AWS re:Invent

WIN308

Hands-on Automating AWS Infrastructure with PowerShell

Alain Vetier - Solutions Architect
Andy Hopper - Solutions Architect
Brian Beach - Solutions Architect
Siavash Irani - Solutions Architect

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Agenda

Introduction (15 mins)

- Windows on AWS
- AWS Tools for Windows PowerShell
- PowerShell Basics
- PowerShell Everywhere
- Workshop Scenarios

Group Work (90 mins)

Wrap up (30 mins)

Windows on AWS

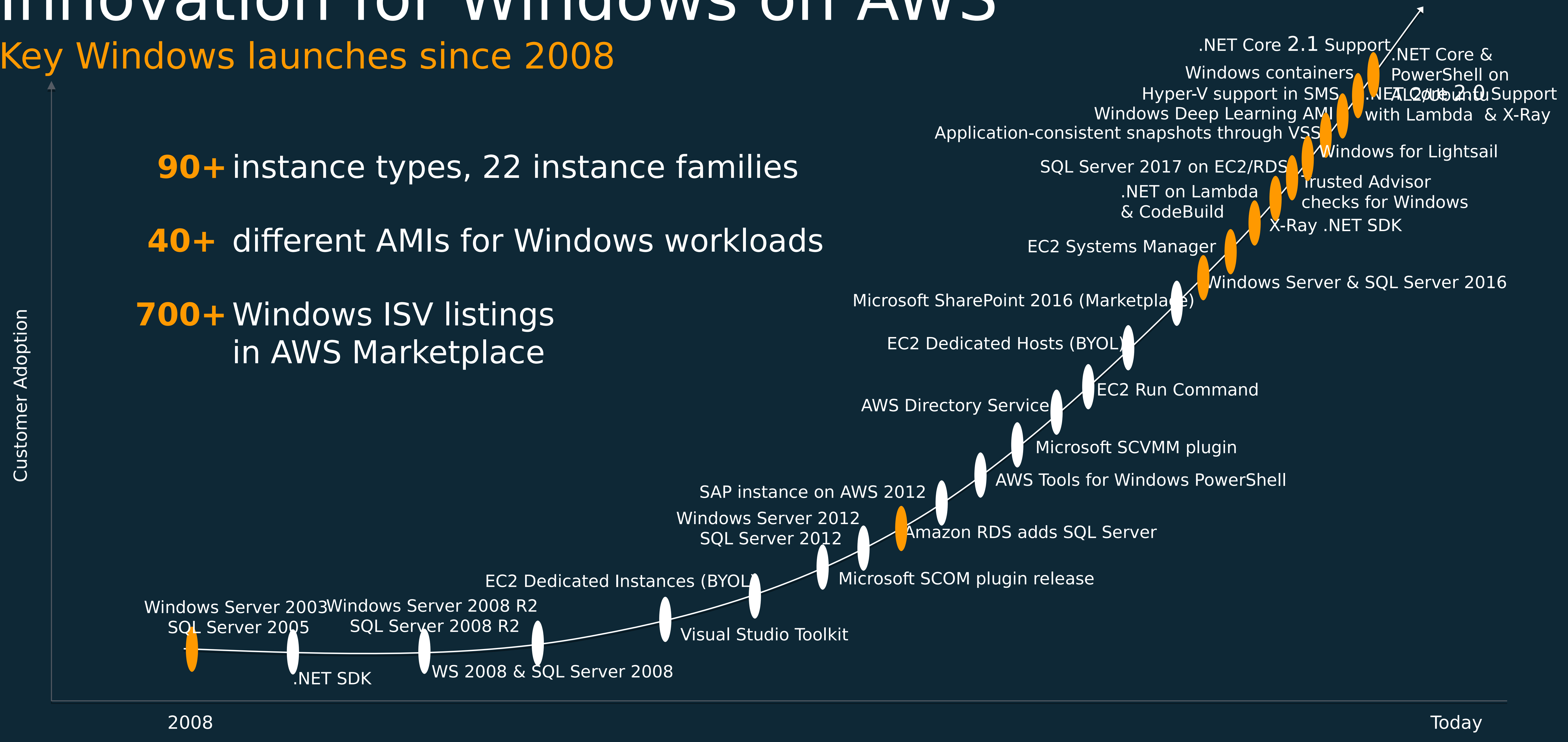
Innovation for Windows on AWS

Key Windows launches since 2008

90+ instance types, 22 instance families

40+ different AMIs for Windows workloads

700+ Windows ISV listings in AWS Marketplace



Windows Server 2003
SQL Server 2005

.NET SDK

Windows Server 2008 R2
SQL Server 2008 R2

WS 2008 & SQL Server 2008

EC2 Dedicated Instances (BYOL)

Visual Studio Toolkit

Microsoft SCOM plugin release

Windows Server 2012
SQL Server 2012

Amazon RDS adds SQL Server

SAP instance on AWS 2012

AWS Tools for Windows PowerShell

Microsoft SCVMM plugin

AWS Directory Service

EC2 Run Command

EC2 Dedicated Hosts (BYOL)

Microsoft SharePoint 2016 (Marketplace)

