

You can configure your Visual Studio Team Services team projects to automatically build and deploy to Azure web apps or cloud services. (For information on how to set up a continuous build and deploy system using an *on-premises* Team Foundation Server, see [Continuous Delivery for Cloud Services in Azure](#).)

This tutorial assumes you have Visual Studio 2013 and the Azure SDK installed. If you don't already have Visual Studio 2013, download it by choosing the **Get started for free** link at [www.visualstudio.com](http://www.visualstudio.com). Install the Azure SDK from [here](#).

#### Note:

You need an Visual Studio Team Services account to complete this tutorial: You can [open a Visual Studio Team Services account for free](#).

To set up a cloud service to automatically build and deploy to Azure by using Visual Studio Team Services, follow these steps.

## 1: Create a team project

Follow the instructions [here](#) to create your team project and link it to Visual Studio. This walkthrough assumes you are using Team Foundation Version Control (TFVC) as your source control solution. If you want to use Git for version control, see [the Git version of this walkthrough](#).

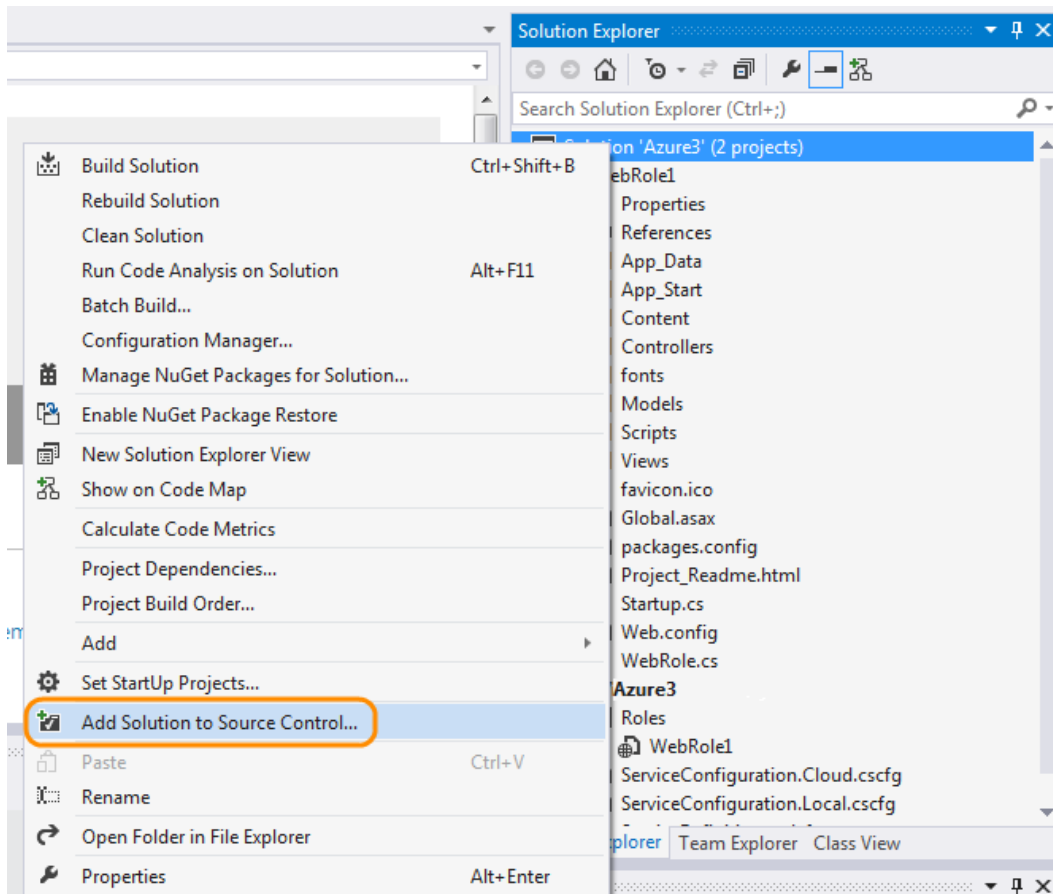
## 2: Check in a project to source control

1. In Visual Studio, open the solution you want to deploy, or create a new one. You can deploy a web app or a cloud service (Azure Application) by following the steps in this walkthrough. If you want to create a new solution, create a new Azure Cloud Service project, or a new ASP.NET MVC project. Make sure that the project targets .NET Framework 4 or 4.5, and if you are creating a cloud service project, add an ASP.NET MVC web role and a worker role, and choose Internet application for the web role. When prompted, choose **Internet Application**. If you want to create a web app, choose the ASP.NET Web Application project template, and then choose MVC. See [Create an ASP.NET web app in Azure App Service](#).

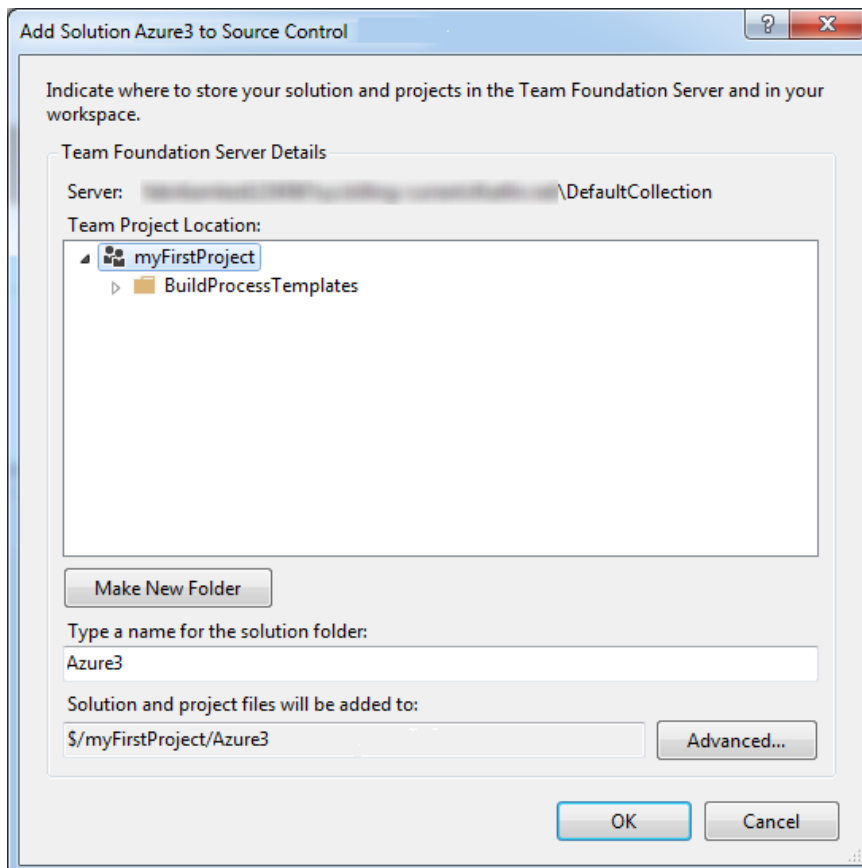
#### Note:

Visual Studio Team Services only support CI deployments of Visual Studio Web Applications at this time. Web Site projects are out of scope.

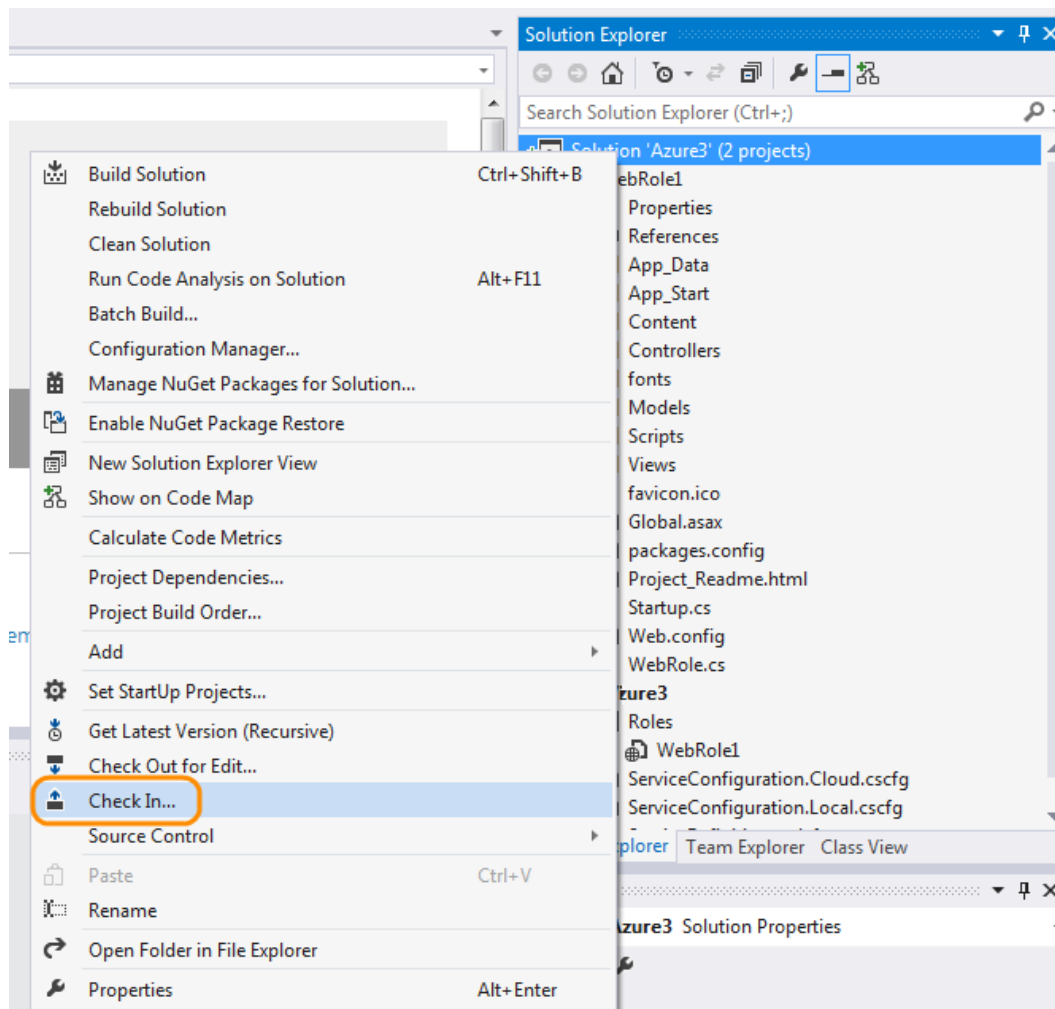
2. Open the context menu for the solution, and choose **Add Solution to Source Control**.



