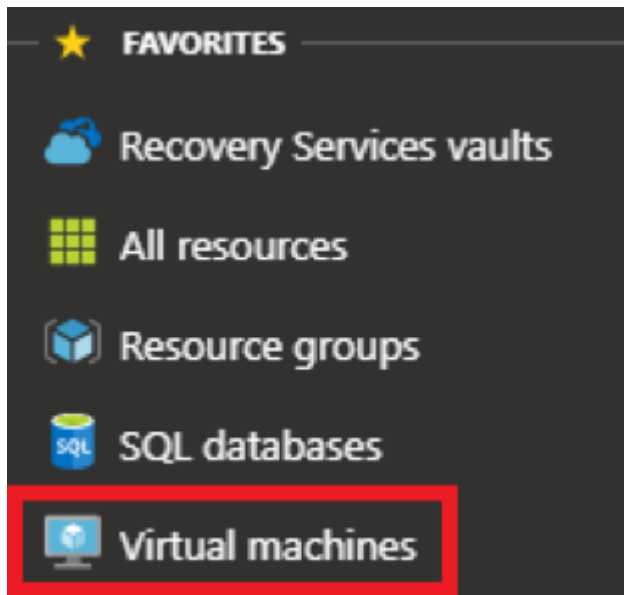
 The Run As account feature will create a Run As account and a Classic Run As account. [Click here to learn more about Run As accounts.](#)

 Learn more about Automation pricing. 

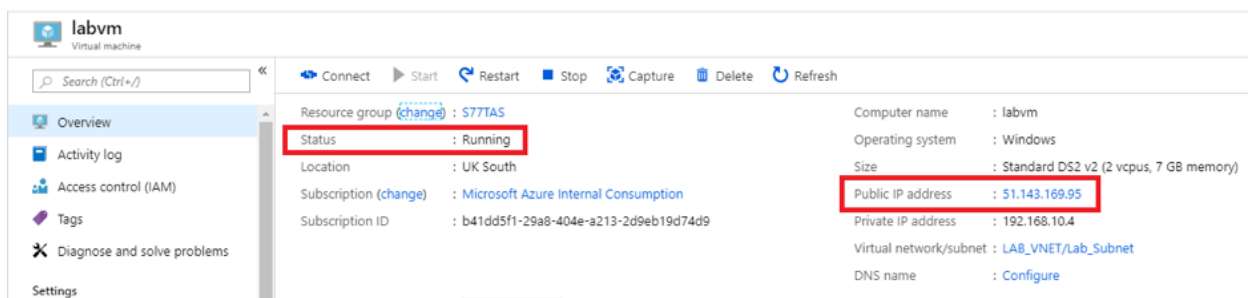
Create

12. Confirm your VM from step #8 has successfully completed provisioning by choosing 'Virtual machines' from the left hand menu (if you do not have a Virtual machines shortcut then just type the name of your VM into the search box at the top):





13. Verify the status is 'Running' and note the public IP Address that has been assigned:



14. RDP into the VM by clicking the 'Connect' button at the top using the credentials you provided in step #5 and verify you can logon successfully:

labvm  
Virtual machine

Search (Ctrl+J)

Connect Start Restart Stop Capture Delete Refresh

Resource group (change) : S77TAS  
Status : Running  
Location : UK South  
Subscription (change) : Microsoft Azure Internal Consumption  
Subscription ID : b41dd5f1-29a8-404e-a213-2d9eb19d74d9

Computer name : labvm  
Operating system : Windows  
Size : Standard DS2 v2 (2 vcpus, 7 GB memory)  
Public IP address : 51.143.169.95  
Private IP address : 192.168.10.4  
Virtual network/subnet : LAB\_VNET/Lab\_Subnet  
DNS name : Configure

## Connect to virtual machine

labvm

To improve security, enable just-in-time access on this VM. →

**RDP** SSH

To connect to your virtual machine via RDP, select an IP address, optionally change the port number, and download the RDP file.