Windows Server & SQL Server 2016

EC2 Systems Manager

.NET on Lambda
& CodeBuild

X-Ray .NET SDK

Trusted Advisor
checks for Windows

SQL Server 2017 on EC2/RDS

Windows for Lightsail

Application-consistent snapshots through VSS

Windows Deep Learning AMI

Hyper-V support in SMS

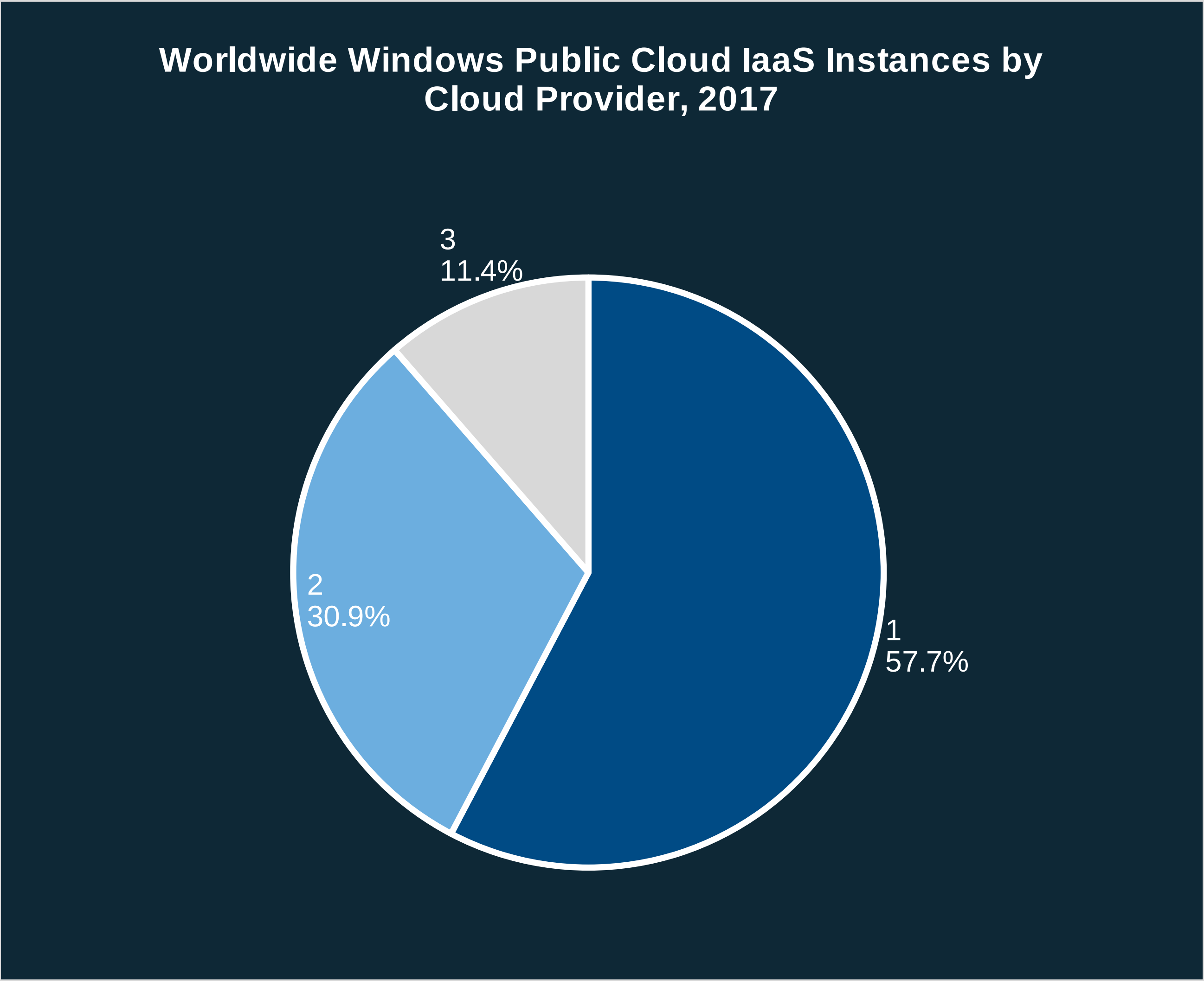
.NET Core 2.0 Support
with Lambda & X-Ray

Windows containers

.NET Core &
PowerShell on
AL2/Ubuntu

.NET Core 2.1 Support

Public cloud market leaders prevail in the Windows market segment of the Infrastructure as a Service Market



Worldwide Windows Public Cloud IaaS Instances by Cloud Provider, 2017

Note: Includes Windows instances deployed in the public cloud IaaS market during 2017
Source: IDC estimates, 2018

IDC estimates AWS accounted for approximately 57.7% of total Windows instances deployed in the public cloud IaaS market during 2017, followed by Microsoft Azure at 30.9%. The rest of the market collectively accounted for the remaining 11.4% of Windows instances deployed in the public cloud IaaS market during 2017.

IDC notes the Windows public cloud IaaS market continues to expand due to the growing usage of public cloud IaaS among enterprises and the movement of Windows workloads into public cloud IaaS.

IDC, Windows Server Operating Environment Market Update, Doc # US44217118, Aug 2018

AWS Tools for Windows PowerShell

AWS APIs and SDK

Android

iOS

Java

JavaScript

.NET

Node.js

PHP

Python (boto)