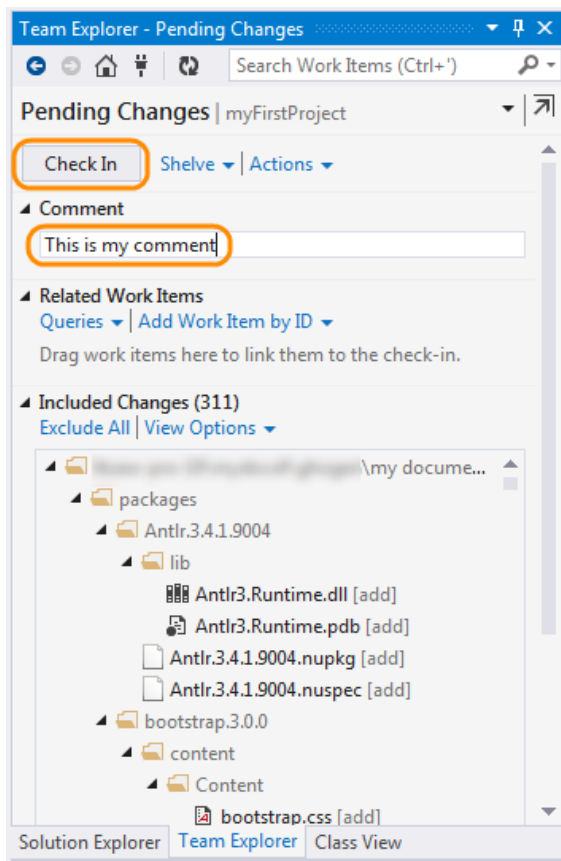
3. Accept or change the defaults and choose the **OK** button. Once the process completes, source control icons appear in **Solution Explorer**.



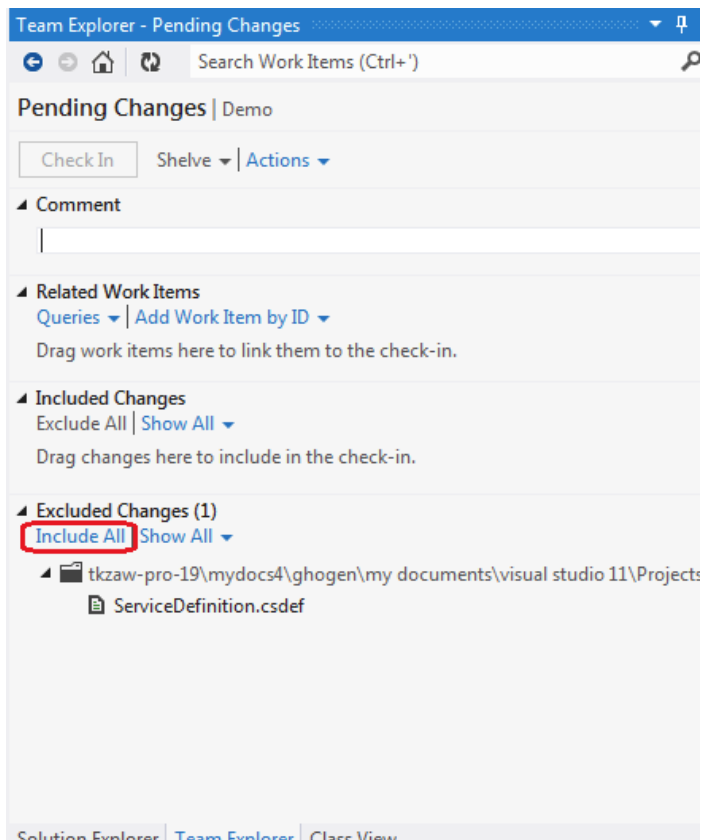
4. Open the shortcut menu for the solution, and choose **Check In**.



5. In the Pending Changes area of Team Explorer, type a comment for the check-in and choose the Check In button.




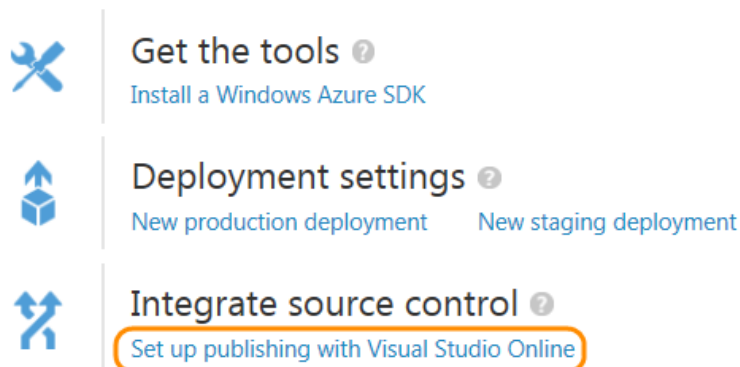
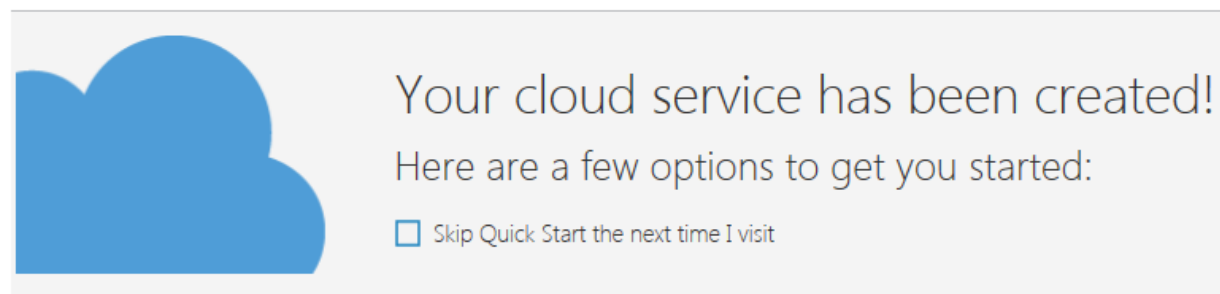
Note the options to include or exclude specific changes when you check in. If desired changes are excluded, choose the **Include All** link.



### 3: Connect the project to Azure

1. Now that you have a VS Team Services team project with some source code in it, you are ready to connect your team project to Azure. In the [Azure classic portal](#), select your cloud service or web app, or create a new one by choosing the + icon at the bottom left and choosing **Cloud Service** or **Web App** and then **Quick Create**. Choose the **Set up publishing with Visual Studio Team Services** link.

 DASHBOARD MONITOR CONFIGURE SCALE **PREVIEW** INSTANCES LINKED RESOURCES CERTIFICATES



2. In the wizard, type the name of your Visual Studio Team Services account in the textbox and click the **Authorize Now** link. You might be asked to sign in.

## AUTHORIZE CONNECTION

## Authorize connection

Existing user ?

https://

[REDACTED]



Authorize Now

New user ?

Don't have an account yet? [Create an account now.](#)

3. In the **Connection Request** pop-up dialog, choose the **Accept** button to authorize Azure to configure your team project in VS Team Services.

## CONNECTION REQUEST

The application [REDACTED] is requesting permission to:

- Make requests on your behalf to access all private resources (project, version control items, builds, etc.) within the [REDACTED] account.

If you change your mind at any time, you can revoke access by accessing your profile and managing the applications in the connections tab.

**Accept**

Deny

4. When authorization succeeds, you see a dropdown containing a list of your Visual Studio Team Services team projects. Choose the name of team project that you created in the previous steps, and then choose the wizard's checkmark button.