\* IP address

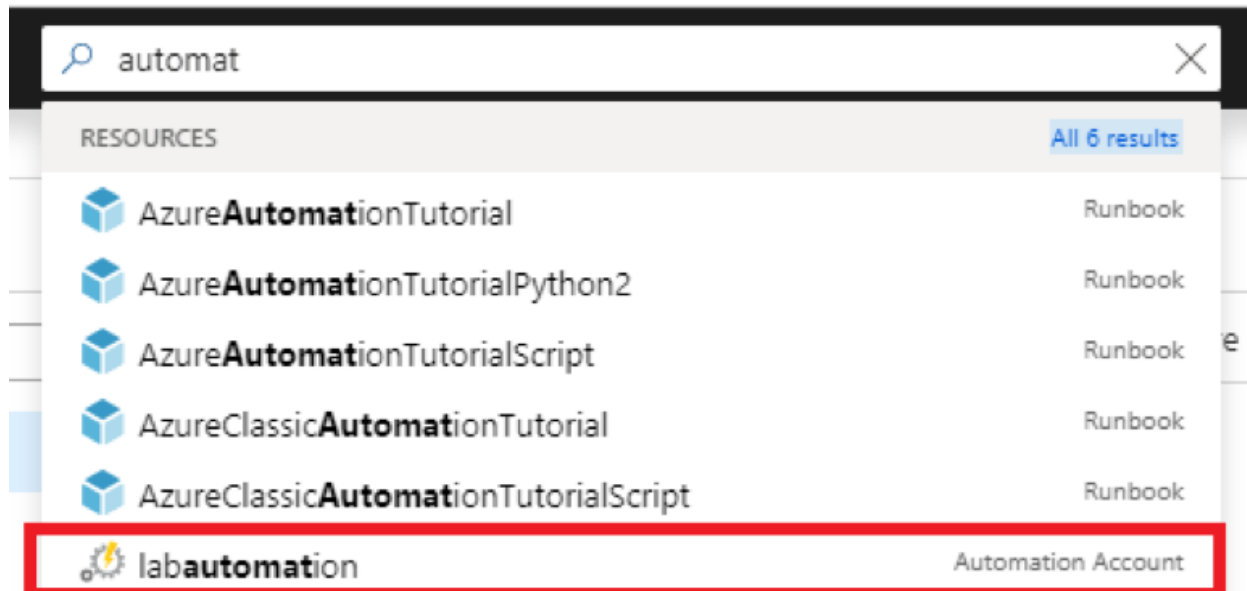
Public IP address (51.143.169.95) ▼

\* Port number

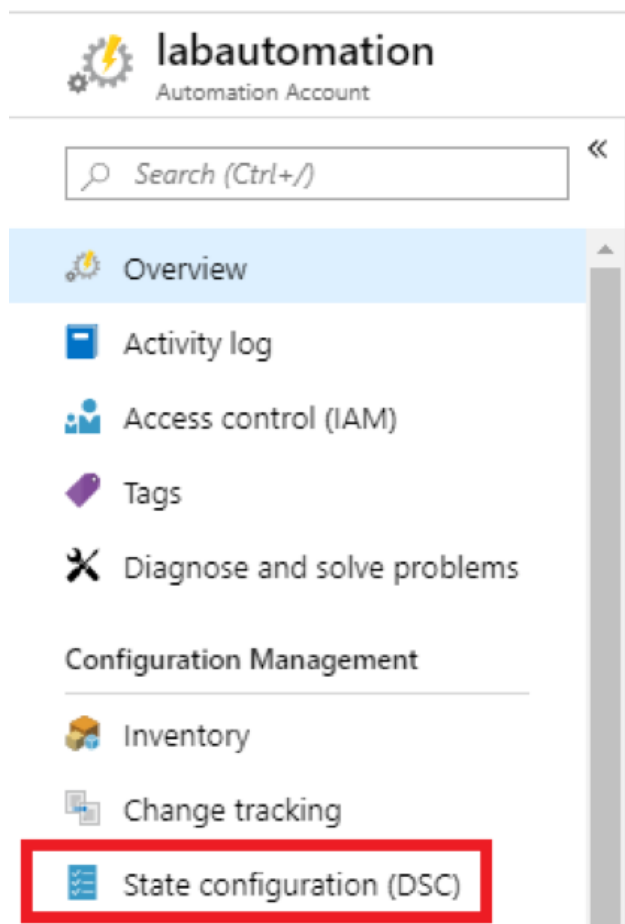
3389

**Download RDP File**

15. In the Azure portal start typing 'Automation' into the search bar until your Automation account that you provisioned in step #11 is displayed, then click on it:



16. Click on 'State configuration (DSC)':



17. Click on 'Gallery':

[+](#) Add
 [↺](#) Refresh
 [↺](#) Reset filters
 [🔍](#) Enable Log Search

[Nodes](#)
[Configurations](#)
[Compiled configurations](#)
[Gallery](#)

**Configuration status**

Failed 0
 Pending 0
 Not compliant 0
 In progress 0
 Unresponsive 0
 Compliant 0

Nodes **0**

Search Node names...
 Status 6 selected

NODE	STATUS	NODE CONFIGURATION
No data		

18. Click on 'WindowsIISServerConfig':

[Nodes](#)
[Configurations](#)
[Compiled configurations](#)
[Gallery](#)

Search

**DomainControllerConfig**  
 Demonstrates a minimally viable domain controller configuration script compatible with Azure Automation Desired State Configuration service.  
 Tags: [DSCConfiguration](#) [PSScript](#)

**xPSEndpoint\_NewConfig**  
 Configuration that creates and registers a new session configuration endpoint.  
 Tags: [DSCConfiguration](#) [PSScript](#)

**xPSEndpoint\_RemoveConfig**  
 Configuration that creates and registers a new session configuration endpoint.  
 Tags: [DSCConfiguration](#) [PSScript](#)

**WindowsIISServerConfig**  
 PowerShell Desired State Configuration for deploying and configuring IIS Servers  
 Tags: [DSCConfiguration](#) [PSScript](#)

19. Click on 'Import' and then the blue 'OK' button:

Home > Automation Accounts > labautomation - State configuration (DSC) > WindowsIISServerConfig

## WindowsIISServerConfig

DSC Configuration

[Import](#)

PowerShell Desired State Configuration for deploying and configuring IIS Servers

**Import**

☐

**Name**

WindowsIISServerConfig

**Description**

PowerShell Desired State Configuration for deploying and configuring IIS Servers

**OK**

20. Click on 'labautomation - State configuration (DSC)' to get back to the main dashboard:

Home > Automation Accounts > labautomation - State configuration (DSC) > WindowsIISServerConfig

## WindowsIISServerConfig

DSC Configuration

[Import](#)

21. Click on 'Configurations' and verify that the WindowsIISServerConfig PS configuration imported successfully:

Nodes **Configurations** Compiled configurations Gallery

Configuration ⓘ

Search configurations...