Ruby

Xamarin

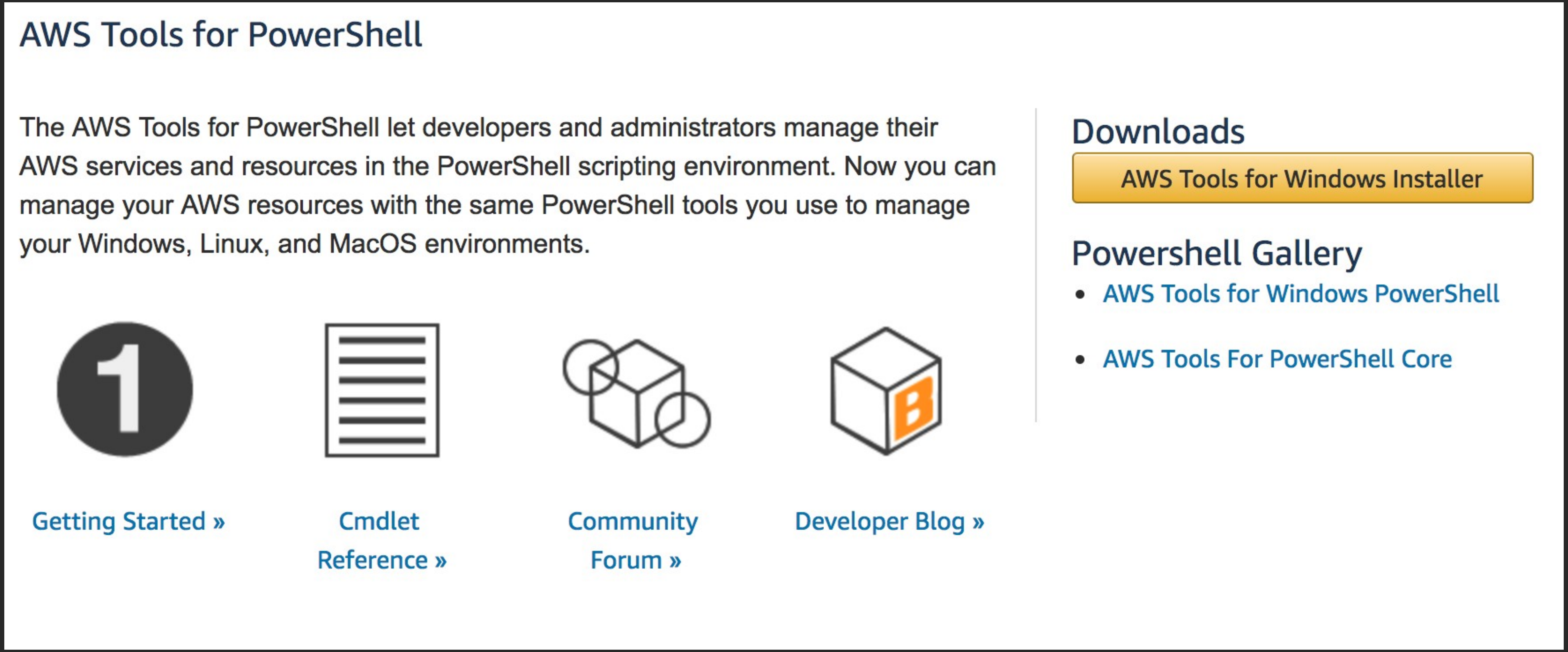
AWS CLI

AWS Toolkit for Eclipse

AWS Toolkit for Visual Studio

AWS Tools for Windows PowerShell

AWS Tools for PowerShell



AWS Tools for PowerShell

The AWS Tools for PowerShell let developers and administrators manage their AWS services and resources in the PowerShell scripting environment. Now you can manage your AWS resources with the same PowerShell tools you use to manage your Windows, Linux, and MacOS environments.

Getting Started »

Cmdlet Reference »

Community Forum »

Developer Blog »

