



# Migrating ASP.NET applications to Elastic Beanstalk

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# Agenda

**Review** key Elastic Beanstalk concepts

**Migration Demo** using Windows Web Application Migration

Assistant

**Migration Demo** using the AWS Toolkit for Visual Studio

# Review key Elastic Beanstalk concepts

# Why Migrate Applications to Elastic Beanstalk



How do get a web application up and running in the cloud?

...and design for high availability?

...and scale dynamically?

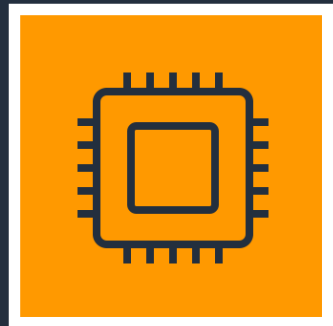
...and deploy new application versions safely?

...and keep my run-time updated?

...and keep my OS patched?

...and monitor application health?

# Lots of options



**Compute:** EC2, Lambda, ECS, EKS, Lightsail, Fargate



**Storage:** S3, Elastic File Service



**Network:** Classic Load Balancer, Application Load Balancer, Network Load Balancer, Security Groups, Virtual Private Cloud



**Database:** RDS, DynamoDB, Aurora



**Management:** Auto Scaling, CloudFormation, Systems Manager, CloudWatch

But is there just **one service** that I can use to run my migrated web application?

YES

# AWS Elastic Beanstalk

A single service that automatically handles...

- Infrastructure provisioning
- Auto scaling configurations
- Network and security configurations
- Load balancing configurations
- OS and runtime updates
- Application deployments
- Application health monitoring
- Application analysis and debugging tools

...at no additional cost



# Other things to do with Elastic Beanstalk

- Modernize your application with multi-container Docker environments
- Serve and scale a machine learning model
- Integrate with your CI/CD pipeline for application updates
- Run Blue/Green deployments



# Runtime Support

Elastic Beanstalk supports the most popular application runtimes, as well as Docker images

Elastic Beanstalk also supports custom platforms and custom images



# Two Migration Paths to Elastic Beanstalk

Path 1 – Migrate ASP.NET website directly from host VM

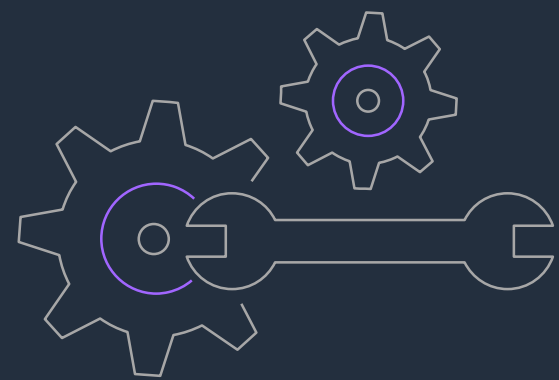
- **Windows Web Application Migration Assistant**

Path 2 – Upload application bundle via:

- **AWS Toolkit for Visual Studio**
- EB console
- EB CLI
- AWS CLI
- CI/CD Toolset



# AWS Elastic Beanstalk Workflow



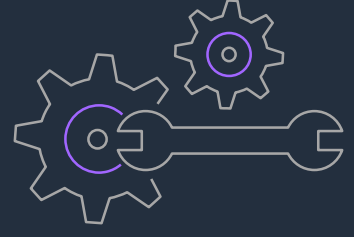
Configure &  
Provision



Deploy



Monitor &  
Manage



Configure &  
Provision

# Applications and Environments

Application: *MyApp*

Environment: *Dev*

V3

Environment: *Staging*

V2

Environment: *Prod*

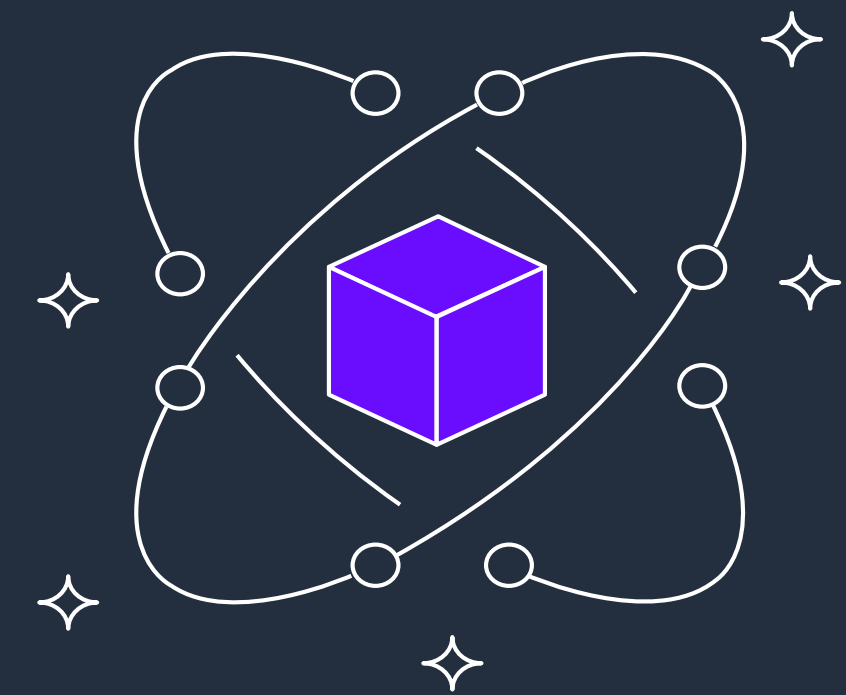
V1

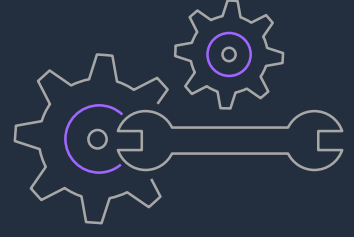
V1

V1

# Elastic Beanstalk environment orchestration

- Provisions EC2 instances, security groups, load balancers, and auto scaling groups
- Configures Route53 with a unique domain name that you can configure and route to
- Safely deploys your code





Configure &  
Provision

# Managing Application Versions

- Elastic Beanstalk stores every code revision as its own unique application version
- All versions are stored durably in Amazon S3
- Easily rollback an environment to a previous version