CONFIGURATION	COMPILED CONFIGURATION COUNT	LAST MODIFIED
WindowsIISServerConfig	0	3/25/2019, 11:22 AM

22. Click on 'WindowsIISServerConfig':

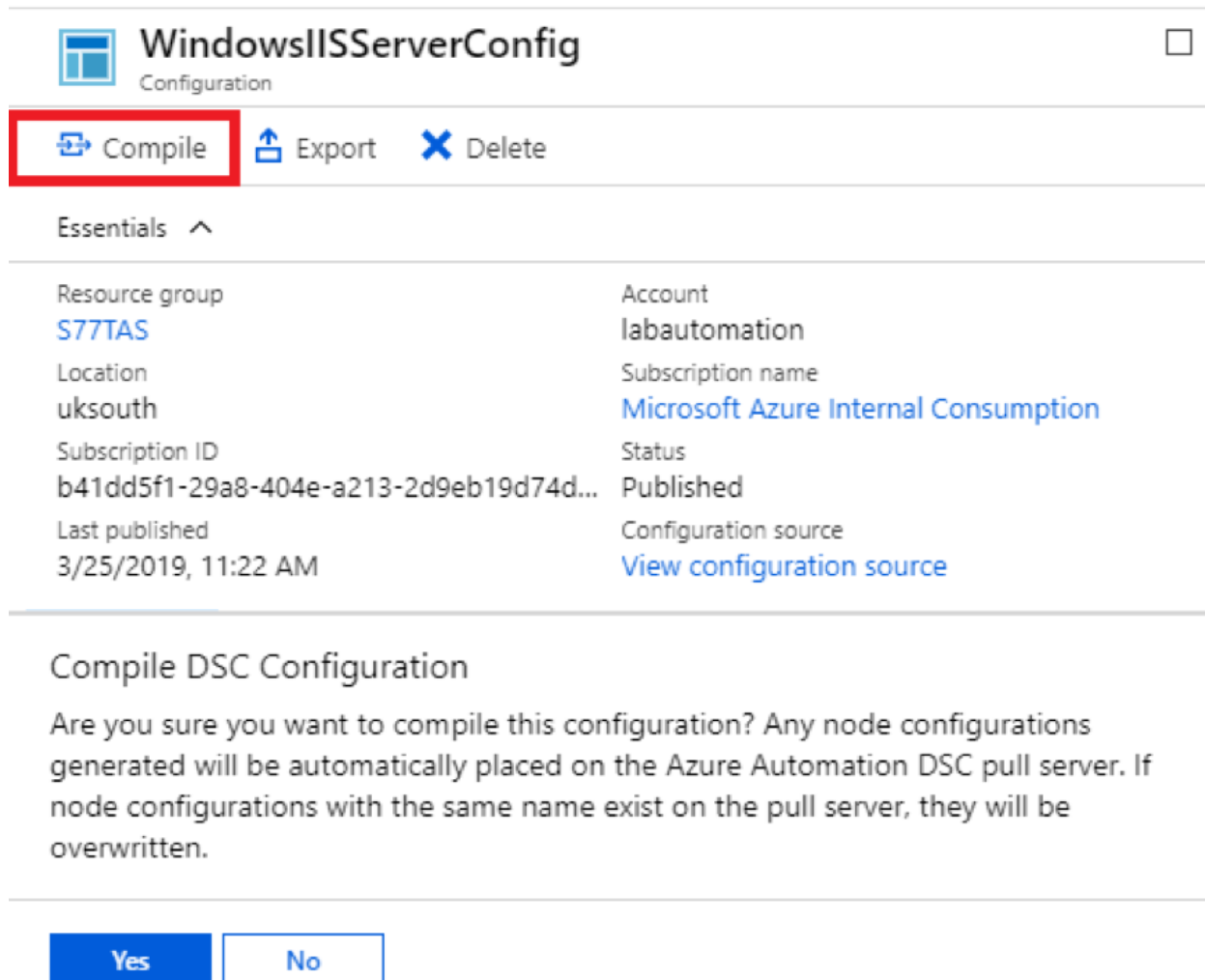
Nodes **Configurations** Compiled configurations Gallery

Configuration ⓘ

Search configurations...

CONFIGURATION	COMPILED CONFIGURATION COUNT	LAST MODIFIED
WindowsIISServerConfig	0	3/25/2019, 11:22 AM

23. Click on 'Compile' and 'Yes':



**WindowsIIServerConfig** Configuration

[Compile](#) [Export](#) [Delete](#)

Essentials ^

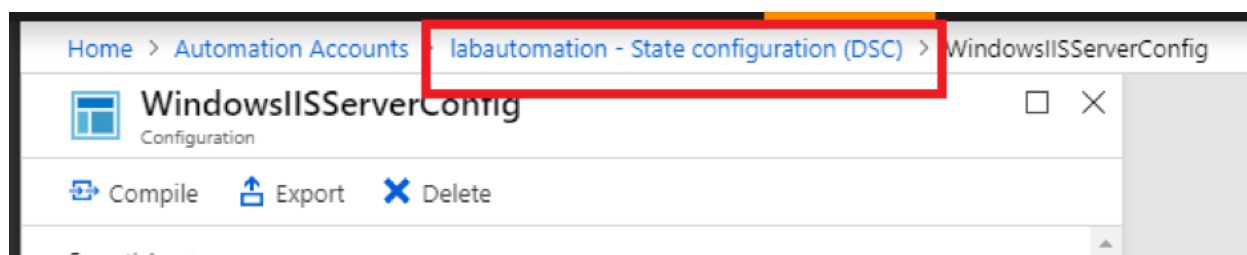
Resource group	Account
<a href="#">S77TAS</a>	labautomation
Location	Subscription name
uksouth	<a href="#">Microsoft Azure Internal Consumption</a>
Subscription ID	Status
b41dd5f1-29a8-404e-a213-2d9eb19d74d...	Published
Last published	Configuration source
3/25/2019, 11:22 AM	<a href="#">View configuration source</a>

### Compile DSC Configuration

Are you sure you want to compile this configuration? Any node configurations generated will be automatically placed on the Azure Automation DSC pull server. If node configurations with the same name exist on the pull server, they will be overwritten.