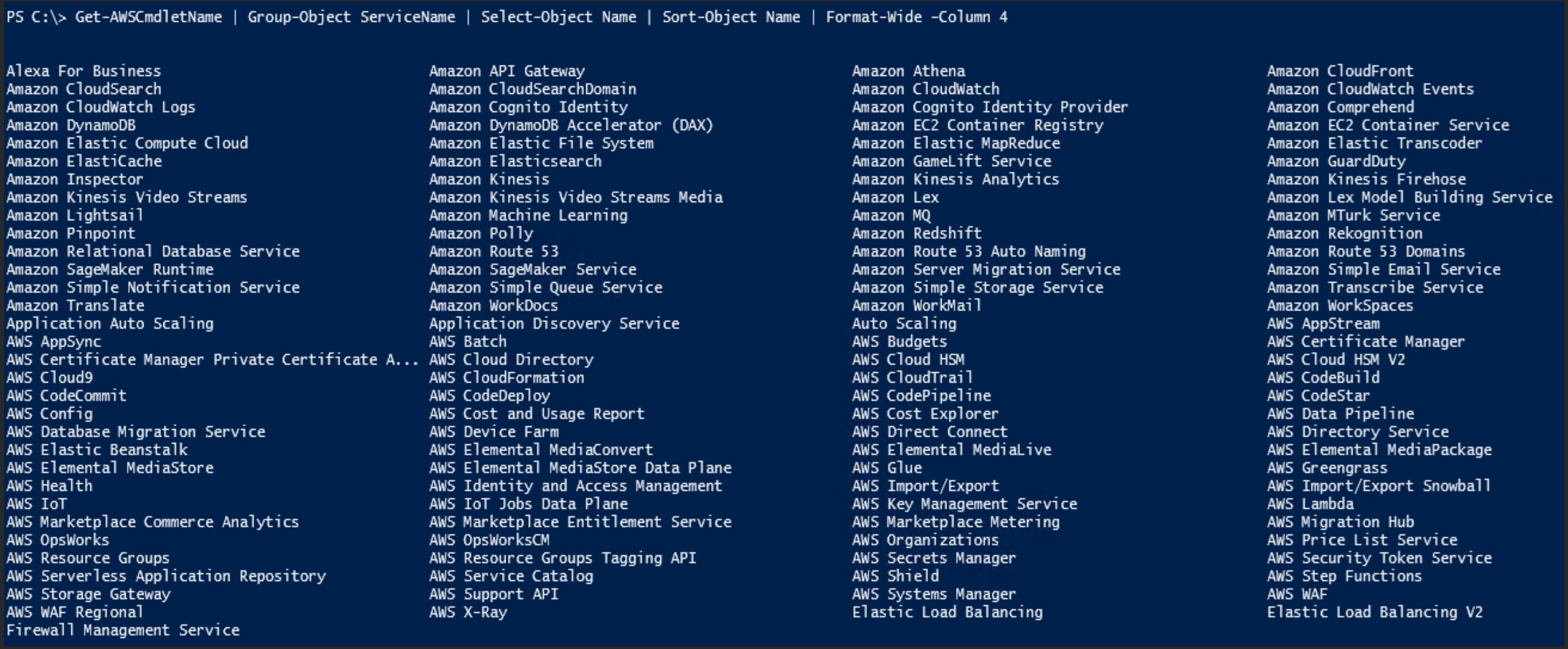
Downloads

AWS Tools for Windows Installer

Powershell Gallery

- AWS Tools for Windows PowerShell
- AWS Tools For PowerShell Core

4,174 Cmdlets across 125 Services



```
PS C:\> Get-AWSCmdletName | Group-Object ServiceName | Select-Object Name | Sort-Object Name | Format-Wide -Column 4


Alexa For Business                               Amazon API Gateway                               Amazon Athena                                    Amazon CloudFront
Amazon CloudSearch                               Amazon CloudSearchDomain                         Amazon CloudWatch                                Amazon CloudWatch Events
Amazon CloudWatch Logs                           Amazon Cognito Identity                          Amazon Cognito Identity Provider                 Amazon Comprehend
Amazon DynamoDB                                  Amazon DynamoDB Accelerator (DAX)                Amazon EC2 Container Registry                    Amazon EC2 Container Service
Amazon Elastic Compute Cloud                     Amazon Elastic File System                       Amazon Elastic MapReduce                         Amazon Elastic Transcoder
Amazon ElastiCache                               Amazon Elasticsearch                             Amazon GameLift Service                          Amazon GuardDuty
Amazon Inspector                                 Amazon Kinesis                                   Amazon Kinesis Analytics                         Amazon Kinesis Firehose
Amazon Kinesis Video Streams                     Amazon Kinesis Video Streams Media               Amazon Lex                                       Amazon Lex Model Building Service
Amazon Lightsail                                 Amazon Machine Learning                          Amazon MQ                                        Amazon MTurk Service
Amazon Pinpoint                                  Amazon Polly                                     Amazon Redshift                                  Amazon Rekognition
Amazon Relational Database Service               Amazon Route 53                                  Amazon Route 53 Auto Naming                      Amazon Route 53 Domains
Amazon SageMaker Runtime                         Amazon SageMaker Service                         Amazon Server Migration Service                  Amazon Simple Email Service
Amazon Simple Notification Service               Amazon Simple Queue Service                      Amazon Simple Storage Service                    Amazon Transcribe Service
Amazon Translate                                 Amazon WorkDocs                                  Amazon WorkMail                                  Amazon WorkSpaces
Application Auto Scaling                         Application Discovery Service                    Auto Scaling                                     AWS AppStream
AWS AppSync                                      AWS Batch                                        AWS Budgets                                      AWS Certificate Manager
AWS Certificate Manager Private Certificate A... AWS Cloud Directory                              AWS Cloud HSM                                    AWS Cloud HSM V2
AWS Cloud9                                       AWS CloudFormation                               AWS CloudTrail                                   AWS CodeBuild
AWS CodeCommit                                   AWS CodeDeploy                                   AWS CodePipeline                                 AWS CodeStar
AWS Config                                       AWS Cost and Usage Report                        AWS Cost Explorer                                AWS Data Pipeline
AWS Database Migration Service                   AWS Device Farm                                  AWS Direct Connect                               AWS Directory Service
AWS Elastic Beanstalk                            AWS Elemental MediaConvert                       AWS Elemental MediaLive                          AWS Elemental MediaPackage
AWS Elemental MediaStore                         AWS Elemental MediaStore Data Plane              AWS Glue                                         AWS Greengrass
AWS Health                                       AWS Identity and Access Management               AWS Import/Export                                AWS Import/Export Snowball
AWS IoT                                          AWS IoT Jobs Data Plane                          AWS Key Management Service                       AWS Lambda
AWS Marketplace Commerce Analytics               AWS Marketplace Entitlement Service              AWS Marketplace Metering                         AWS Migration Hub
AWS OpsWorks                                     AWS OpsWorksCM                                   AWS Organizations                                AWS Price List Service
AWS Resource Groups                              AWS Resource Groups Tagging API                  AWS Secrets Manager                              AWS Security Token Service
AWS Serverless Application Repository            AWS Service Catalog                              AWS Shield                                       AWS Step Functions
AWS Storage Gateway                              AWS Support API                                  AWS Systems Manager                              AWS WAF
AWS WAF Regional                                 AWS X-Ray                                        Elastic Load Balancing                           Elastic Load Balancing V2
Firewall Management Service
```

PowerShell Basics

Working with Amazon Simple Storage Service (Amazon S3)

```
PS C:\> New-S3Bucket -BucketName reinvent-demo -Region us-west-1

BucketName                                                  CreationDate
----------                                                  ------------
reinvent-demo                                       Mon, 26 Nov 2018 00:41:08 GMT


PS C:\> Write-S3Object -BucketName reinvent-demo -File demo.txt
```

Working with Amazon Elastic Compute Cloud (Amazon EC2)

```
PS C:\> PS C:\> $myPSKeyPair = New-EC2KeyPair -KeyName myPSKeyPair



PS C:\> New-EC2Instance -ImageId ami-c49c0dac -MinCount 1 -MaxCount 1 -KeyName
myPSKeyPair -SecurityGroups myPSSecurityGroup -InstanceType t2.micro

ReservationId   : r-b70a0ef1
OwnerId         : 123456789012
RequesterId     :
Groups          : {myPSSecurityGroup}
GroupName       : {myPSSecurityGroup}
Instances       : {}
```