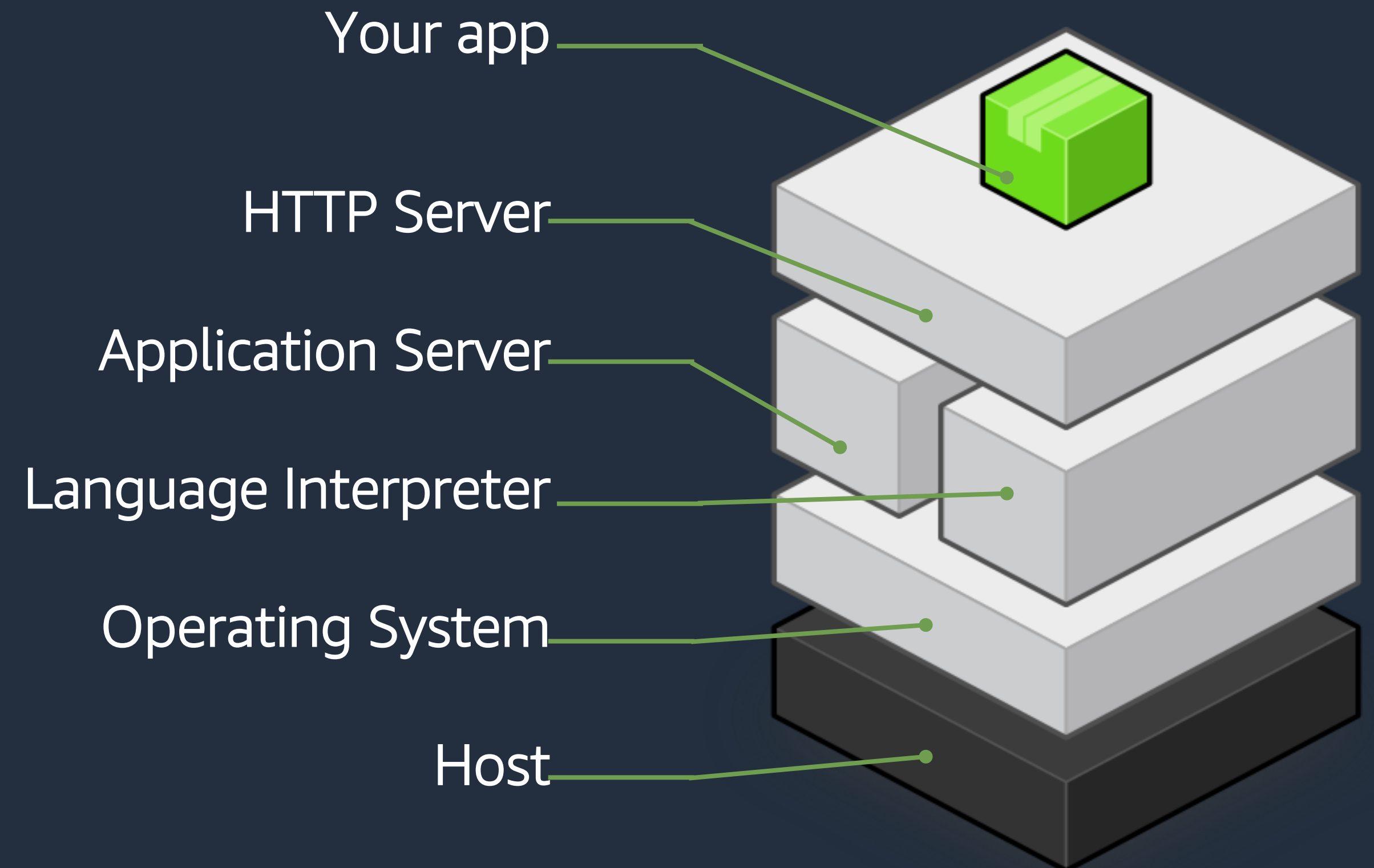




Deploy

# Automated application deployment

- Deploys your application with the right runtime and platform components
- Ensures all of the components are working seamlessly together







Deploy

# Options for deploying applications

- All At Once
- Rolling
- Rolling with Additional Batch
- Immutable
- Blue-Green

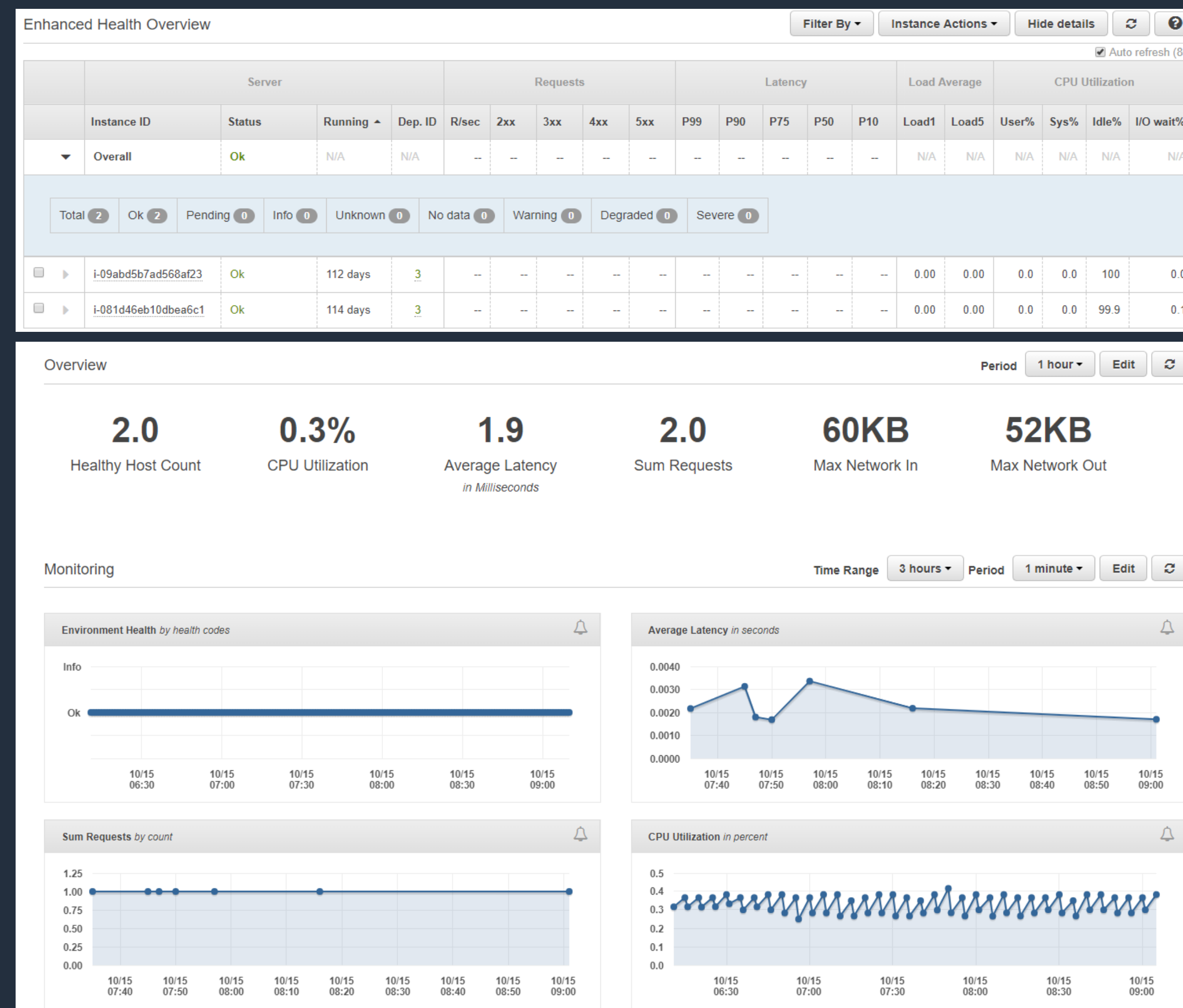




Monitor &  
Maintain

# Health Monitoring

- Real-time health monitoring of your application
- Automatic AWS CloudWatch dashboard with detail application metrics
- CloudWatch Logs streaming
- Easily enable AWS X-Ray for analysing and debugging
- Available through Elastic Beanstalk CLI for easy integration into existing workflows





Monitor &  
Maintain

# Managed Updates

- Enabled by default
- Applies latest OS and runtime security patches, fixes, minor updates
- Configurable maintenance windows

## Modify managed updates

### Managed platform updates

Enable managed platform updates to apply platform updates automatically during a weekly maintenance window that you choose. Your application stays available during the update process.

**Managed updates**  Enabled

**Weekly update window** Tuesday at 02 : 06 UTC

**Update level** Minor and patch

**Instance replacement**  If enabled, an instance replacement will be scheduled if no other updates are available.



Monitor &  
Maintain

# Managed Updates

Dashboard

Configuration

Logs

Health

Monitoring

Alarms

Managed Updates

Events

Tags

## Managed Updates Overview

An instance replacement has been scheduled to run during the next maintenance window, between **Tuesday, December 3rd 9:36 PM** and **Tuesday, December 3rd 11:36 PM (-0800 GMT)**. To perform the replacement immediately, choose **Apply Now**.