[Yes](#) [No](#)

24. Click on 'labautomation - State configuration (DSC)' to get back to the main dashboard:



Home > Automation Accounts > [labautomation - State configuration \(DSC\)](#) > WindowsIIServerConfig

**WindowsIIServerConfig** Configuration

[Compile](#) [Export](#) [Delete](#)

Essentials ^

25. Click on 'Compiled configurations' and then click 'Refresh'. Note that the WindowsIIServerConfig does not appear:

Navigation bar: + Add, Compose configuration, Refresh, Reset filters

Tabs: Nodes, Configurations, **Compiled configurations**, Gallery

Node configuration ⓘ

Search node configurations...

NODE CONFIGURATION	CONFIGURATION
No data	

26. Click on 'Configurations' and then 'WindowsIISServerConfig':

Navigation bar: Nodes, **Configurations**, Compiled configurations, Gallery

Configuration ⓘ

Search configurations...

CONFIGURATION	COMPILED CONFIGURATION COUNT
WindowsIISServerConfig	0

27. Note that the status is marked as 'Suspended'. Click on the status and note the exception error displayed:

Deployments to Pull Server

Compilation jobs

STATUS	CREATED	LAST UPDATED
Suspended	3/25/2019, 11:32 AM	3/25/2019, 11:33 AM


Exception




Exception calling "NewScriptBlock" with "1" argument(s): "At line:48 char:1 + Import-DscResource -ModuleName @{ModuleName = 'xWebAdministration';Mo ... +  
~~~~~  
~~~~~ ~ Could not find the module '<xWebAdministration, 1.19.0.0>'. At  
~~~~~

28. This error message is displayed because we haven't (yet) loaded the PS module for IIS administration into our DSC repository.

Delete the WindowsIISServerConfig module from the pull server clicking 'Yes' at the prompt:


Home > Automation Accounts > labautomation




 **WindowsIISServerConfig**  
Configuration

 Compile  Export  **Delete**

29. Click on 'lab automation – State configuration (DSC)' to return to the main dashboard:

Home > Automation Accounts > **labautomation - State configuration (DSC)** > WindowsIISServerConfig