## AUTHORIZE CONNECTION

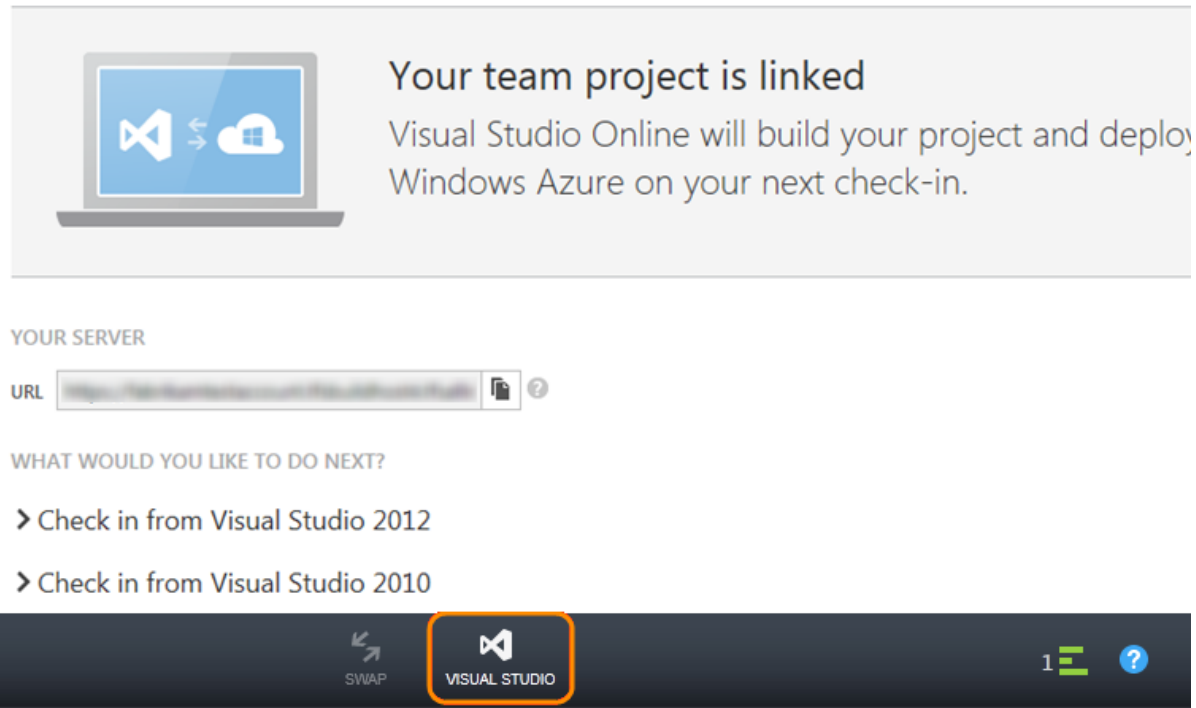
## Choose a repository to deploy

REPOSITORY NAME

fabrikam



5. After your project is linked, you will see some instructions for checking in changes to your Visual Studio Team Services team project. On your next check-in, Visual Studio Team Services will build and deploy your project to Azure. Try this now by clicking the **Check In from Visual Studio** link, and then the **Launch Visual Studio** link (or the equivalent **Visual Studio** button at the bottom of the portal screen).



**Your team project is linked**

Visual Studio Online will build your project and deploy Windows Azure on your next check-in.

YOUR SERVER

URL

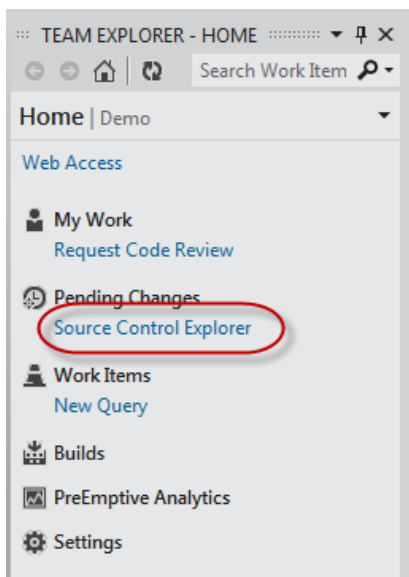
WHAT WOULD YOU LIKE TO DO NEXT?

- > Check in from Visual Studio 2012
- > Check in from Visual Studio 2010

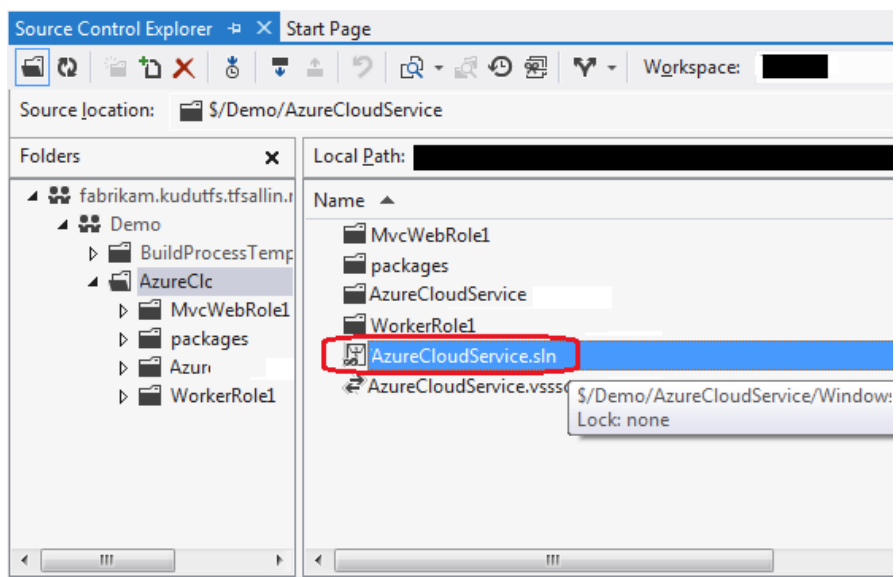
SWAP VISUAL STUDIO 1 ?

#### 4: Trigger a rebuild and redeploy your project

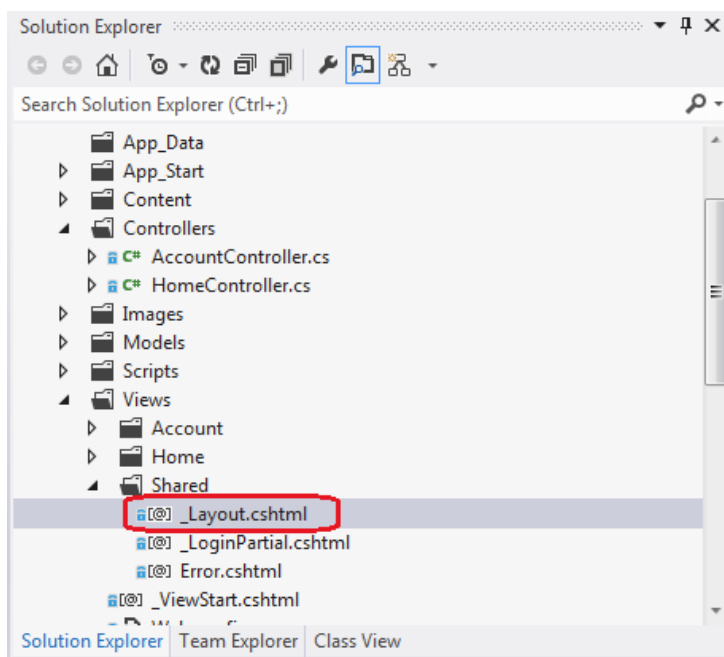
1. In Visual Studio's Team Explorer, choose the [Source Control Explorer](#) link.



2. Navigate to your solution file and open it.



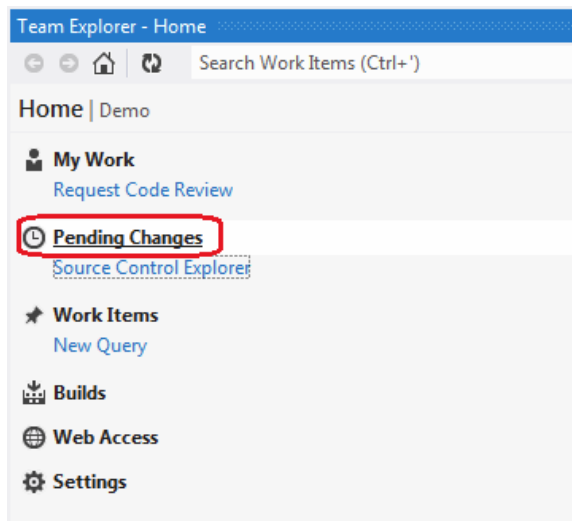
3. In **Solution Explorer**, open up a file and change it. For example, change the file `_Layout.cshtml` under the Views\Shared folder in an MVC web role.