Apply now

## History

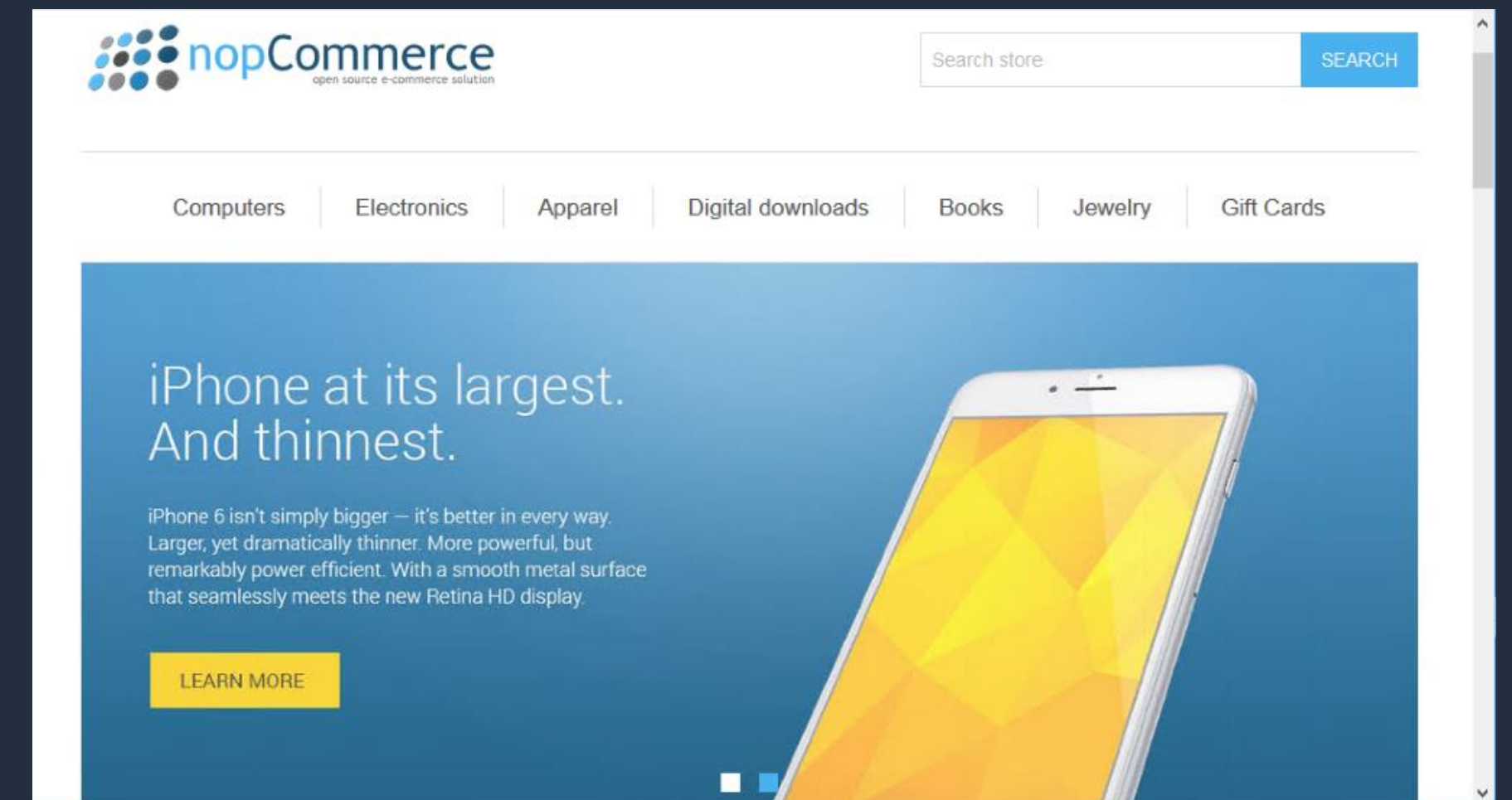
Start Time	Durati...	Update Information	Result
2019-11-26 21:36:07 UTC-0800	00:09:44	Platform update from 64bit Amazon Linux running Python 3.6 2.9.3 to 64bit Amazon Linux running Python 3.6 2.9.4	COMPLETED
2019-11-19 21:36:23 UTC-0800	00:09:43	Environment instance replacement	COMPLETED
2019-11-12 21:36:03 UTC-0800	00:09:11	Environment instance replacement	COMPLETED
2019-11-05 21:36:39 UTC-0800	00:09:57	Environment instance replacement	COMPLETED
2019-10-29 22:36:53 UTC-0700	00:08:56	Environment instance replacement	COMPLETED
2019-10-22 22:37:01 UTC-0700	00:10:13	Platform update from 64bit Amazon Linux running Python 3.6 2.9.2 to 64bit Amazon Linux running Python 3.6 2.9.3	COMPLETED
2019-10-15 22:36:07 UTC-0700	00:10:12	Environment instance replacement	COMPLETED
2019-10-08 22:36:55 UTC-0700	00:09:24	Environment instance replacement	COMPLETED

Migration Demo using the

 Windows Web Application Migration Assistant

# Migrate an ASP.NET e-commerce website to Elastic Beanstalk in three steps:

1. Configure IAM roles and permissions
2. Run the **Windows Web Application Migration Assistant**
3. Deploy the website to Elastic Beanstalk



# Windows Web Application Migration Assistant

- PowerShell script
- Migrates an ASP.NET web application to Elastic Beanstalk
- Runs on the host currently serving the application
- Launched Dec 16, 2019
- Available on GitHub





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PowerShell utility that migrates .NET applications from Windows servers to AWS Elastic Beanstalk

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[samiull](#) String Review

Latest commit [cf4cecf](#) 20 days ago

[utils](#)

Updated documentation and migration script

last month

[.gitignore](#)

AWS Web App Migration Assistant

2 months ago

[CODE\\_OF\\_CONDUCT.md](#)

Initial commit

2 months ago

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Initial commit

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Initial commit

2 months ago

[MigrateIISWebsiteToElasticBeanstalk.ps1](#)

String Review

9 days ago

[NOTICE](#)

Initial commit

2 months ago

<https://github.com/awslabs/windows-web-app-migration-assistant>

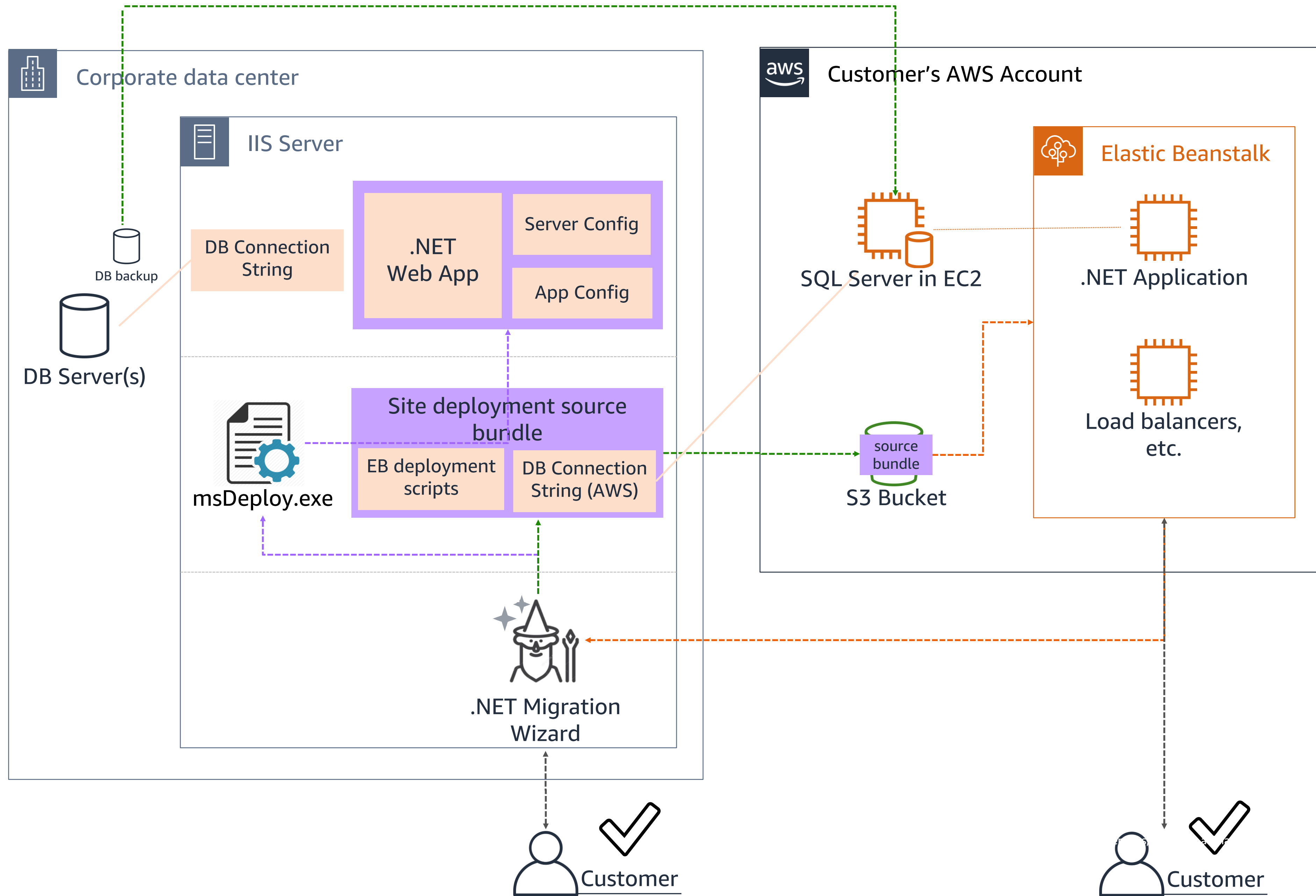


# Windows Web Application Migration Assistant

- Discovers ASP.NET websites
- Selects site to migrate
- Discovers database connection strings
- Generates an Elastic Beanstalk deployment bundle
- Deploys to Elastic Beanstalk