 **WindowsIISServerConfig**  
Configuration

 Compile  Export  Delete

30. Click on 'Modules' from the left-hand side menu:



## Shared Resources



Schedules



Modules



Modules gallery



Python 2 packages



Credentials



Connections



Certificates



Variables

31. Click on 'Browse Gallery':

labautomation - Modules  
Automation Account

Search (Ctrl+/) « + Add a module ↻ Update Azure modules 🔗 Learn about module updates **Browse gallery** ↻ Refresh

Runbooks Search modules...

32. Type 'xWeb' and press enter:

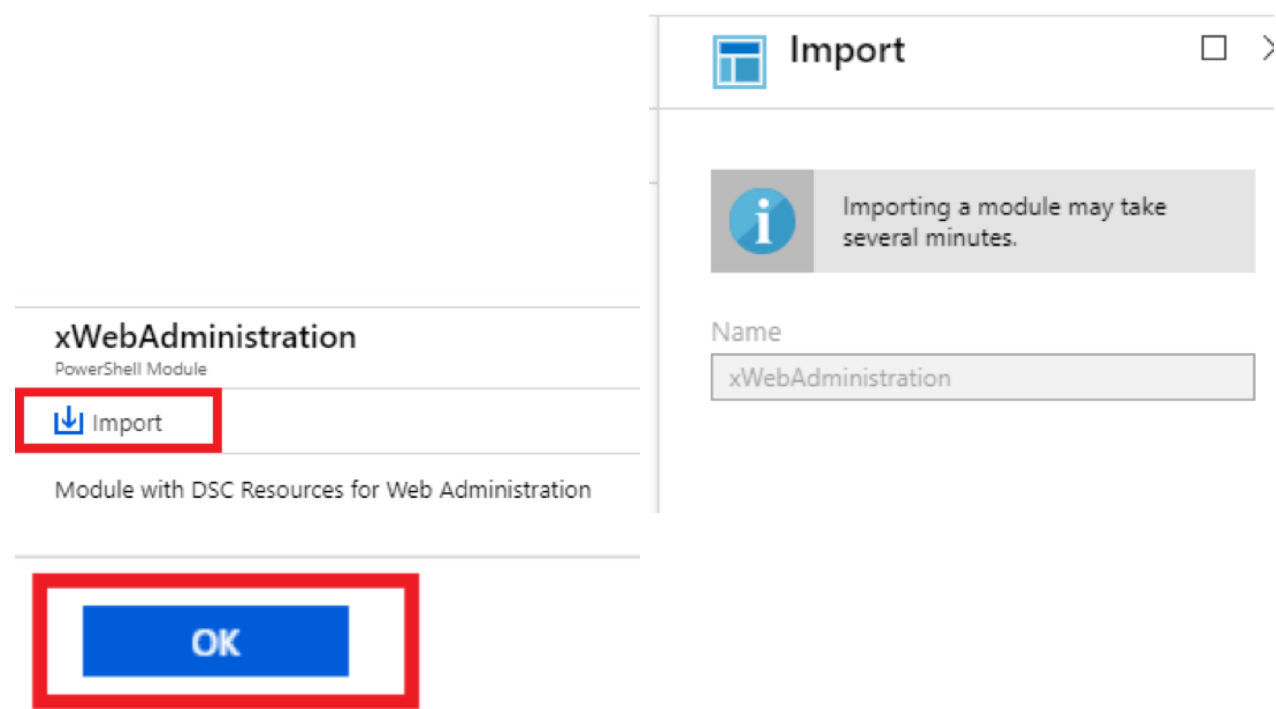
Browse Gallery □ >

xweb

**xWebAdministration**  
Module with DSC Resources for Web Administration  
Tags: [DesiredStateConfiguration](#) [DSC](#) [DSCResourceKit](#) [DSCResource](#) [PSModule](#)

Created by: PowerShellTeam  
719145 downloads  
Last updated: 2/20/2019


33. Click on the xWebAdministration module and choose 'Import' and 'OK':



34. Click 'labautomation – Modules' to confirm that the xWebAdministration module has now been loaded (it may show as importing for a brief period):

xWebAdministration	3/25/2019, 11:53 AM	Available	2.5.0.0
--------------------	---------------------	-----------	---------

35. Click on 'State configuration (DSC)' to return to the DSC dashboard and repeat steps #17 thru #23 to import the WindowsIISServerConfig DSC profile again:



labautomation

Automation Account

Overview

Activity log

Access control (IAM)

Tags

Diagnose and solve problems

Configuration Management

Inventory

Change tracking

State configuration (DSC)

labautomation - State configuration (DSC)

Automation Account

Tags

Diagnose and solve problems

Configuration Management

Inventory

Change tracking

State configuration (DSC)

Update management

Update management

Process Automation

Runbooks

+ Add

Refresh

Reset filters

Enable Log Search

Nodes

Configurations

Compiled configurations

Gallery

Configuration status