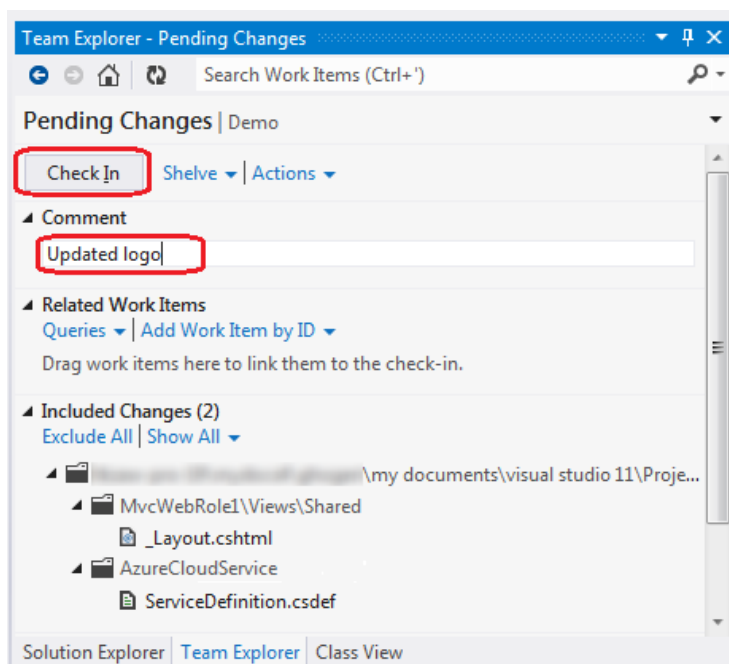
4. Edit the logo for the site and choose **Ctrl+S** to save the file.

```
<body>
  <div class="navbar navbar-inverse navbar-fixed-top">
    <div class="container">
      <div class="navbar-header">
        <button type="button" class="navbar-toggle" data-toggle="collapse" data-target=".navbar-collapse">
          <span class="icon-bar"></span>
          <span class="icon-bar"></span>
          <span class="icon-bar"></span>
        </button>
        @Html.ActionLink("My awesome demo!!!", "Index", "Home", null, new { @class = "navbar-brand" })
      </div>
      <div class="navbar-collapse collapse">
        <ul class="nav navbar-nav">
          <li>@Html.ActionLink("Home", "Index", "Home")</li>
```

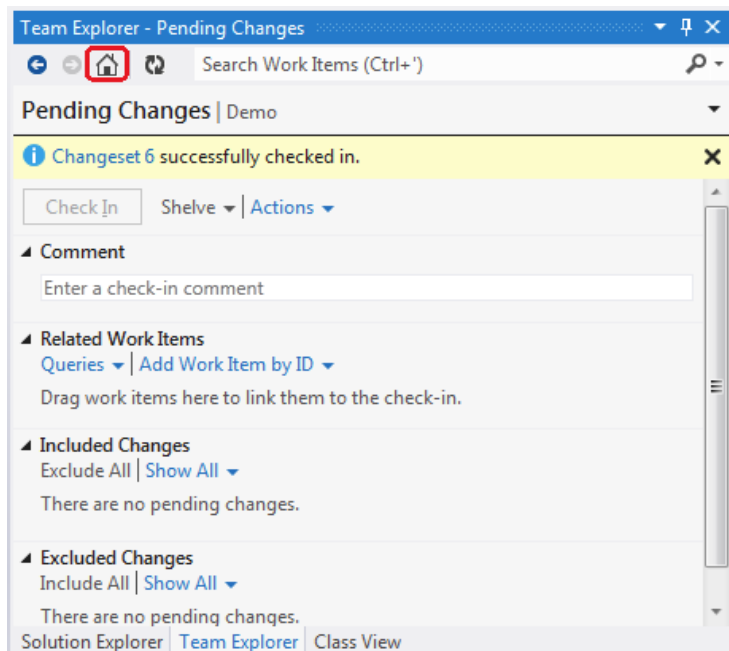
5. In **Team Explorer**, choose the Pending Changes link.



6. Enter a comment and then choose the **Check In** button.



7. Choose the **Home** button to return to the **Team Explorer** home page.

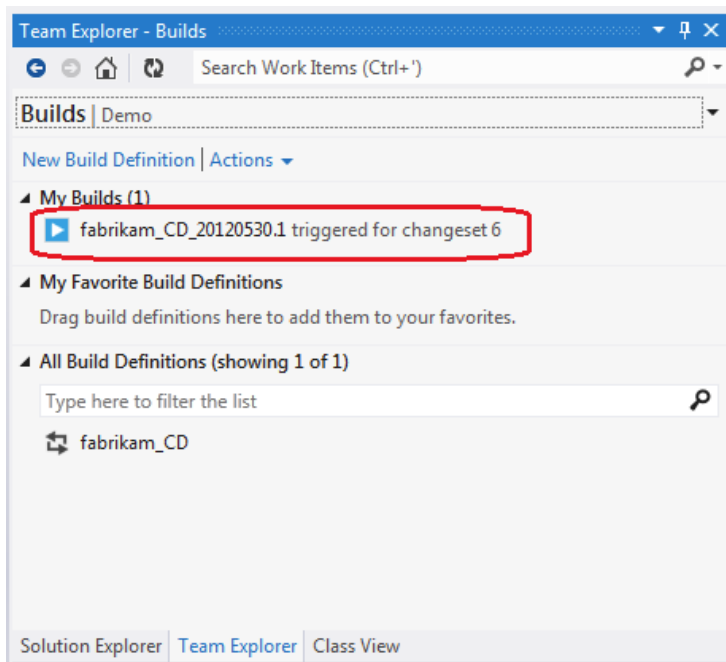


8. Choose the **Builds** link to view the builds in progress.





Team Explorer shows that a build has been triggered for your check-in.



9. Double-click the name of the build in progress to view a detailed log as the build progresses.

**Building fabrikam\_CD\_20120530.1**

View Summary | View Log | **Diagnostics** | Actions

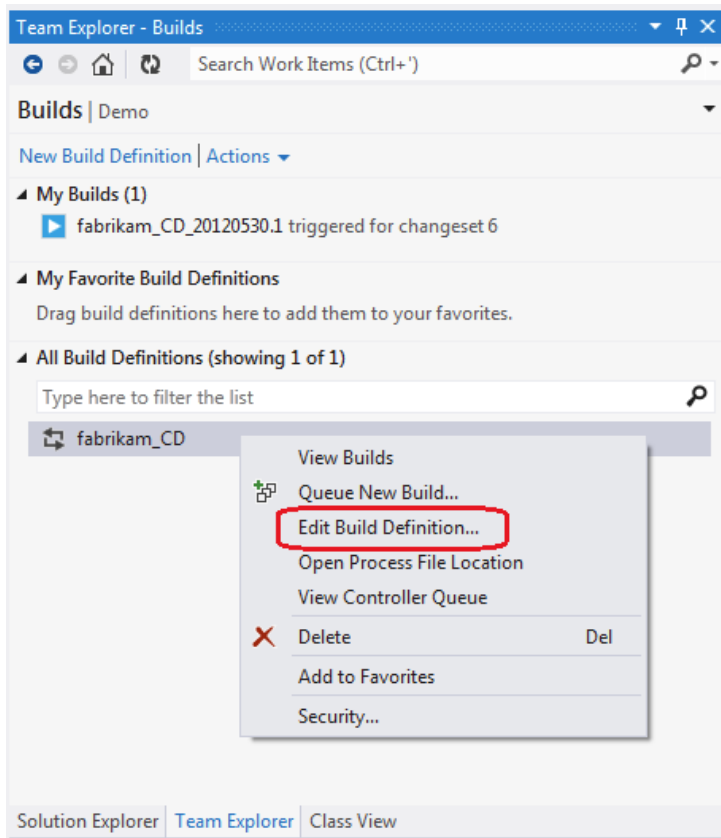
triggered fabrikam\_CD (Demo) for changeset 6  
Running for 2.6 minutes (Hosted Build Controller)

---

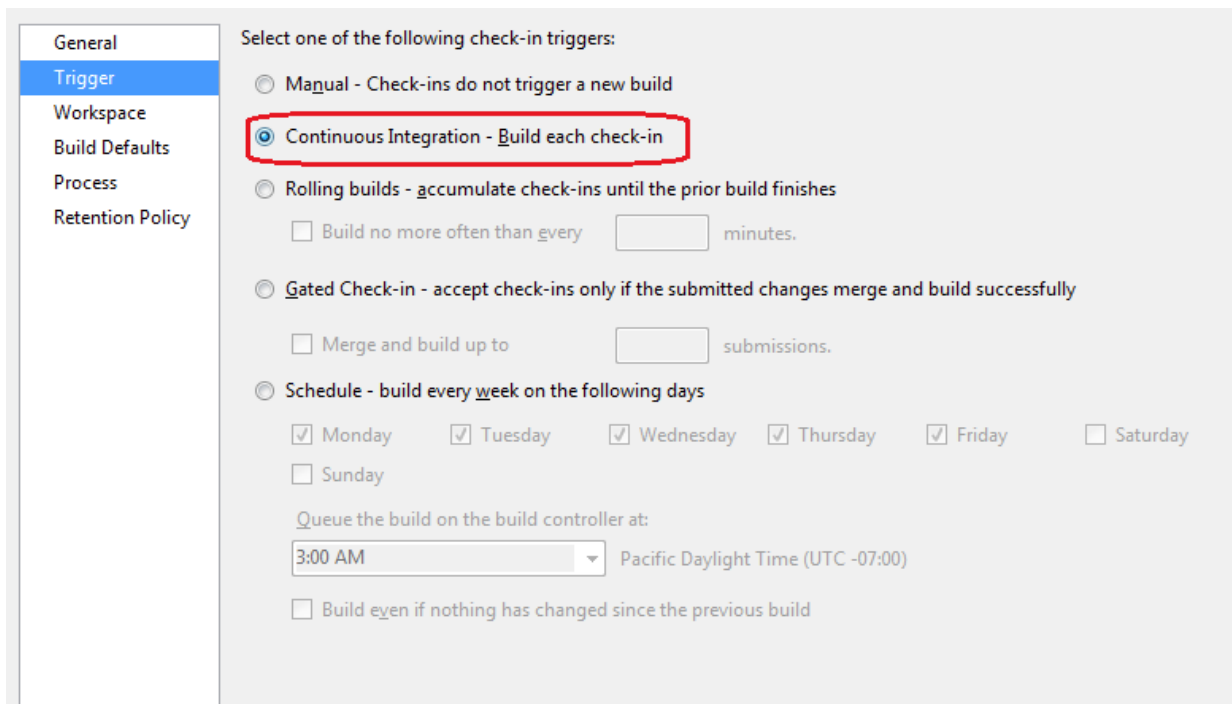
Activity Log | Next Error | Next Warning | Auto Refresh: On