# .NET Application Migration To Elastic Beanstalk



# Setting Up

1. **Create a new IAM user (e.g. `MigrationUser`)**
2. **Attach the following polices to `MigrationUser`**
  - `IAMReadOnlyAccess`
  - `AWSElasticBeanstalkFullAccess`
3. **Copy the `AccessKey` and `SecretKey` for `MigrationUser`**

# Setting Up

## 4. Add a user profile for `MigrationUser` on the on-prem host

```
PS > Set-AWSCredential `
    -AccessKey AKIA0123456787_EXAMPLE `
    -SecretKey wJalrXUtnFEMI/K7MDENG/bPxrFiCY_EXAMPLE `
    -StoreAs MigrationUser
```

# Setting Up

5. [Optional] Migrate database used by web application to AWS

6. Download the migration assistant from GitHub to the on-prem host

<https://github.com/awslabs/windows-web-app-migration-assistant>

## Identity and Access Management (IAM)

### Dashboard

#### Access management

[Groups](#)**Users**[Roles](#)[Policies](#)[Identity providers](#)[Account settings](#)

#### Access reports

[Access analyzer](#)[Archive rules](#)[Analyzer details](#)[Credential report](#)[Organization activity](#)[Service control policies \(SCPs\)](#)**AWS account ID:**

860547654709

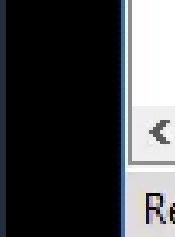
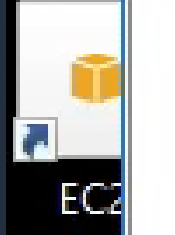
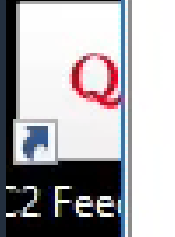
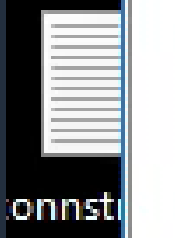
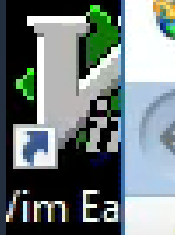
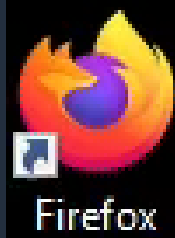
[Add user](#)[Delete user](#)

Showing 1 result

<input type="checkbox"/>	User name ▾	Groups	Access key age	Password age	Last activity	MFA
<input type="checkbox"/>	EBmigrationuser	None	✔ 47 days	None	<a href="#">Today</a>	Not enabled

# Run the migration assistant

```
PS C:\> .\MigrateIISWebsiteToElasticBeanstalk.ps1
```



App\_Data

Administrator: Windows PowerShell

IIS Windows Server Your store

localhost

Internet Information Services (IIS) Manager

EC2AMAZ-9VP6LPT

File View Help

Connections

Start Page

EC2AMAZ-9VP6LPT (EC2AMAZ-9VP6LPT)

### EC2AMAZ-9VP6LPT Home

Filter: Go Show All Group by: Area

IIS

ASP	Authentic...	Authorizat... Rules	CGI	Compression	Default Document	Directory Browsing	Error Pages	Failed Request Tra...	FastCGI Settings	Handler Mappings
HTTP Redirect	HTTP Respon...	IP Address and Doma...	ISAPI and CGI Restri...	ISAPI Filters	Logging	MIME Types	Modules	Output Caching	Request Filtering	Server Certificates
WebDAV Authori...	Worker Processes									

Management

Centralized Certificates	Configurat... Editor	Feature Delegation	IIS Manager Permissions	IIS Manager Users	Management Service	Shared Configurat...
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Features View Content View

Actions

**Manage Server**

- Restart
- Start
- Stop

[View Application Pools](#)

[View Sites](#)

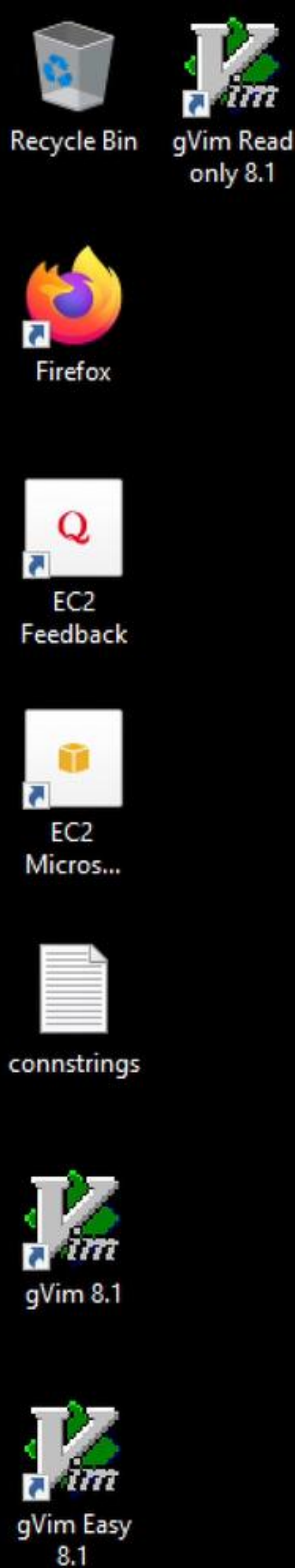
Deploy

- Export Server Package...
- Import Server or Site Package...
- Change .NET Framework Version
- Get New Web Platform Components
- Help

Ready

5 minutes later...





Internet Information Services (IIS) Administrator: Windows PowerShell

EC2AMAZ-9VP6LPT (EC2AMAZ-9VP6LPT)

File View Help

Connections

- Start Page
- EC2AMAZ-9VP6LPT (EC2AMAZ-9VP6LPT)
  - Application Pools
  - Sites
    - Default Web Site
    - nop4.2

```
BuildArn : 
DateCreated : 11/20/2019 7:23:58 PM
DateUpdated : 11/20/2019 7:23:58 PM
Description : 
SourceBuildInformation : 
SourceBundle : Amazon.ElasticBeanstalk.Model.S3Location
Status : Unprocessed
VersionLabel : MigrationRun-20191120191955-v1

[AWS Migration] Updating the EB environment... This might take a few minutes.
.....
LoggedAt : 11/20/2019 7:29:02 PM
AbortableOperationInProgress : True
ApplicationName : Nov20_Demo777
CNAME : MigrationRun-20191120191955.hi6h9e6gis.us-east-1.elasticbeanstalk.com
DateCreated : 11/20/2019 7:23:56 PM
DateUpdated : 11/20/2019 7:29:01 PM
Description : 
EndpointURL : awseb-e-z-AWSEBLoa-57LUHGVDRCY9-1219858745.us-east-1.elb.amazonaws.com
EnvironmentArn : arn:aws:elasticbeanstalk:us-east-1:246350206254:environment/Nov20_Demo777/MigrationRun-20191120191955
EnvironmentId : e-zqyk3ekaep
EnvironmentLinks : {}
EnvironmentName : MigrationRun-20191120191955
Health : Grey
HealthStatus : 
PlatformArn : arn:aws:elasticbeanstalk:us-east-1::platform/IIS 10.0 running on 64bit Windows Server 2016/1.2.0
Resources : 
SolutionStackName : 64bit Windows Server 2016 v1.2.0 running IIS 10.0
Status : Updating
TemplateName : 
Tier : Amazon.ElasticBeanstalk.Model.EnvironmentTier
VersionLabel : MigrationRun-20191120191955-v1
ResponseMetadata : Amazon.Runtime.ResponseMetadata
ContentLength : 1428
HttpStatusCode : OK

[AWS Migration] Waiting for the application to launch... This might take a few minutes.
.....
[AWS Migration] Deployment succeeded! Your web application is now hosted in AWS.
[AWS Migration] Note that it might take a few minutes for the application to be ready.
[AWS Migration] Application URL:
[AWS Migration] awseb-e-z-AWSEBLoa-57LUHGVDRCY9-1219858745.us-east-1.elb.amazonaws.com
[AWS Migration]
[AWS Migration] Thank you for using AWS Web Application Migration Assistant.
[AWS Migration] Please contact the migration support team for any feedback or question.

PS C:\Users\Administrator\Downloads\aws-web-migration-assistant\AWSWebAppMigrationAssistant>
```



# Viewing applications from Elastic Beanstalk console...

### Learn More

- [Get started using Elastic Beanstalk](#)
- [Modify the code](#)
- [Create and connect to a database](#)
- [Add a custom domain](#)

### Featured

- [Create your own custom platform](#)

### Command Line Interface (v3)

- [Installing the AWS EB CLI](#)
- [EB CLI Command Reference](#)

If you want to use a command line to create, manage, and scale your Elastic Beanstalk applications, please use the Elastic Beanstalk Command Line Interface (EB CLI).