0

Failed

0

Not compliant

0

Unresponsive

0

Pending

0

In progress

0

Compliant

0

Nodes

Search Node names...

Status

6 selected

Node co

All

NODE

STATUS

NODE CONFIGURATION

No data

36. Click on 'Configurations' and then 'WindowsIISServerConfig':

19 / 28

Nodes

Configurations

Compiled configurations

Gallery

Configuration ⓘ

Search configurations...

CONFIGURATION	COMPILED CONFIGURATION COUNT
WindowsIISServerConfig	0

37. Note that the status is marked as 'Suspended' again. Click on the status and note the same exception error displayed as in step #27:

Deployments to Pull Server

Compilation jobs

STATUS	CREATED	LAST UPDATED
⏸ Suspended	3/25/2019, 11:32 AM	3/25/2019, 11:33 AM

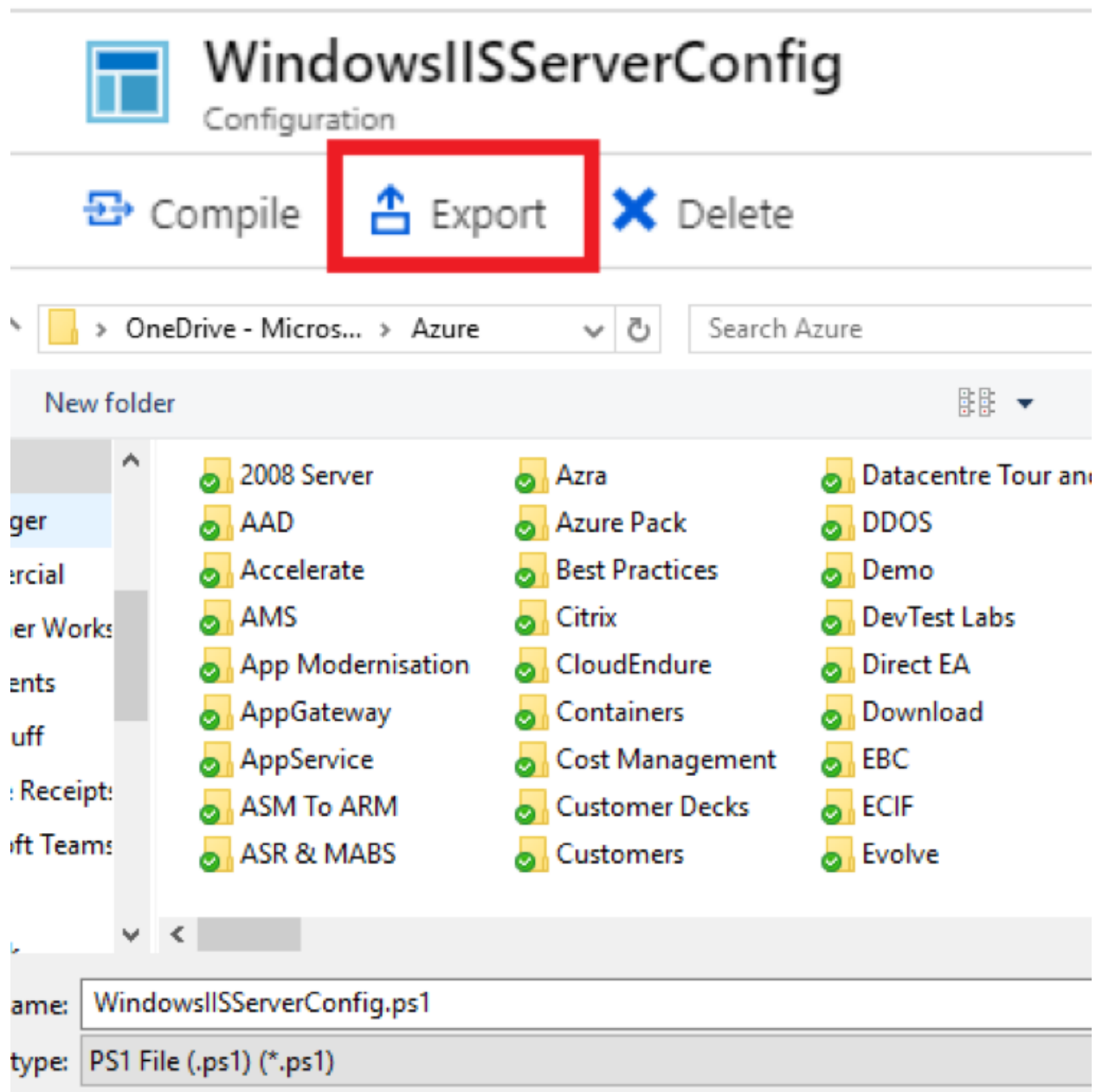
Exception

Exception calling "NewScriptBlock" with "1" argument(s): "At line:48 char:1 + Import-DscResource -ModuleName @{ModuleName = 'xWebAdministration';Mo ... +  
~~~~~  
~~~~~ ~ Could not find the module '<xWebAdministration, 1.19.0.0>'. At  
line:50 char:5 + ~~~~~

38. Compare the version of xWebAdministration that the WindowIISServerConfig PS is looking for versus the version that we have loaded into our PS modules:

|                    |                     |           |         |
|--------------------|---------------------|-----------|---------|
| xWebAdministration | 3/25/2019, 11:53 AM | Available | 2.5.0.0 |
|--------------------|---------------------|-----------|---------|

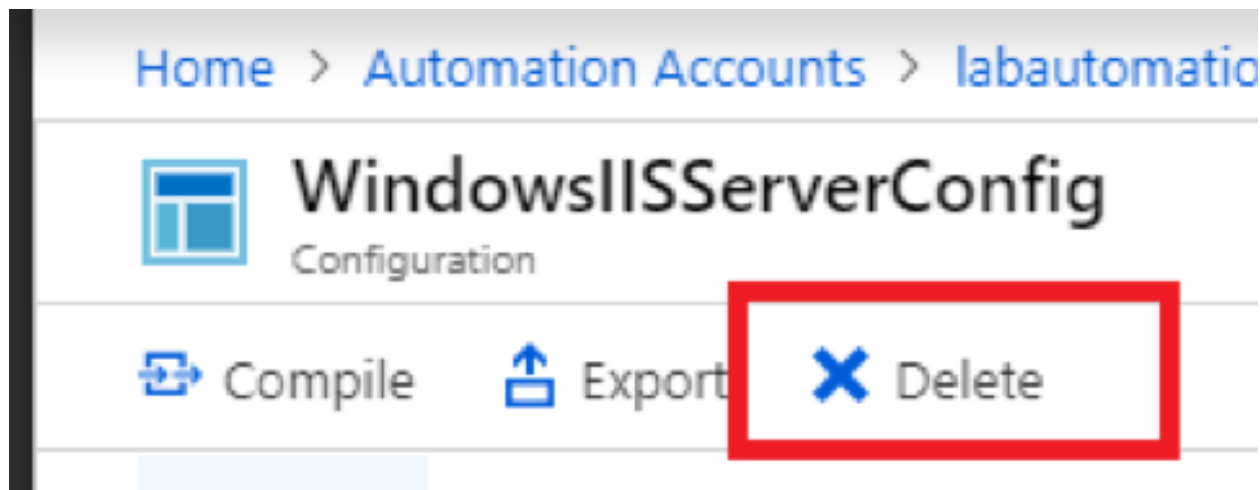
39. In order to edit the WindowsIISServerConfig PS to utilise the later version of xWebAdministration we can export the script, make a simple edit and re-upload it. Click 'Export' at the top of the screen and save the WindowsIISServerConfig PS locally on your PC:



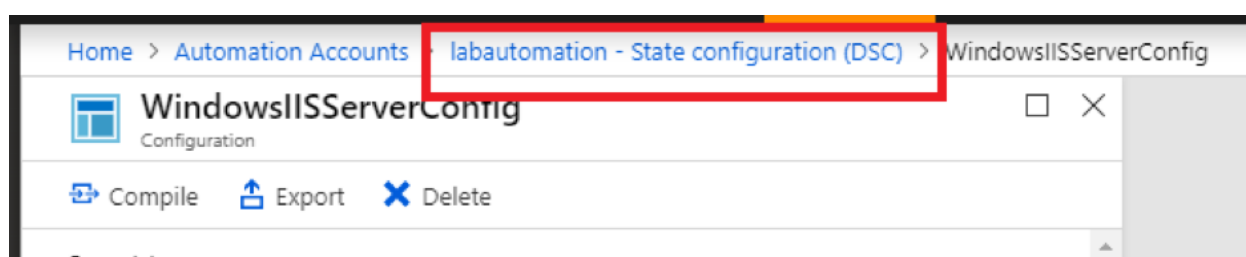
40. Open the PS script with a text editor and change the value of the xWebAdministration version from 1.19.0.0 to 2.5.00 and save it:

```
configuration WindowsIIServerConfig
{
    Import-DscResource -ModuleName @{ModuleName = 'xWebAdministration';ModuleVersion = '2.5.0.0'}
    Import-DscResource -ModuleName 'PSDesiredStateConfiguration'
```

41. Delete the existing WindowsIIServerConfig module from the pull server clicking 'Yes' at the prompt:



42. Click on 'lab automation – State configuration (DSC)' to return to the main dashboard:



43. Click on 'Add' and browse to the edited PS file you created in step #40 clicking 'OK' to confirm:

The screenshot shows the 'labautomation - State configuration (DSC)' dashboard. The 'Add' button is highlighted with a red box. Below the dashboard, the 'Import' dialog box is open, showing the configuration file 'WindowsIIServerConfig.ps1' and the name 'WindowsIIServerConfig'. The 'OK' button is highlighted with a red box.

labautomation - State configuration (DSC)  
Automation Account

Search (Ctrl+ /)

Tags

Diagnose and solve problems

Configuration Management

Inventory

Change tracking

State configuration (DSC)

+ Add Compose configuration Refresh Reset filters

Nodes Configurations Compiled configurations Gallery

Configuration ⓘ

Search configurations...

CONFIGURATION COMPILED CONFIGURATION COL

No data

Import  
Configuration

Add a new configuration or update an existing one. Select a file smaller than 1 MB to import.

\* Configuration file ⓘ

"WindowsIIServerConfig.ps1"

\* Name

WindowsIIServerConfig

Description

OK

44. Repeat steps #22 thru #25 to compile the edited WindowsIIServerConfig PS and add it to the pull server. Note that this time it should load successfully:

The screenshot shows the 'WindowsIIServerConfig' configuration details. The 'Compilation jobs' table shows a single job with a status of 'Completed'. The 'Details' section shows the 'Input' and 'Configuration source snapshot'.

WindowsIIServerConfig  
Configuration

Compile Export Delete

Essentials ^

Resource group  
S77TAS

Location  
uksouth

Subscription ID  
b41dd5f1-29a8-404e-a213-2d9eb19d74d...

Last published  
3/25/2019, 12:19 PM

Account  
labautomation

Subscription name  
Microsoft Azure Internal Consumption

Status  
Published

Configuration source  
View configuration source

Deployments to Pull Server

Compilation jobs

| STATUS      | CREATED             | LAST UPDATED        |
|-------------|---------------------|---------------------|
| ✓ Completed | 3/25/2019, 12:22 PM | 3/25/2019, 12:23 PM |

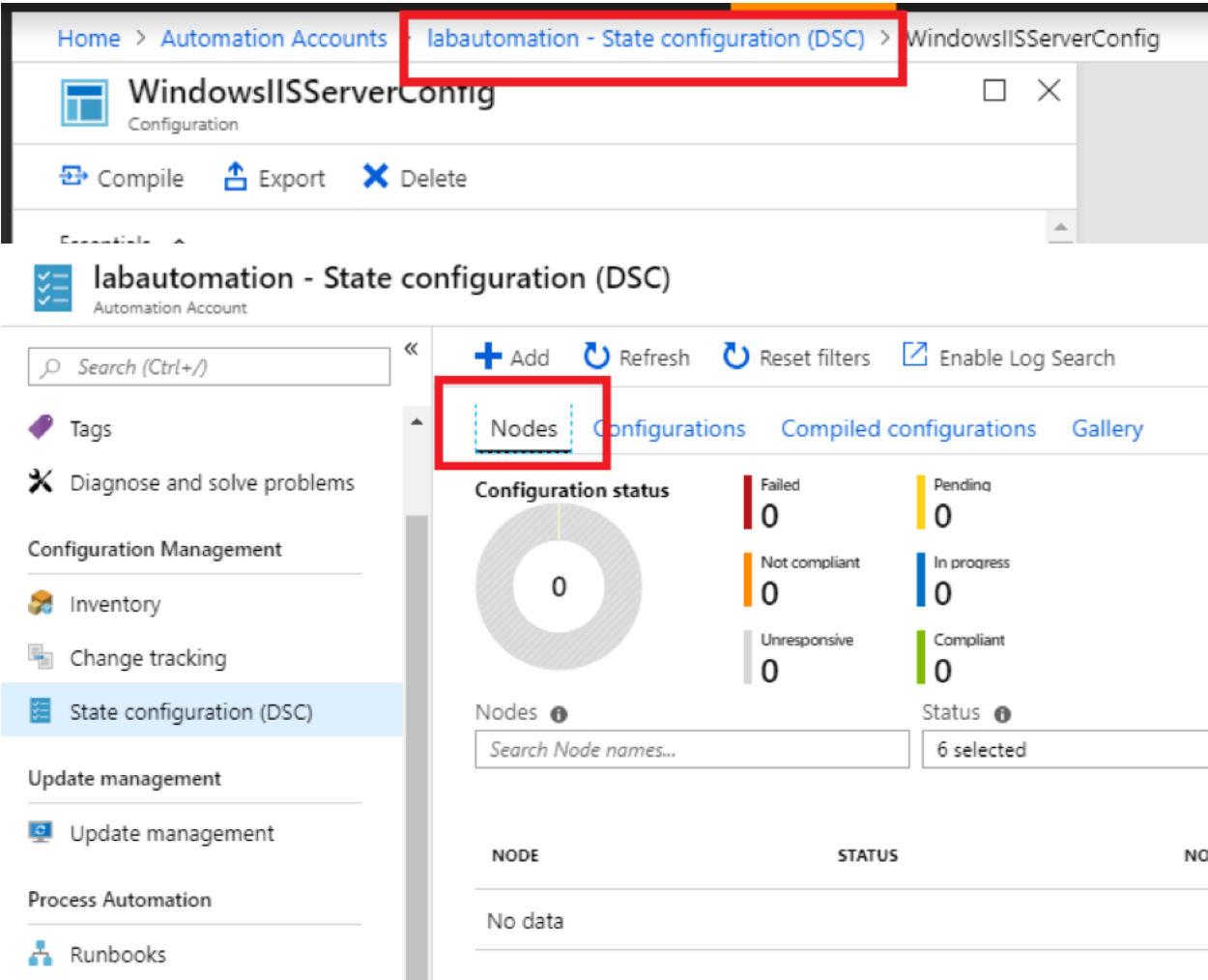
Details

Input

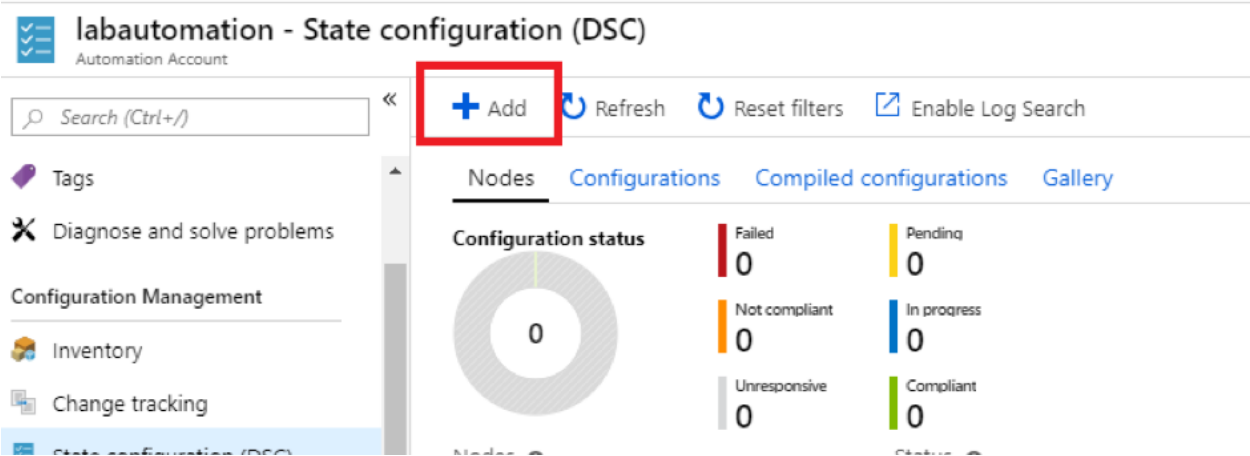
0

Configuration source snapshot

45. Click on 'lab automation – State configuration (DSC)' to return to the main dashboard and then click on 'Nodes':



46. Click on 'Add':



47. Pick the VM you provisioned at the start of this lab and click connect:



The screenshot shows the Azure Virtual Machines portal. At the top, there's a 'Virtual Machines' header with a 'labautomation' sub-header. Below this is a 'Refresh' button. A search bar contains 'lab'. Filter buttons show 'Microsoft Azure Internal Cons...' and '2 selected'. A table lists VMs with columns: VIRTUAL MACHINES, SUBSCRIPTION, RESOURCE GROUP, and LOCATION. One VM, 'labvm', is listed under 'Microsoft Azure Internal Consum...' and 'S77TAS' in 'UK South'. Below the table, a detailed view of 'labvm' is shown. It includes a 'Connect' button (highlighted with a red box), 'Refresh', and 'Learn more' buttons. The 'Power State' is 'VM running', and the 'OS' is 'Windows'.