	Duration
Overall Build Process	02:33
Update Build Number	00:00
Run On Agent (reserved build agent Hosted Build Agent)	02:32
Create Workspace	00:00
Get Workspace	00:04
Create Label	00:01
Compile, Test, and Associate Changesets and Work Items	02:15
Compile and Test	02:15
Get Default Azure Cloud Service Publish Profile	00:00
Set Project to build CSPack	00:00
Run MSBuild for Project	00:25
Built \$/Demo/AzureCloudService/AzureCloudService.sln for target(s) AzureCloudService:Publish.	00:19
Built \$/Demo/AzureCloudService/AzureCloudService/AzureCloudService.ccproj for target(s) Publish.	00:18
Built \$/Demo/AzureCloudService/MvcWebRole1/MvcWebRole1.csproj for default targets.	00:02

10. While the build is in-progress, take a look at the build definition that was created when you linked TFS to Azure by using the wizard. Open the shortcut menu for the build definition and choose **Edit Build Definition**.



In the **Trigger** tab, you will see that the build definition is set to build on every check-in by default.



In the **Process** tab, you can see the deployment environment is set to the name of your cloud service or web app. If you are working with web apps, the properties you see will be different from those shown here.

9/17/2016Continuous delivery with Visual Studio Team Services in Azure | Microsoft Azure

Team Foundation Build uses a build process template defined by a Windows Workflow (XAML) file. The behavior of this template can be customized by setting the build process Property, provided by the Default Value.

Build process template:

TfvcContinuousDeploymentTemplate.12.xaml

Build process file (Windows Workflow XAML):

TfvcContinuousDeploymentTemplate.12.xaml

New...

Refresh

[Download](#)

[Learn how to customize build process templates](#)

Build process parameters:

1. TF Version Control

1. Clean workspace

2. Get version

True

2. Build

1. Projects

2. Configurations

3. Clean build

4. Output location

5. Advanced

Azure1.sln

True

SingleFolder

3. Test

1. Automated tests

2. Advanced

1 set(s) of tests specified.

4. Publish Symbols

Path to publish symbols

5. Advanced

Agent settings

Build number format

Create work item on failure

Update work items with build number

Use agent where Name=\* and Tags=[] (MatchExactly)

\$(BuildDefinitionName)\_\$(Date:yyyyMMdd)(Rev.:r)

True

True

6. Deployment

Deployment

Allow Untrusted Certificates

Allow Upgrade

Do Not Delete

Path to Deployment Settings

SharePoint Deployment Environment

Windows Azure Deployment Environment

True

True

True

fabrikamTestingCo

Azure Deployment Environment

The named set of Provider-Hosted Deployment Settings to use for Application Deployment.

11. Specify values for the properties if you want different values than the defaults. The properties for Azure publishing are in the Deploymentsection.

The following table shows the available properties in the Deploymentsection:

Property	Default Value
Allow Untrusted Certificates	If false, SSL certificates must be signed by a root authority.
Allow Upgrade	Allows the deployment to update an existing deployment instead of creating a new one. Preserves the IP address.
Do Not Delete	If true, do not overwrite an existing unrelated deployment (upgrade is allowed).

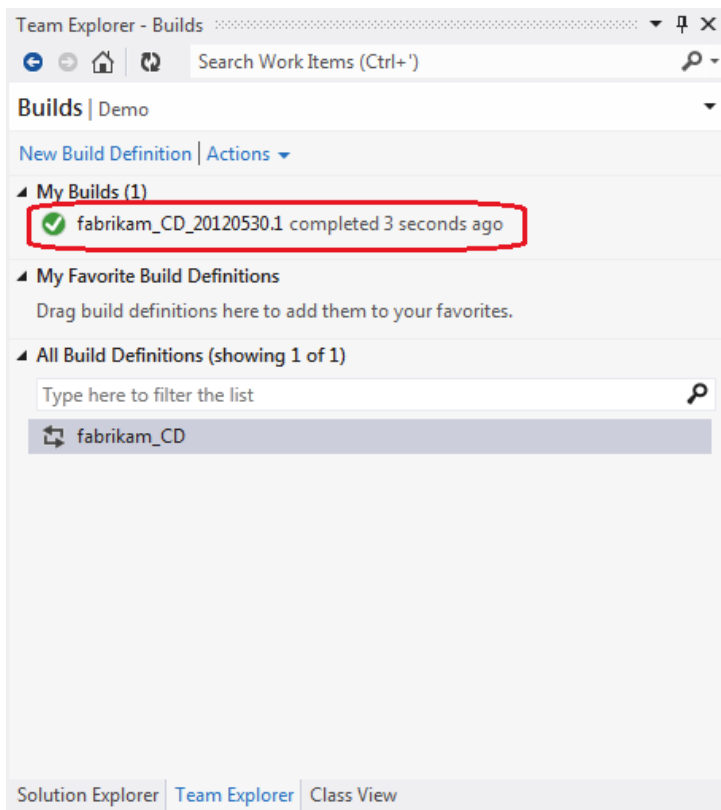
1

Property	Default Value
Path to Deployment Settings	The path to your .pubxml file for a web app, relative to the root folder of the repo. Ignored for cloud services.
Sharepoint Deployment Environment	The same as the service name.
Azure Deployment Environment	The web app or cloud service name.

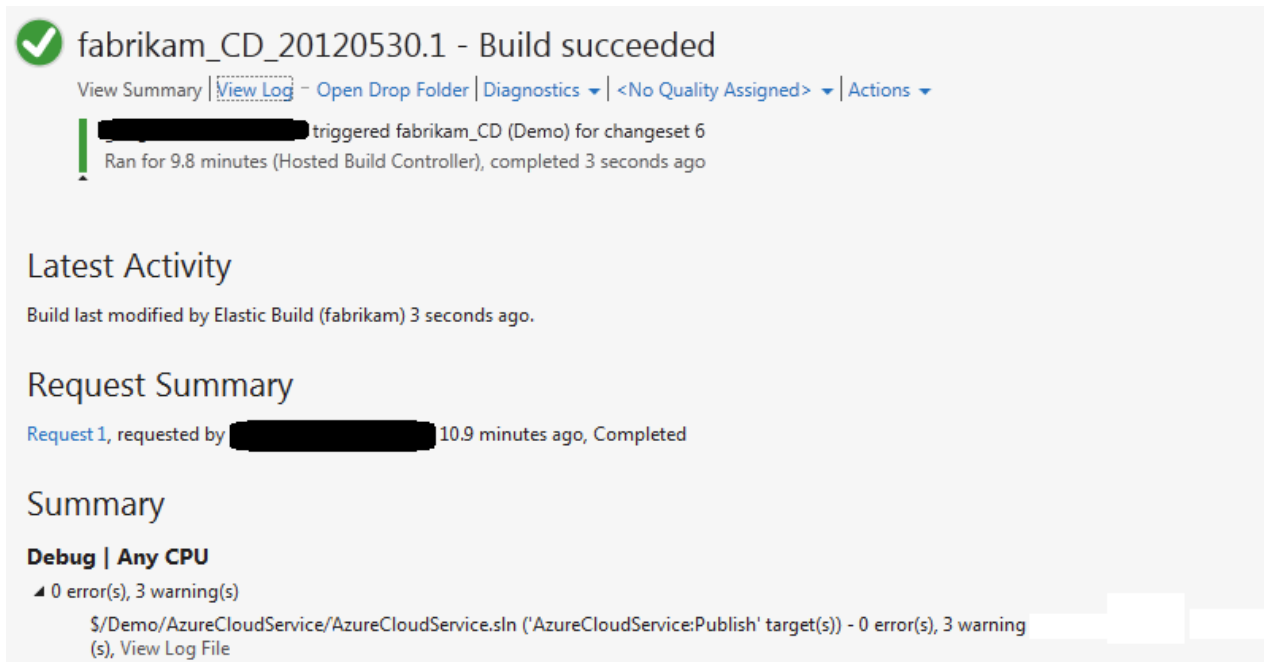
12. If you are using multiple service configurations (.csf files), you can specify the desired service configuration in the **Build, Advanced, MSBuild arguments** setting. For example, to use ServiceConfiguration.Test.csf, set MSBuild arguments line option `/p:TargetProfile=Test`.