### Get Started

```
$ mkdir HelloWorld
$ cd HelloWorld
$ eb init -p PHP
$ echo "Hello World" > index.html
$ eb create dev-env
$ eb open
```

To deploy updates to your applications, use **'eb deploy'**.

## All Applications

Filter by Application Name: 

### .Net v2 test

Actions ▾

NetV2Test-env

**Environment tier:** Web Server  
**Platform:** IIS 10.0 running on 64bit Windows Server 2016/2.3.2  
**Running versions:** Sample Application  
**Last modified:** 2020-01-02 17:13:49 UTC-0800  
**URL:** NetV2Test-env.mtjzj7ynpu.us-west-2.elasticbeanstalk.com  
**Health status:** Ok

### 2020-01-02-246PM\_nop

Actions ▾

MigrationRun-20200102224342

**Environment tier:** Web Server  
**Platform:** IIS 10.0 running on 64bit Windows Server 2016/2.3.0  
**Running versions:** MigrationRun-20200102224342-vl  
**Last modified:** 2020-01-02 16:49:00 UTC-0800  
**URL:** MigrationRun-20200102224342.v2e7cjujye.us-west-2.elastic...  
**Health status:** Green

### 2020-01-02-AdminTaylor

Actions ▾

MigrationRun-20200102234900

**Environment tier:** Web Server  
**Platform:** IIS 10.0 running on 64bit Windows Server 2016/2.3.0  
**Running versions:** MigrationRun-20200102234900-vl  
**Last modified:** 2020-01-02 16:13:35 UTC-0800  
**URL:** MigrationRun-20200102234900.vsbh3qytqy.us-west-2.elasti...  
**Health status:** Ok

### 2020-01-02nop

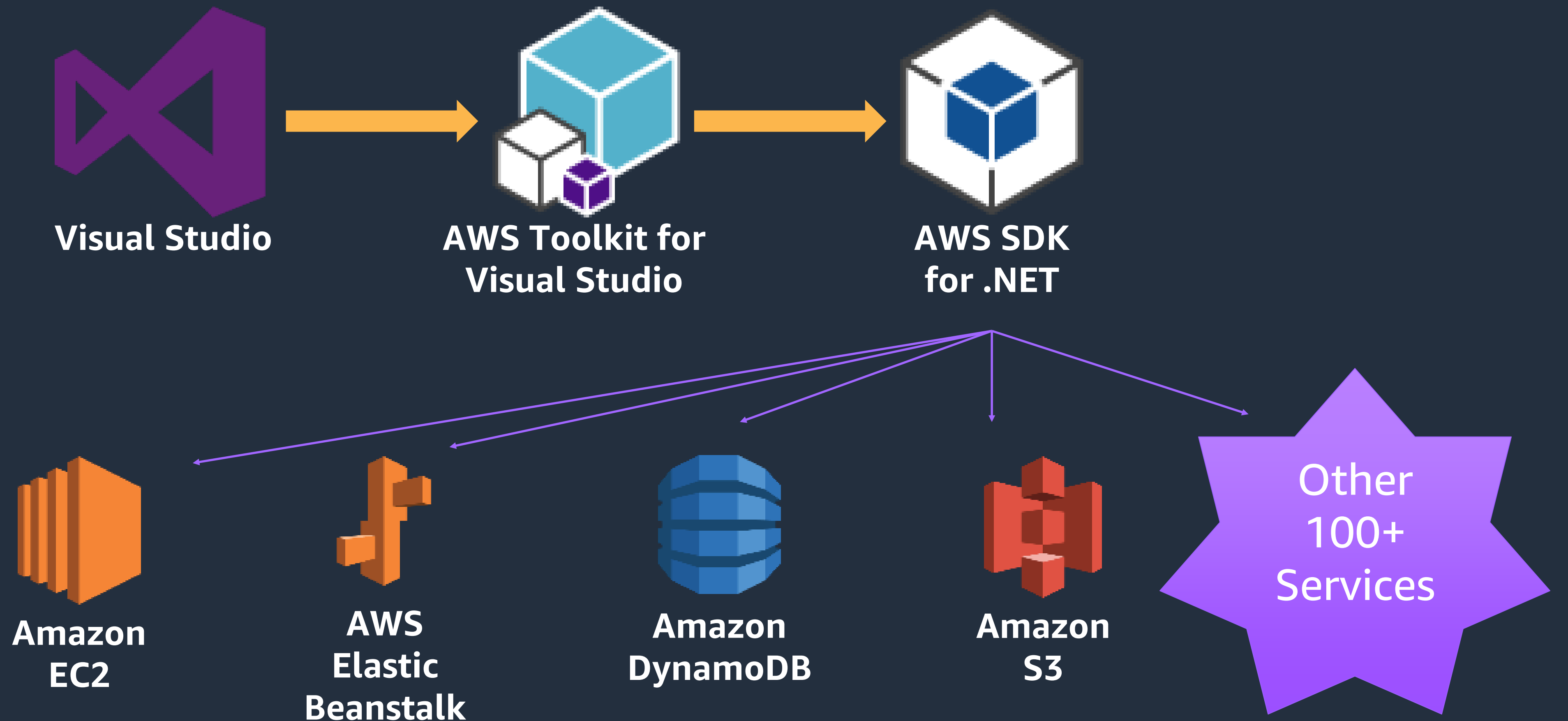
Actions ▾

# Migration Demo using the AWS Toolkit for Visual Studio

# Setting Up/Migration demo background

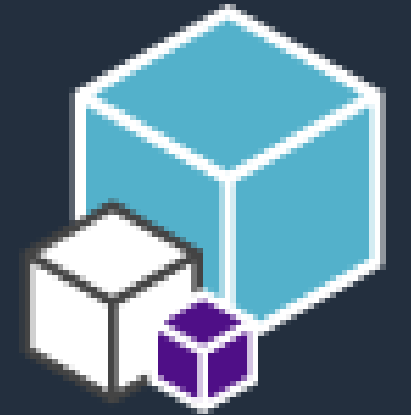
Sepher to provide (how to get VS plugin, what web app is going to be migrated, etc.)