Working with AWS Identity and Access Management (IAM)

```
PS C:\> New-IAMUser -UserName "myNewUser”

UserName   : myNewUser
UserId     : AIDAJOJSPSPXADHBT7IN6
Arn        : arn:aws:iam::455364113843:user/ps-created-users/myNewUser
CreateDate : 11/20/2018 3:26:31 PM

PS C:\> Add-IAMUserToGroup -UserName myNewUser -GroupName powerUsers

ServiceResponse
---------------
Amazon.IdentityManagement.Model.AddUserToGroupResponse
```

Working with Credentials

1) Passed as Parameters (Don’t do this)

```
PS C:\> Get-EC2Instance -AccessKey XXX -SecretKey YYY
```

2) Environment Variables

```
PS C:\> set AWS_ACCESS_KEY_ID=XXX
PS C:\> set AWS_SECRET_ACCESS_KEY=YYY
```

3) Windows Credential Store (Encrypted)

```
PS C:\> Set-AWSCredential -AccessKey XXX -SecretKey YYY
```

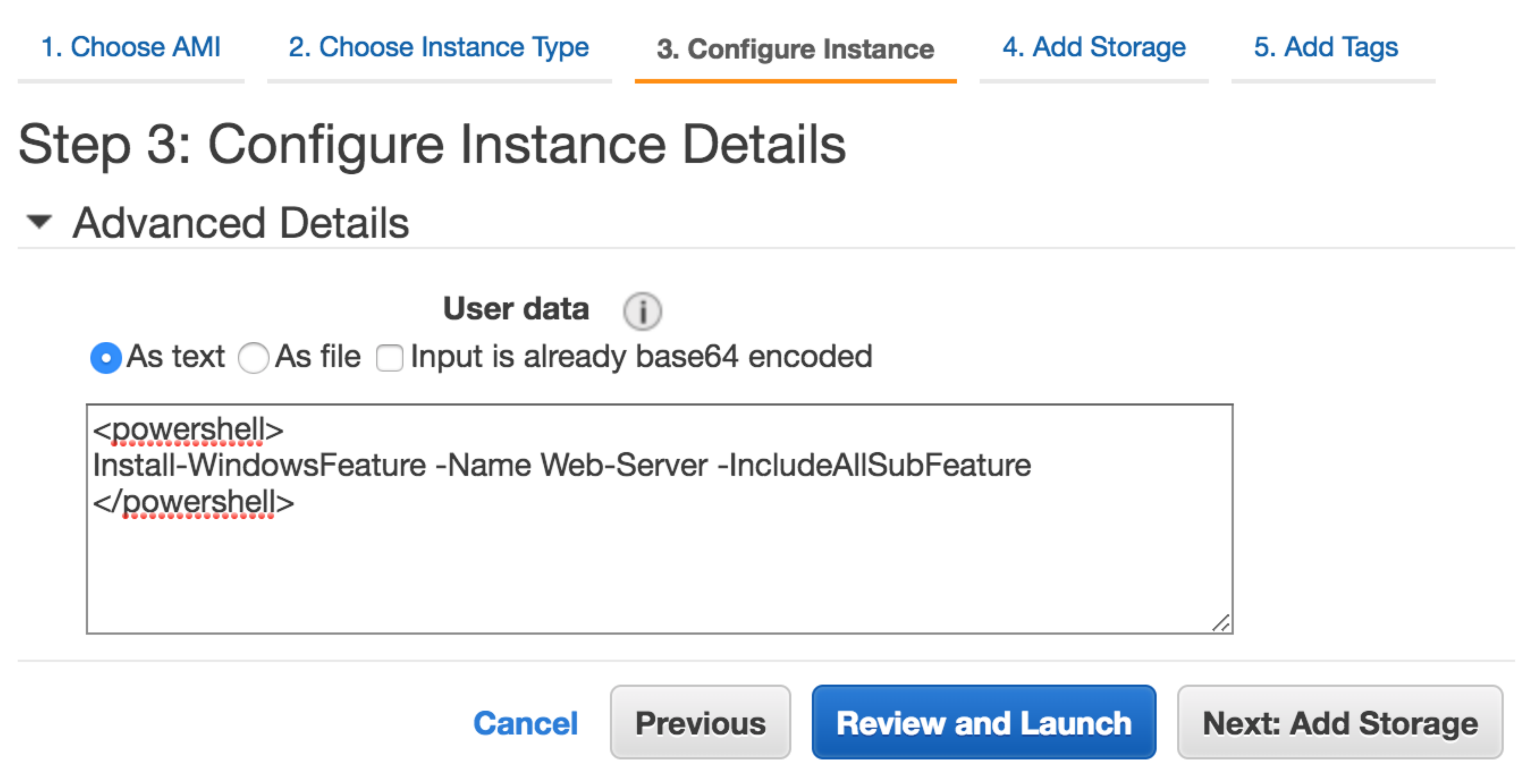
4) AWS Config File (Shared by CLI)

```
C:\Users\Brian\.aws\credentials
```

5) EC2 Instance Profile

PowerShell Everywhere

EC2 Instance User Data



Step 3: Configure Instance Details

▾ Advanced Details

User data ⓘ

● As text ○ As file □ Input is already base64 encoded

```
<powershell>
Install-WindowsFeature -Name Web-Server -IncludeAllSubFeature
</powershell>
```