<b>2. Build</b>	
1. Projects	Azure1/Azure1.sln
2. Configurations	
3. Clean build	True
4. Output location	SingleFolder
<b>5. Advanced</b>	
MSBuild arguments	/p:TargetProfile=Test
MSBuild platform	Auto
Perform code analysis	AsConfigured
Post-build script arguments	
Post-build script path	
Pre-build script arguments	
Pre-build script path	

By this time, your build should be completed successfully.



13. If you double-click the build name, Visual Studio shows a **Build Summary**, including any test results from associated unit test projects.



✓ **fabrikam\_CD\_20120530.1 - Build succeeded**

[View Summary](#) | [View Log](#) | [Open Drop Folder](#) | [Diagnostics](#) ▾ | [<No Quality Assigned>](#) ▾ | [Actions](#) ▾

triggered fabrikam\_CD (Demo) for changeset 6  
Ran for 9.8 minutes (Hosted Build Controller), completed 3 seconds ago

### Latest Activity

Build last modified by Elastic Build (fabrikam) 3 seconds ago.

### Request Summary

Request 1, requested by [redacted] 10.9 minutes ago, Completed

### Summary

**Debug | Any CPU**

▲ 0 error(s), 3 warning(s)

\$/Demo/AzureCloudService/AzureCloudService.sln ('AzureCloudService:Publish' target(s)) - 0 error(s), 3 warning(s), [View Log File](#)

14. In the [Azure classic portal](#), you can view the associated deployment on the **Deployments** tab when the staging environment is selected.

## fabrikam

 [DASHBOARD](#) | [DEPLOYMENTS](#) | [MONITOR](#) | [CONFIGURE](#) | [SCALE](#) | [INSTANCES](#) | [LINKED RESOURCES](#)  
[CERTIFICATES](#)

[PRODUCTION](#) | **[STAGING](#)**

## deployment history

TFS URL: [https://fabrikam\[redacted\]](https://fabrikam[redacted]) ?



✓ **ACTIVE DEPLOYMENT:** Wed May 30 2012 1:58:58 PM

Individual Continuous Integration - fabrikam\_CD\_20120530.1 - [View Log](#)

CHANGESET: 6

AUTHOR: [redacted]

DEPLOYED BY: [redacted]

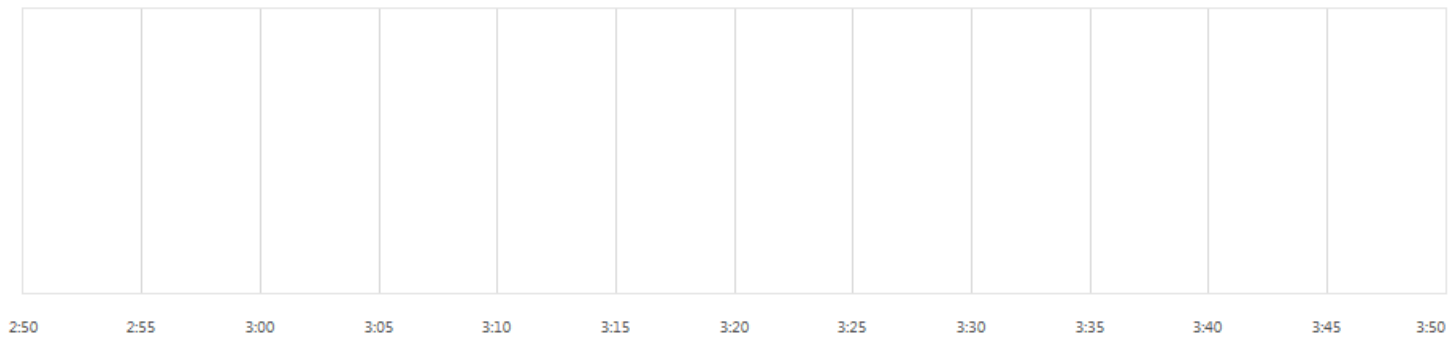
Last Refreshed: Wed May 30 2012 2:06:49 PM

15. Browse to your site's URL. For a web app, just click the **Browse** button on the command bar. For a cloud service, choose the URL in the **Quick Glance** section of the **Dashboard** page that shows the Staging environment for a cloud service. Deployments from continuous integration for cloud services are published to the Staging environment by default. You can change this by setting the **Alternate Cloud Service Environment** property to **Production**. This screenshot shows where the site URL is on the cloud service's dashboard page.

[DASHBOARD](#) [DEPLOYMENTS](#) [MONITOR](#) [CONFIGURE](#) [SCALE](#) **PREVIEW** [INSTANCES](#) [LINKED RESOURCES](#) [CERTIFICATES](#)**PRODUCTION** **STAGING**

✓ CPU PERCENTAGE(WEBROLE1)

RELATIVE ▾ 1 HOUR ▾ ↺

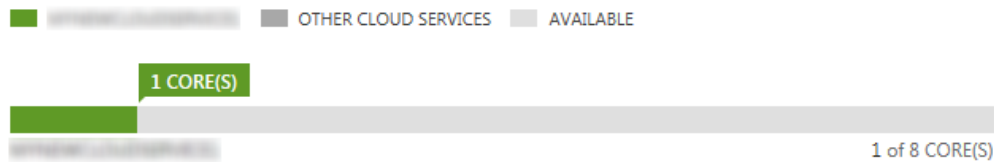


## autoscale status **PREVIEW**

You need to configure the autoscale service.

[CONFIGURE AUTOSCALE](#) ➔[AUTOSCALE OPERATION LOGS](#) ➔

## usage overview



## linked resources

You have no linked resources. You can link resources such as databases or storage to scale, configure, and monitor your cloud service and resources at the same time.

## quick glance

[↶ Disconnect from Visual Studio Online](#)

### STATUS

Running

### MANAGEMENT SERVICES

[Operation Logs](#)

### SITE URL

[http://10.10.10.10:80/](#)

### DEPLOYMENT NAME

910d70584bed405eb313c638afb6adfe

### TEAM PROJECT

[myFirstProject](#)

### DEPLOYMENT LABEL

[11/7/2013 11:47:52 PM](#)

STOP



UPDATE



SWAP



DELETE



VISUAL STUDIO

1

A new browser tab will open to reveal your running site.

# My awesome demo!!!

[Register](#)[Log in](#)[Home](#)[About](#)[Contact](#)

## Home Page. Modify this template to kick-start your ASP.NET MVC application.

To learn more about ASP.NET MVC visit <http://asp.net/mvc>. The page features [videos, tutorials, and samples](#) to help you get the most from ASP.NET MVC. If you have any questions about ASP.NET MVC visit [our forums](#).

### We suggest the following:

1

#### Getting Started

ASP.NET MVC gives you a powerful, patterns-based way to build dynamic websites that enables a clean separation of concerns and that gives you full control over markup for enjoyable, agile development. ASP.NET MVC includes many features that enable fast, TDD-friendly development for creating sophisticated applications that use the latest web standards. [Learn more](#)

2

#### Add NuGet packages and jump start your coding

NuGet makes it easy to install and update free libraries and tools. [Learn more](#)

3

#### Find Web Hosting

You can easily find a web hosting company that offers the right mix of features and price for your applications. [Learn more](#)

For cloud services, if you make other changes to your project, you trigger more builds, and you will accumulate multiple deployments. The latest one marked as Active.

fabrikam

[DASHBOARD](#)[DEPLOYMENTS](#)[MONITOR](#)[CONFIGURE](#)[SCALE](#)[INSTANCES](#)[LINKED RESOURCES](#)[CERTIFICATES](#)[PRODUCTION](#)[STAGING](#)

## deployment history

URL

<https://fabrikam.>

✓ **ACTIVE DEPLOYMENT:** Wed May 30 2012 2:33:52 PM

Individual Continuous Integration - fabrikam\_CD\_20120530.2 - [View Log](#)

CHANGESET: 11

AUTHOR:

DEPLOYED BY:



Wed May 30 2012 1:58:58 PM

Individual Continuous Integration - fabrikam\_CD\_20120530.1 - [View Log](#)

CHANGESET: 6

AUTHOR:

DEPLOYED BY:

Last Refreshed: Wed May 30 2012 2:33:59 PM

## 5: Redeploy an earlier build

This step applies to cloud services and is optional. In the Azure classic portal, choose an earlier deployment and then choose the **Redeploy** button to rewind your site to an earlier check-in. Note that this will trigger a new build in TFS and create a new entry in your deployment history.