# AWS Toolkit for Visual Studio

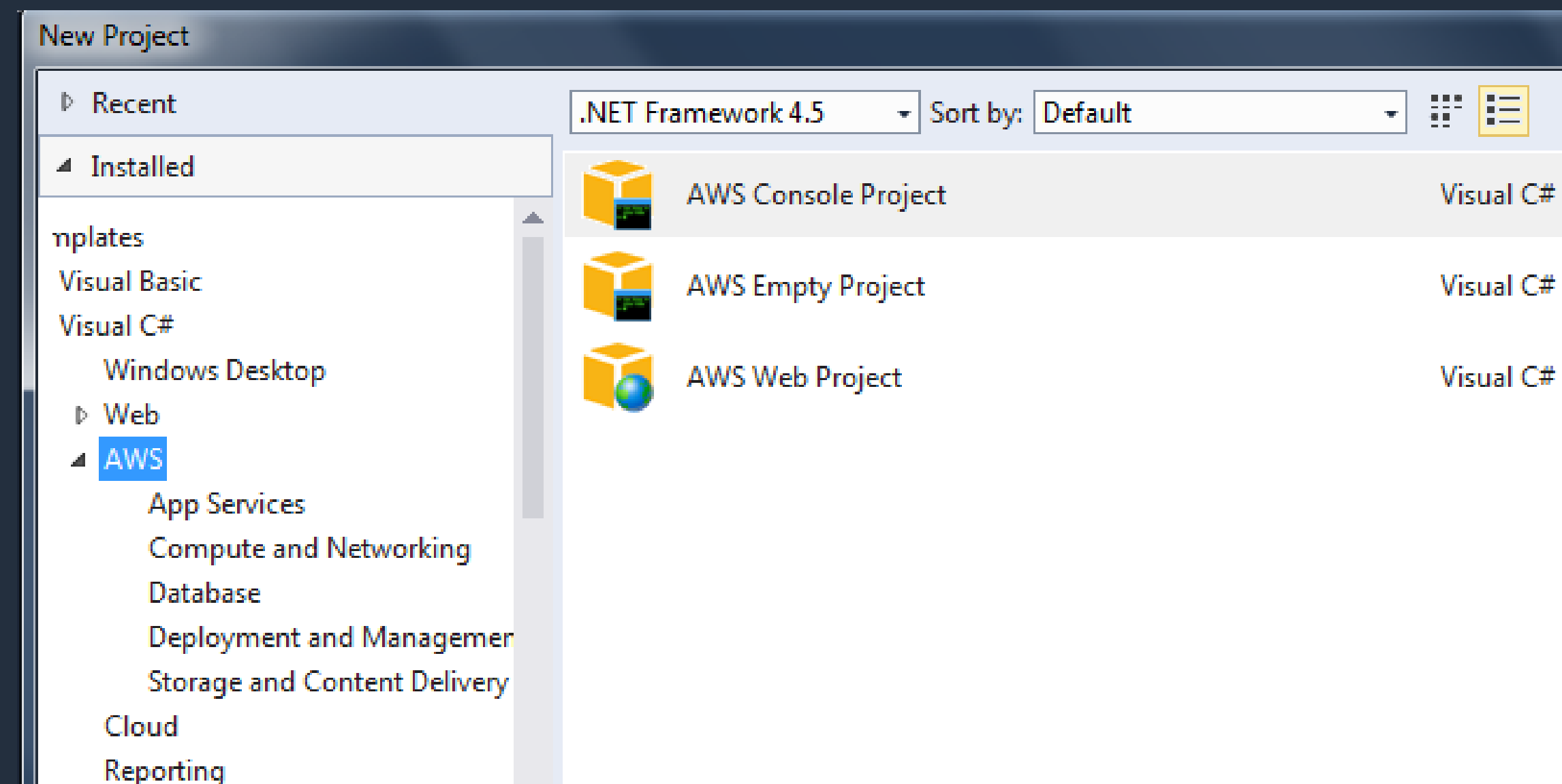
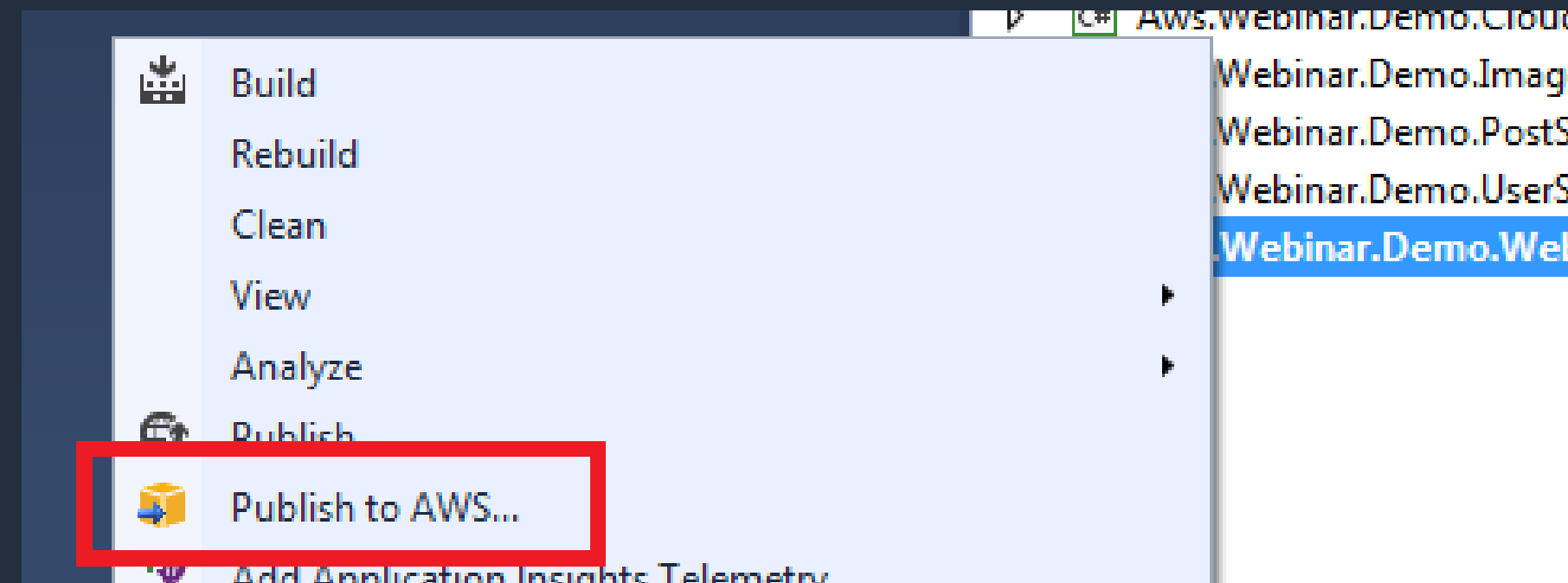
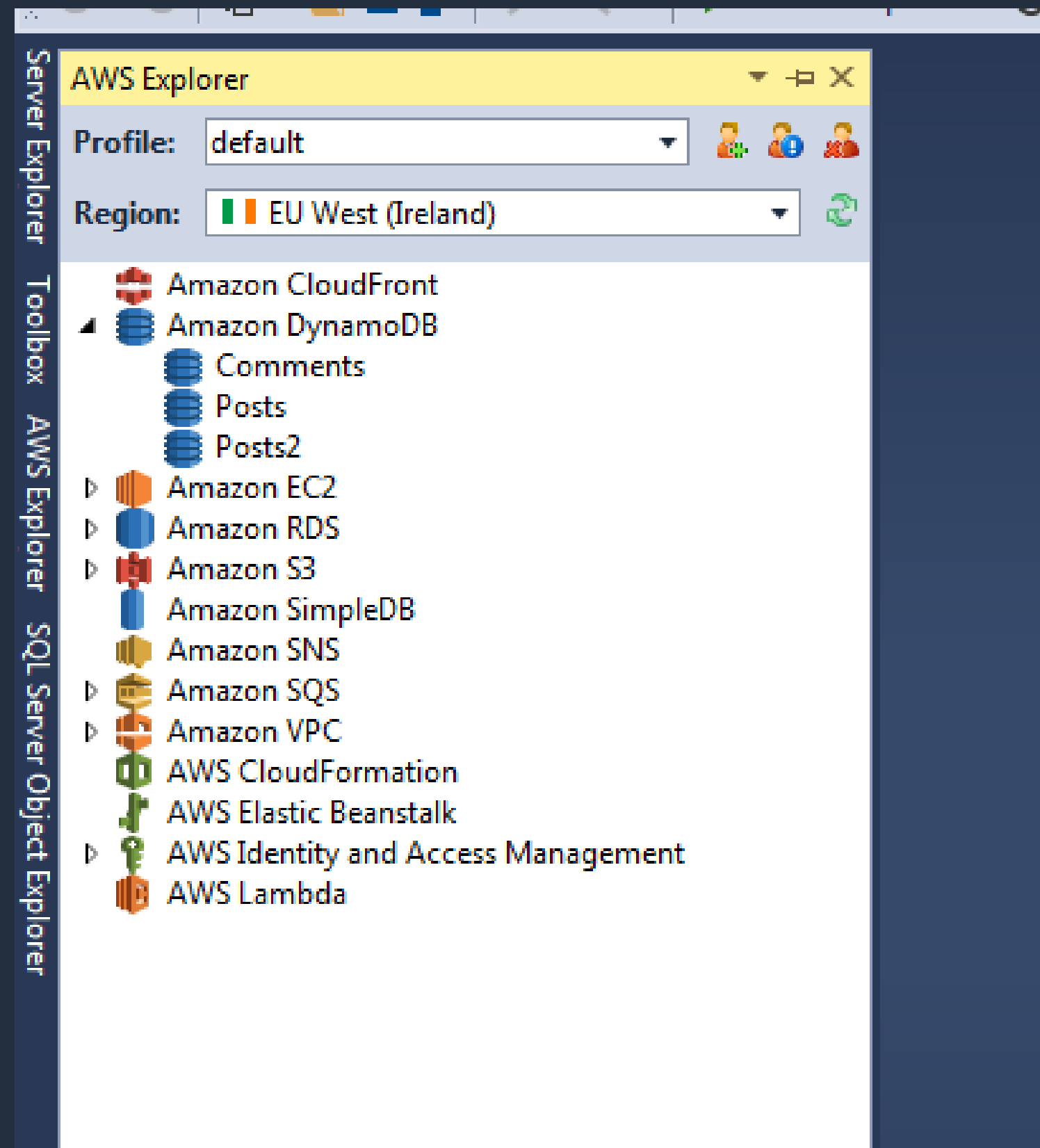