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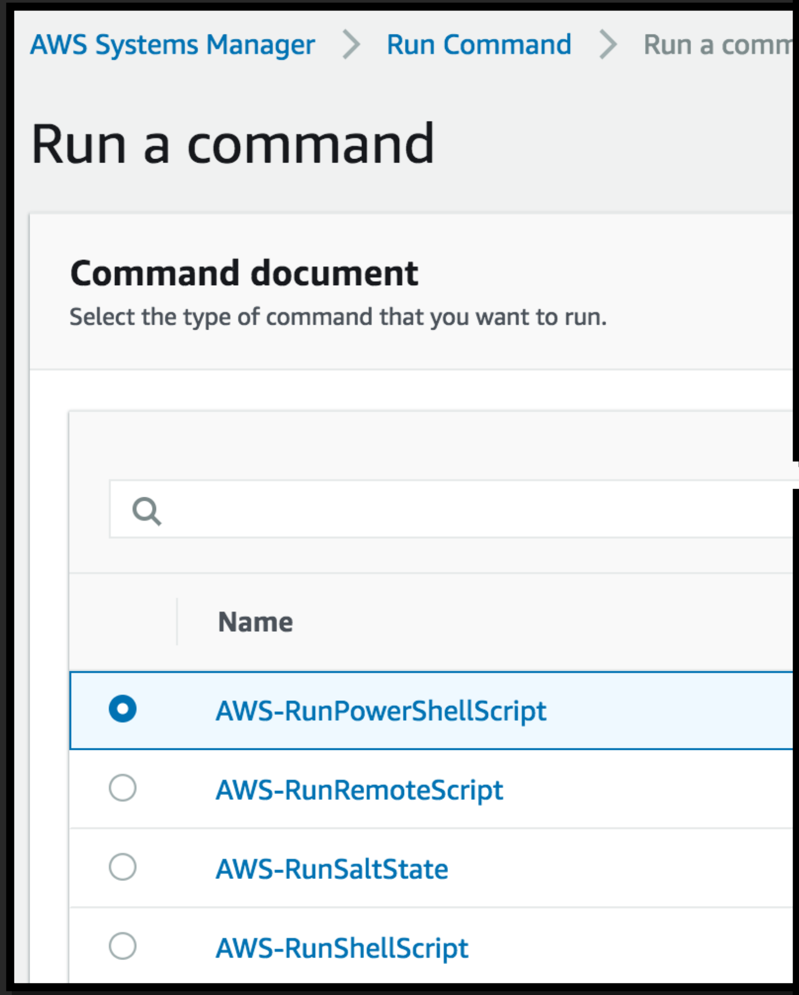
AWS Systems Manager – Run Command



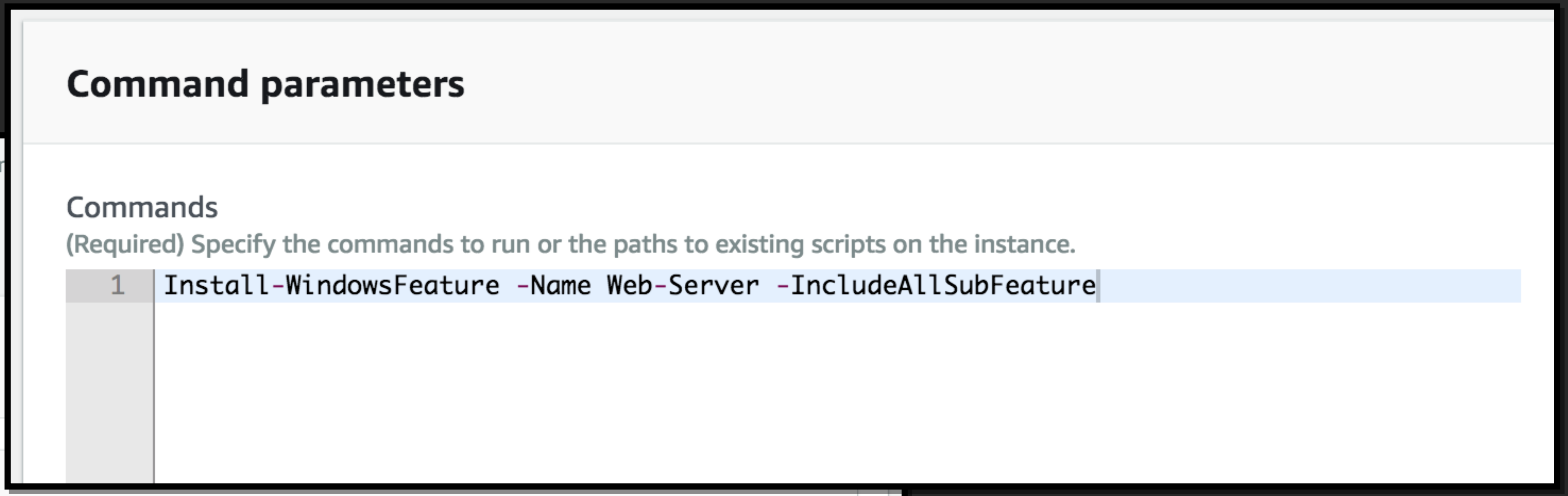
AWS Systems Manager > Run Command > Run a comm

Run a command

Command document

Select the type of command that you want to run.

	Name
●	AWS-RunPowerShellScript
○	AWS-RunRemoteScript
○	AWS-RunSaltState
○	AWS-RunShellScript