## fabrikam

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[CERTIFICATES](#)[PRODUCTION](#) [STAGING](#)

## deployment history

URL  ?✓ **ACTIVE DEPLOYMENT:** Wed May 30 2012 2:33:52 PMIndividual Continuous Integration - fabrikam\_CD\_20120530.2 - [View Log](#)

CHANGESET: 11

AUTHOR: [REDACTED]

DEPLOYED BY: [REDACTED]



Wed May 30 2012 1:58:58 PM

Individual Continuous Integration - fabrikam\_CD\_20120530.1 - [View Log](#)

CHANGESET: 6

AUTHOR: [REDACTED]

DEPLOYED BY: [REDACTED]

Last Refreshed: Wed May 30 2012 2:35:15 PM



SWAP



VISUAL STUDIO



REDEPLOY



## 6: Change the Production deployment

This step applies only to cloud services, not web apps. When you are ready, you can promote the Staging environment to the production environment by choosing the **Swap** button in the Azure classic portal. The newly deployed Staging environment is promoted to Production, and the previous Production environment, if any, becomes a Staging environment. The Active deployment may be different for the Production and Staging environments, but the deployment history of recent builds is the same regardless of environment.

## fabrikam

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[CERTIFICATES](#)[PRODUCTION](#) [STAGING](#)

## deployment history

TFS URL  ?✓ **ACTIVE DEPLOYMENT:** Wed May 30 2012 2:59:15 PMIndividual Continuous Integration - fabrikam\_CD\_20120530.3 - [View Log](#)

CHANGESET: 16

AUTHOR: [REDACTED]

DEPLOYED BY: [REDACTED]



Wed May 30 2012 2:33:52 PM

Individual Continuous Integration - fabrikam\_CD\_20120530.2 - [View Log](#)

CHANGESET: 11

AUTHOR: [REDACTED]

DEPLOYED BY: [REDACTED]



Wed May 30 2012 1:58:58 PM



SWAP



VISUAL STUDIO

1

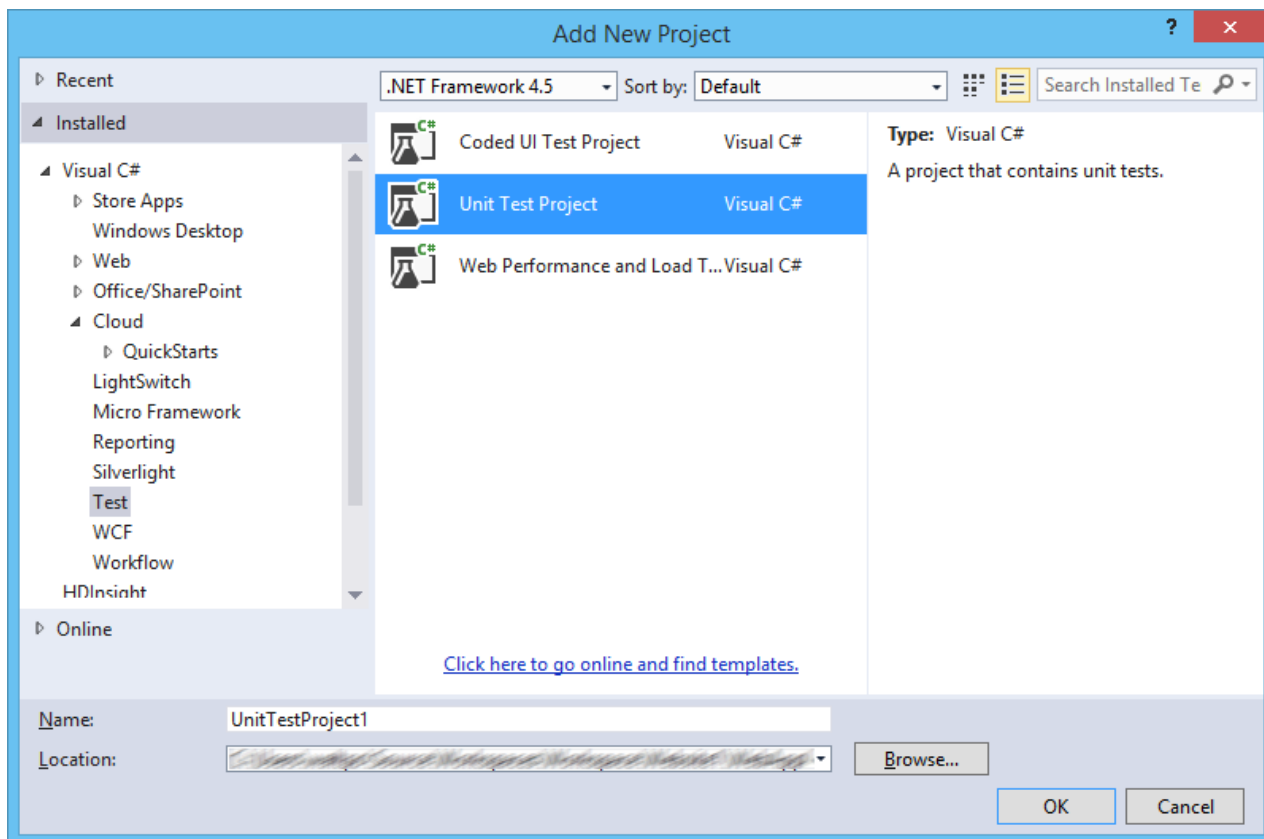




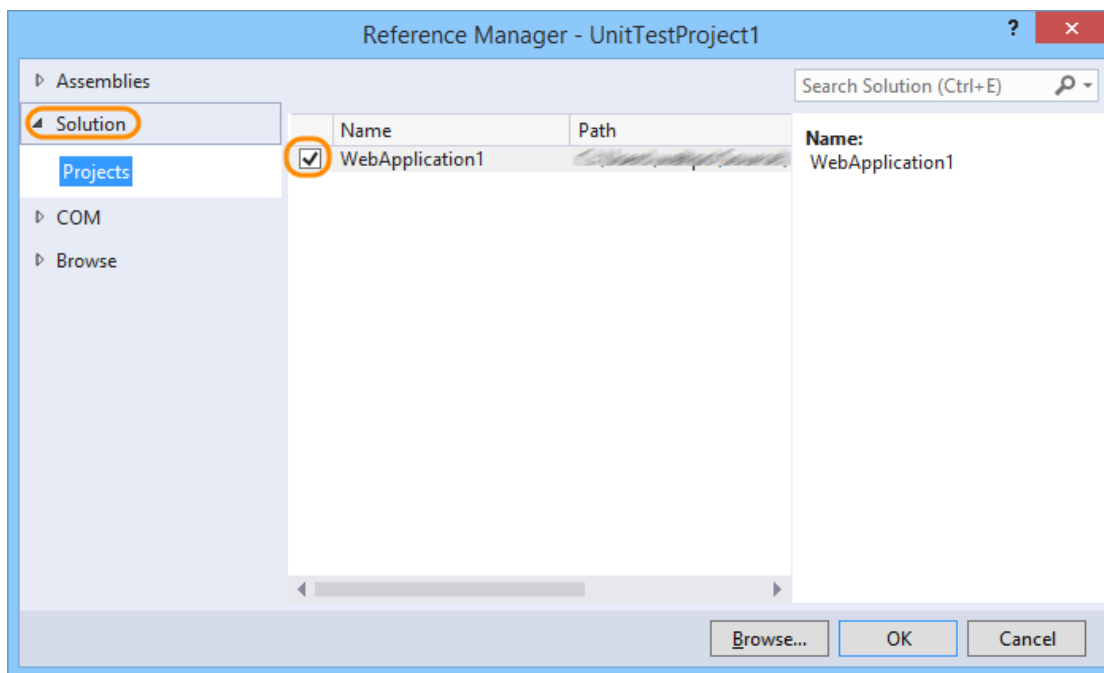
## 7: Run unit tests

This step applies only to web apps, not cloud services. To put a quality gate on your deployment, you can run unit tests and if they fail, you can stop the deployment.