| VIRTUAL MACHINES | SUBSCRIPTION                       | RESOURCE GROUP | LOCATION |
|------------------|------------------------------------|----------------|----------|
| labvm            | Microsoft Azure Internal Consum... | S77TAS         | UK South |


labvm  
Virtual machine

+ Connect Refresh Learn more

Power State  
VM running

OS  
Windows

48. Choose the WindowsIISServerConfig profile from the dropdown menu leaving everything else as default, then click OK:

 **Registration** ☐

\* Registration key

**Primary key** Secondary key

Node configuration name ⓘ

WindowsIIServerConfig.localhost ▼

Refresh Frequency ⓘ

30

Configuration Mode Frequency ⓘ

15

Configuration Mode ⓘ

ApplyAndMonitor ▼

Allow Module Override ⓘ ☐

Reboot Node if Needed ⓘ ☐

Action after Reboot ⓘ

ContinueConfiguration ▼

**OK**

49. The VM should show “Connecting” and eventually ‘Connected’. Your VM should then show up under nodes as ‘Compliant’:

labvm

Virtual machine

+ Connect

Refresh

Learn more

Connecting...

Power State

VM running

OS

Windows

Status

Connecting

labautomation - State configuration (DSC)

Automation Account

Search (Ctrl+J)

+ Add

Refresh

Reset filters

Enable Log Search

Tags

Diagnose and solve problems

Configuration Management

Inventory

Change tracking

State configuration (DSC)

Update management

Update management

Process Automation

Runbooks

Nodes

Configurations

Compiled configurations

Gallery

Configuration status

1

Failed

0

Pending

0

Not compliant

0

In progress

0

Unresponsive

0

Compliant

1

Nodes

Search Node names...

Status

6 selected

Node configuration

All

VM DSC extension versio

2 selected

| NODE  | STATUS    | NODE CONFIGURATION              | LAST SEEN          | VERSION  |
|-------|-----------|---------------------------------|--------------------|----------|
| labvm | Compliant | WindowsIIServerConfig.localhost | 3/25/2019, 1:35 PM | 2.77.0.0 |

50. Log onto your VM via RDP and verify that the IIS role is now installed. You can also look in the Windows Event Viewer to verify configuration was done via Azure Automation (DSC):

The screenshot shows the Windows Server Manager console. The left-hand navigation pane has the following items: Dashboard, Local Server, All Servers, File and Storage Services, and IIS (which is selected and highlighted in blue). The main area on the right is titled 'SERVERS' and shows 'All servers | 1 total'. Below this is a 'Filter' input field. A table lists the servers with columns 'Server Name', 'IPv4 Address', and 'Managea'. One server is listed: 'labvm' with IPv4 address '192.168.10.4' and status 'Online - P'. Below the table, an 'Event Properties' window is open for 'Event 4402, Desired State Configuration'. The 'General' tab is active, showing a message: 'Job {C34DE752-4F02-11E9-A812-00224807D9F6} : Successfully registered the Dsc agent with AgentId F0567BA2-4BE8-11E9-A80E-00224807D9F6 with the server <https://uks-agentservice-prod-1.azure-automation.net/accounts/85def02a-479f-496d-b1ce-1e2009d8e31c> using Download Manager WebDownloadManager.'

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