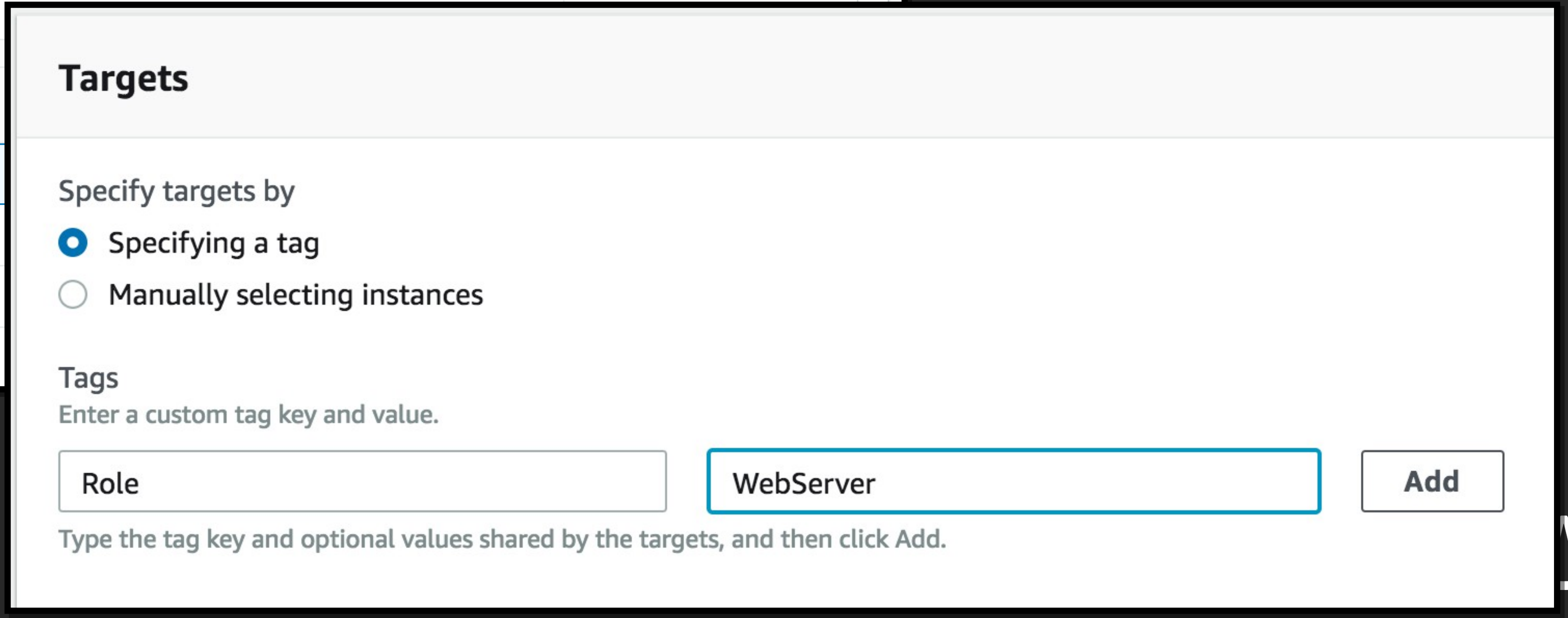


Command parameters

Commands

(Required) Specify the commands to run or the paths to existing scripts on the instance.

```
Install-WindowsFeature -Name Web-Server -IncludeAllSubFeature
```



Targets

Specify targets by

● Specifying a tag

○ Manually selecting instances

Tags

Enter a custom tag key and value.

Role | WebServer | Add

Type the tag key and optional values shared by the targets, and then click Add.