# AWS Toolkit for Visual Studio

Full integration in Visual Studio

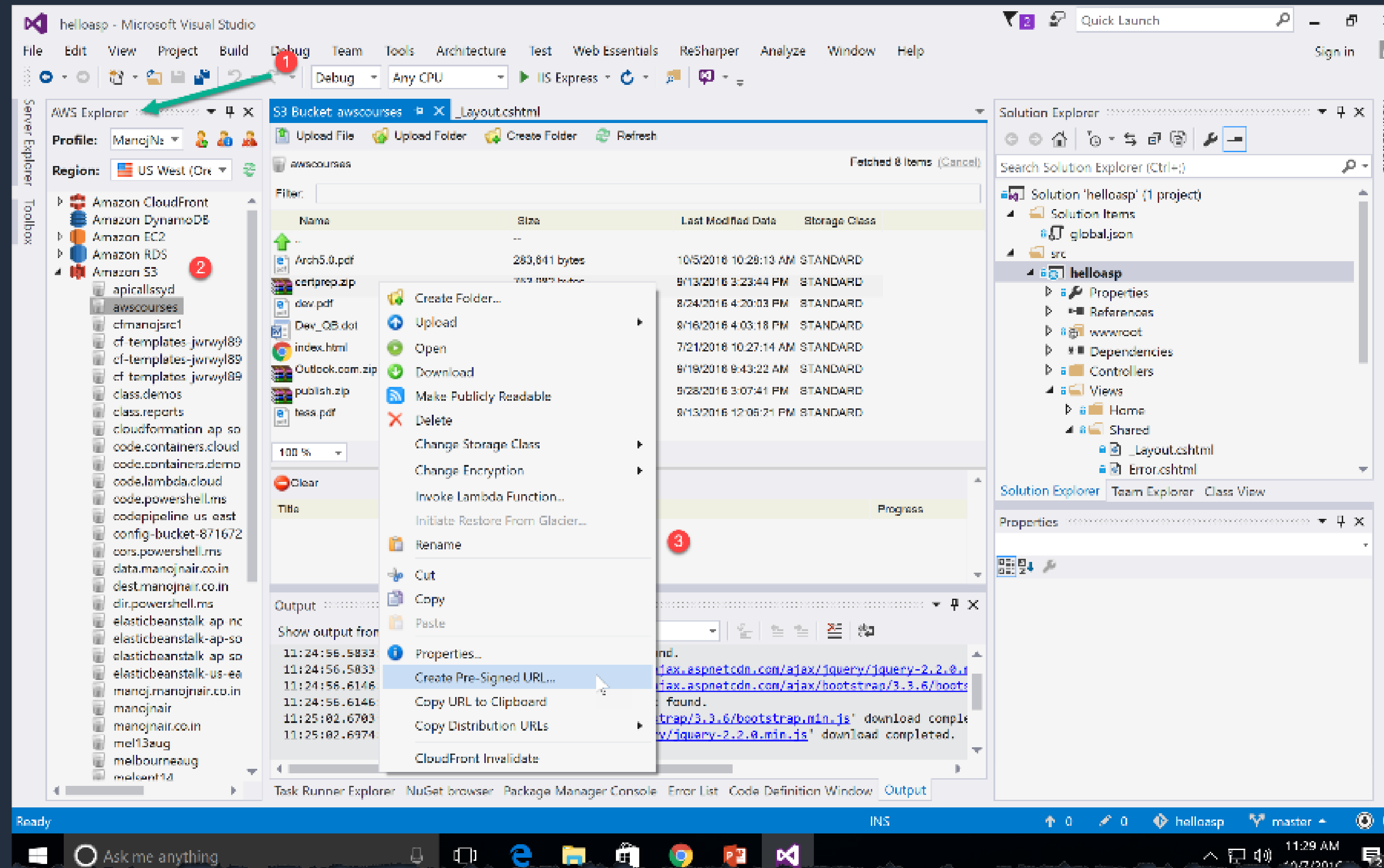


AWS Toolkit  
for Visual  
Studio



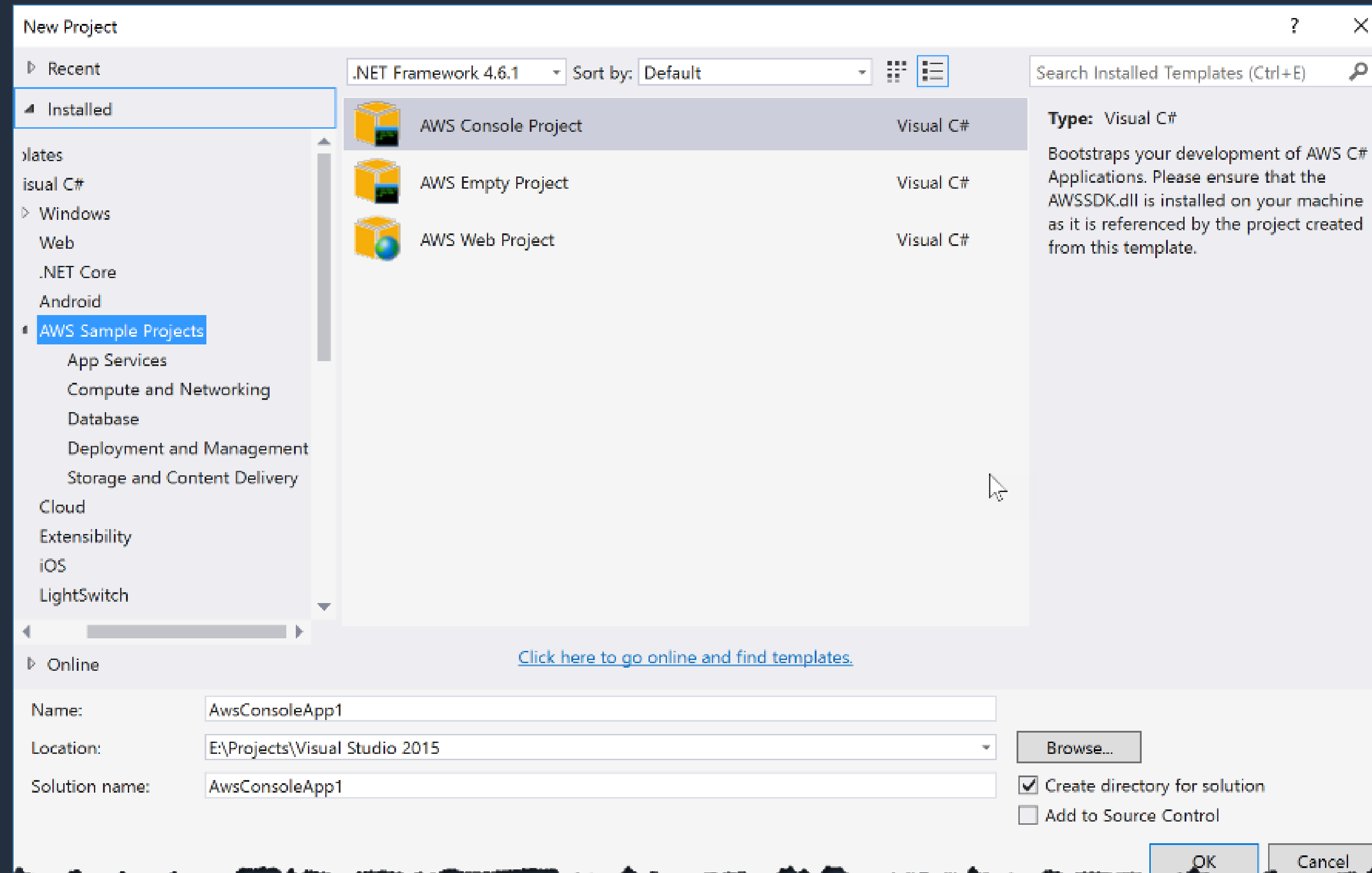
.NET SDK

# AWS Toolkit for Visual Studio: .NET SDK

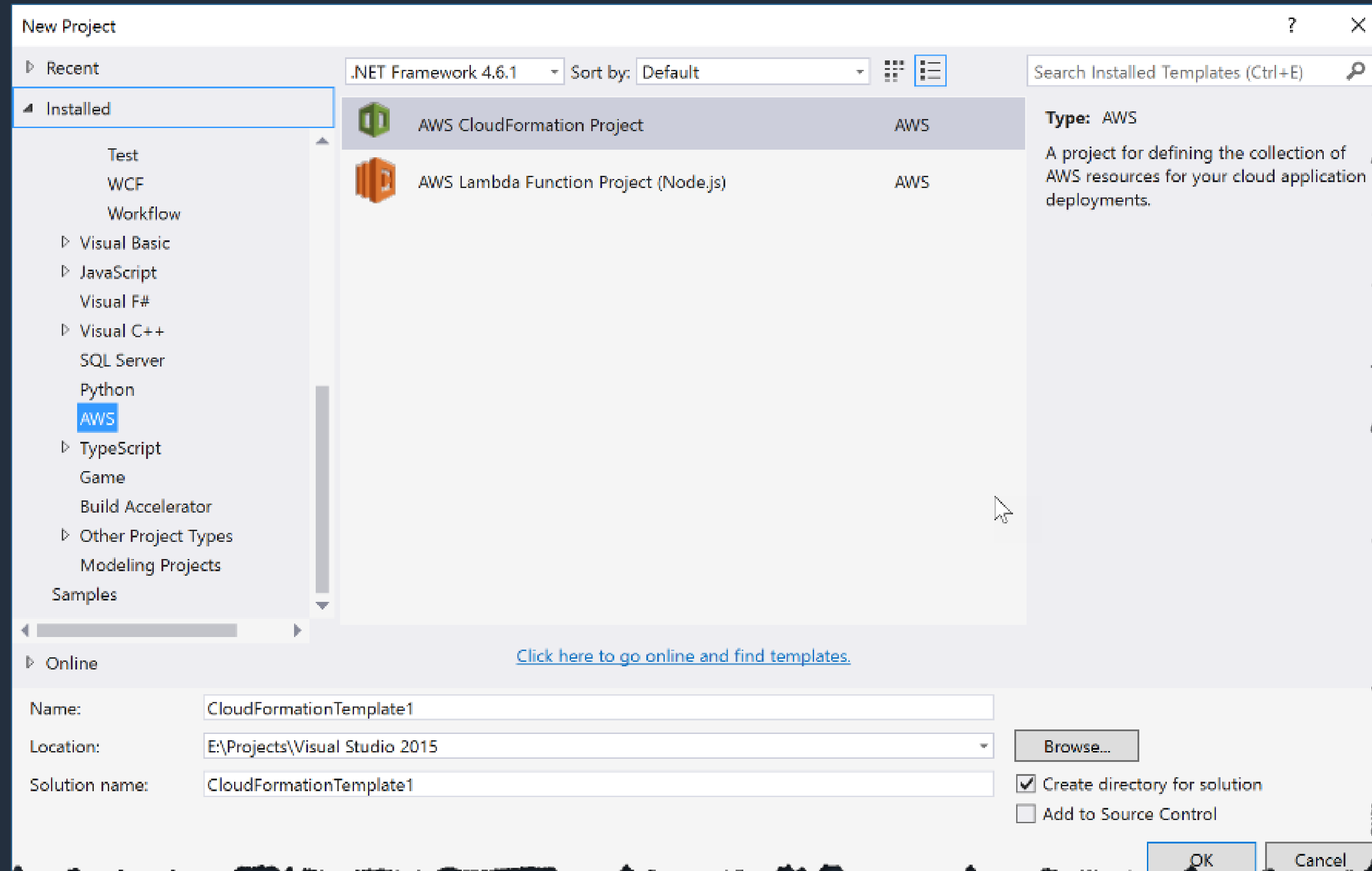




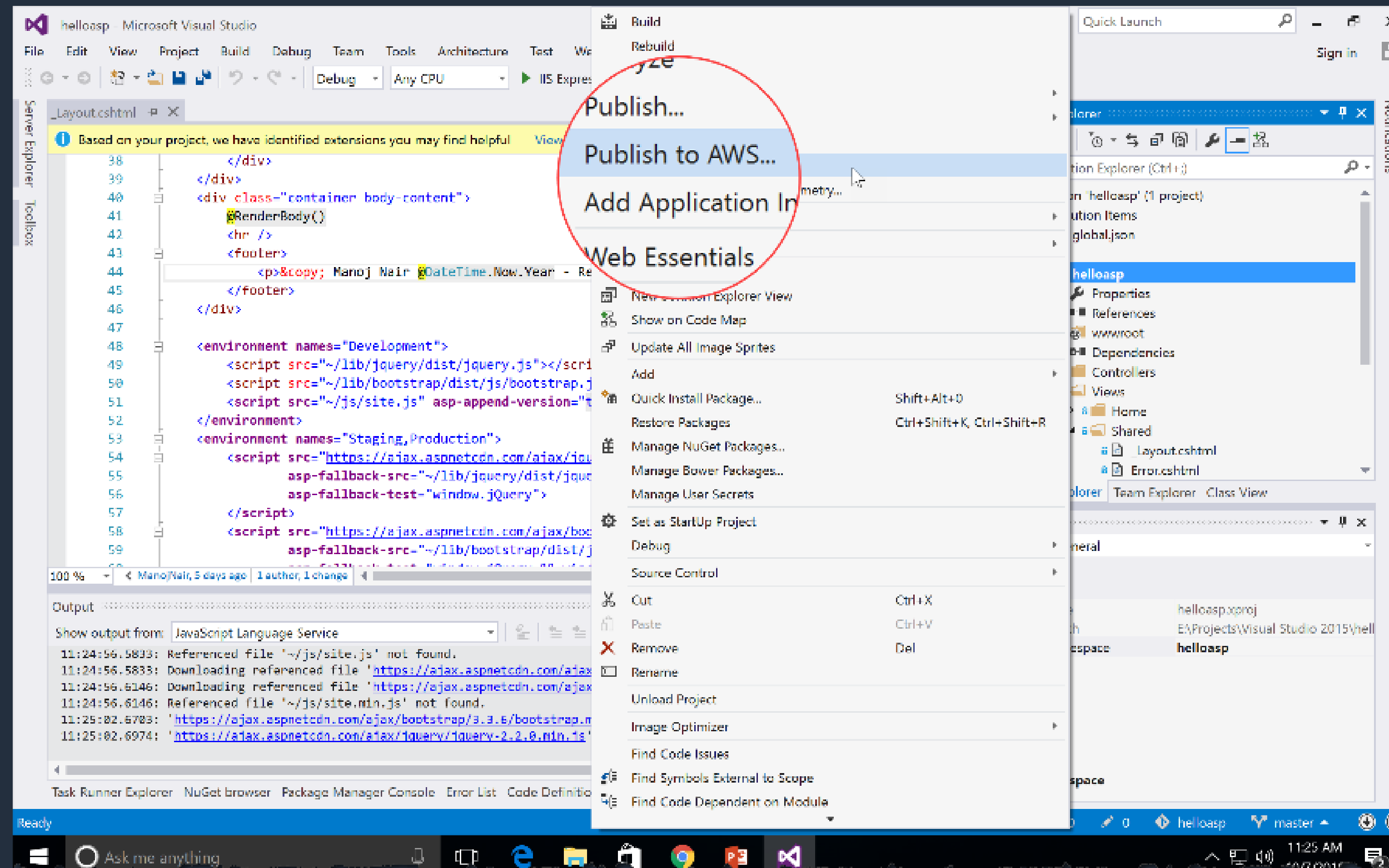
# AWS Toolkit: Starter Templates



# AWS Toolkit: Boilerplate Templates



# AWS Toolkit: Elastic Beanstalk



MyWebApplication

File Home Share View

Clipboard: Pin to Quick access, Copy, Paste, Cut, Copy path, Paste shortcut

Organize: Move to, Copy to, Delete, Rename

New: New folder, New item, Easy access

Open: Properties, Open, Edit, History

Select: Select all, Select none, Invert selection

Address bar: < > > This PC > Repository (D:) > temp > EB > MyWebApplication

Search: Search MyWebApplication

Name	Date modified	Type	Size
.vs	28/02/2020 12:14 PM	File folder	
MyWebApplication	28/02/2020 12:14 PM	File folder	
packages	28/02/2020 12:14 PM	File folder	
MyWebApplication.sln	28/02/2020 12:14 PM	Visual Studio Solu...	2 KB

4 items 1 item selected



Thank you!