AWS Systems Manager – Components

Run Command

State Manager

Inventory

Maintenance Window

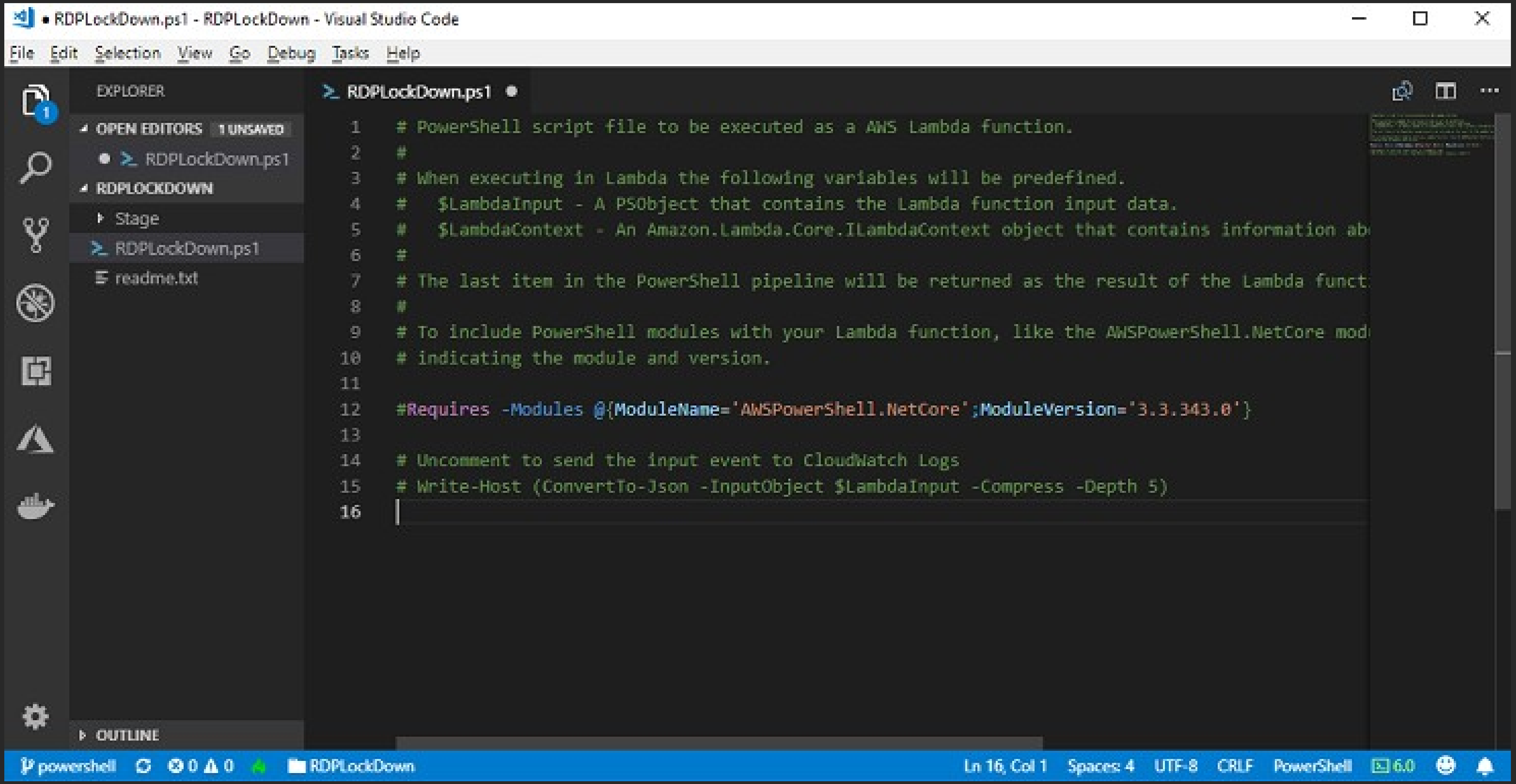
Patch Manager

Automation

Parameter Store

Documents

PowerShell in AWS Lambda



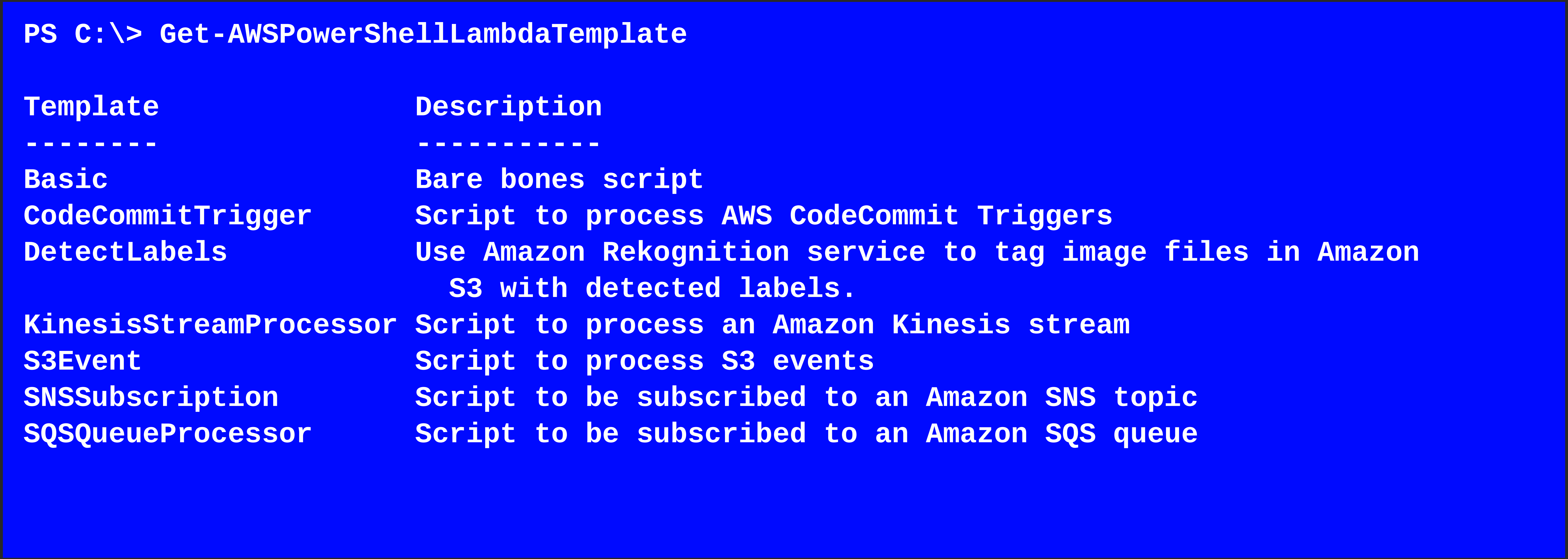
```powershell
# PowerShell script file to be executed as a AWS Lambda function.
#
# When executing in Lambda the following variables will be predefined.
#   $LambdaInput - A PSObject that contains the Lambda function input data.
#   $LambdaContext - An Amazon.Lambda.Core.ILambdaContext object that contains information ab
#
# The last item in the PowerShell pipeline will be returned as the result of the Lambda funct
#
# To include PowerShell modules with your Lambda function, like the AWSPowerShell.NetCore mod
# indicating the module and version.

#Requires -Modules @{ModuleName='AWSPowerShell.NetCore';ModuleVersion='3.3.343.0'}

# Uncomment to send the input event to CloudWatch Logs
# Write-Host (ConvertTo-Json -InputObject $LambdaInput -Compress -Depth 5)

```

PowerShell in AWS Lambda



```
PS C:\> Get-AWSPowerShellLambdaTemplate

Template               Description
--------               -----------
Basic                  Bare bones script
CodeCommitTrigger      Script to process AWS CodeCommit Triggers
DetectLabels           Use Amazon Rekognition service to tag image files in Amazon
                         S3 with detected labels.
KinesisStreamProcessor Script to process an Amazon Kinesis stream
S3Event                Script to process S3 events
SNSSubscription        Script to be subscribed to an Amazon SNS topic
SQSQueueProcessor      Script to be subscribed to an Amazon SQS queue
```

Workshop scenarios

Challenge #1- Configure EC2

- Right-size instances
- Tag instances
- Enable termination protection

Challenge #2 – Configure Windows

- Install IIS
- Disable RDP
- Activate Windows

Challenge #3 – Schedule Instances

- Start development instances at 8 AM
- Stop development instances at 6 PM

Debrief

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Thank you!

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Please complete the session survey in the mobile app.

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