1. In Visual Studio, add a unit test project.



2. Add project references to the project you want to test.



3. Add some unit tests. To get started, try a dummy test that will always pass.

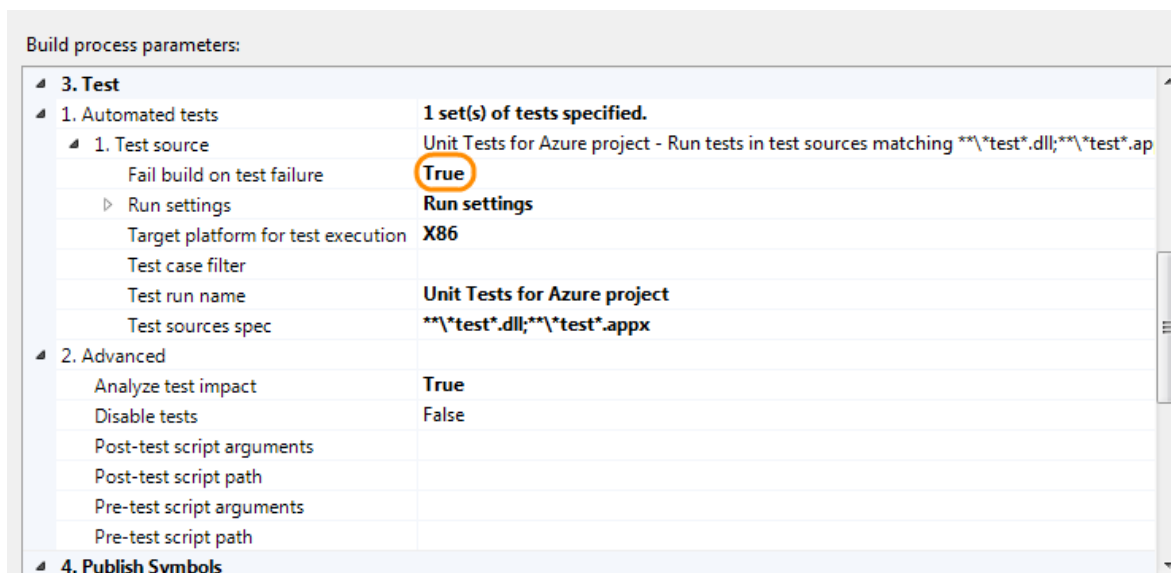
```
using System;
using Microsoft.VisualStudio.TestTools.UnitTesting;
```

```

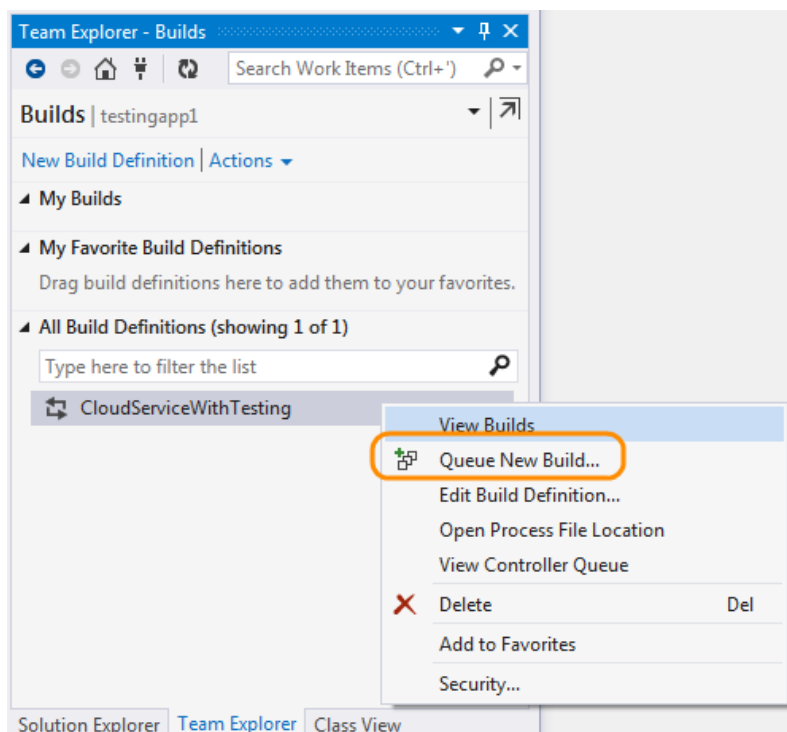
namespace UnitTestProject1
{
    [TestClass]
    public class UnitTest1
    {
        [TestMethod]
        [ExpectedException(typeof(NotImplementedException))]
        public void TestMethod1()
        {
            throw new NotImplementedException();
        }
    }
}
...

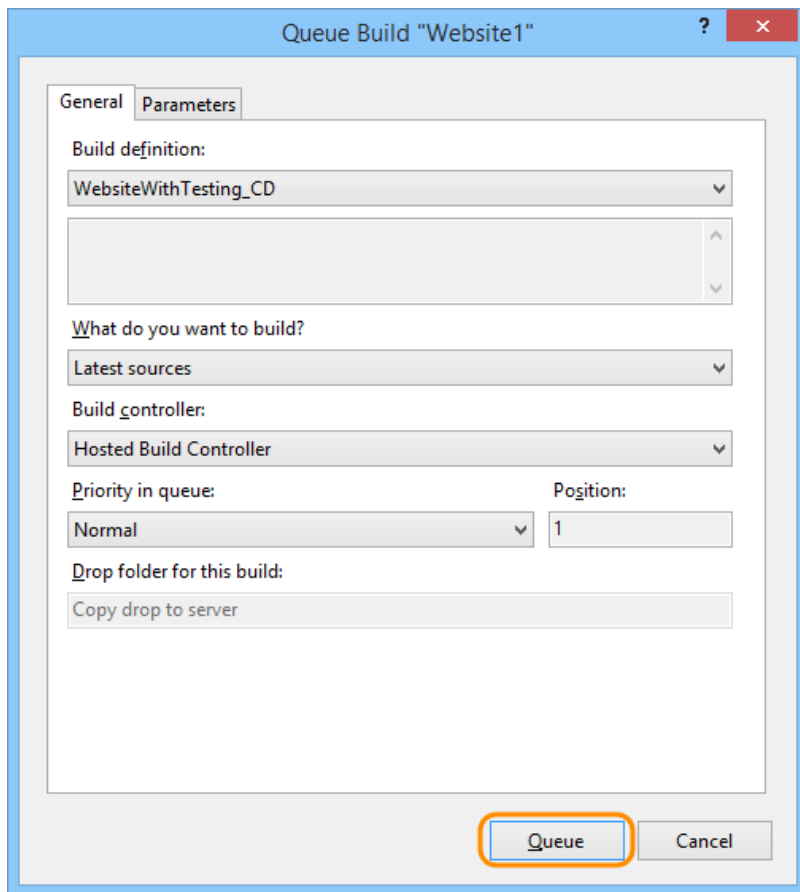
```

4. Edit the build definition, choose the **Process** tab, and expand the **Test** node.
5. Set the **Fail build on test failure** to **True**. This means that the deployment won't occur unless the tests pass.



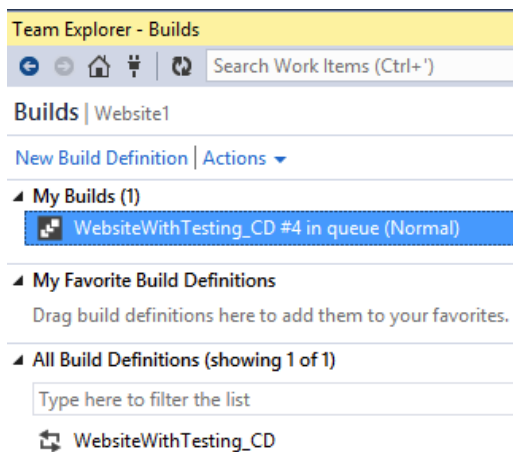
6. Queue a new build.



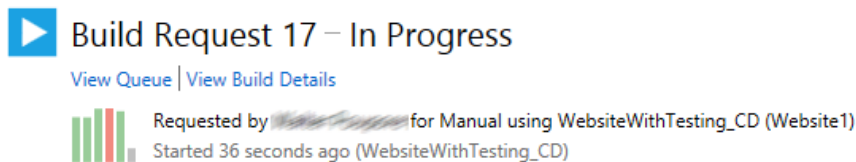


The screenshot shows the 'Queue Build' dialog box for a build named 'Website1'. The 'Parameters' tab is selected. The 'Build definition' is set to 'WebsiteWithTesting\_CD'. The 'What do you want to build?' section is set to 'Latest sources'. The 'Build controller' is set to 'Hosted Build Controller'. The 'Priority in queue' is set to 'Normal' and the 'Position' is set to '1'. The 'Drop folder for this build' is set to 'Copy drop to server'. The 'Queue' button is highlighted with an orange rectangle.

7. While the build is proceeding, check on its progress.



The screenshot shows the 'Team Explorer - Builds' view. The 'Builds' section is expanded, showing 'Website1'. Under 'My Builds (1)', there is a build 'WebsiteWithTesting\_CD #4 in queue (Normal)'. Under 'My Favorite Build Definitions', there is a message 'Drag build definitions here to add them to your favorites.' Under 'All Build Definitions (showing 1 of 1)', there is a search bar and a build definition 'WebsiteWithTesting\_CD'.



The screenshot shows the 'Build Request 17 - In Progress' view. It includes links for 'View Queue' and 'View Build Details'. A progress bar shows the build is in progress. The text indicates the build was requested by 'User' for Manual using 'WebsiteWithTesting\_CD (Website1)' and started 36 seconds ago.

## Queue Details

Waited for 63 seconds in the queue

## Build Summary

WebsiteWithTesting\_CD\_20150217.2, started 36 seconds ago, currently in progress

Includes the following requests:

Build Request 17, requested by User 99 seconds ago, In Progress

8. When the build is done, check the test results.



## Build Request 17 – Succeeded

[View Queue](#) | [View Build Details](#)



Requested by [\[redacted\]](#) for Manual using WebsiteWithTesting\_CD (Website1)  
Finished 2 seconds ago (WebsiteWithTesting\_CD)

### Queue Details

Waited for 63 seconds in the queue

### Build Summary

WebsiteWithTesting\_CD\_20150217.2, completed 2 seconds ago, Succeeded

#### Includes the following requests:

[Build Request 17](#), requested by [\[redacted\]](#) 3.5 minutes ago, Completed

Test Results				
Unit Tests for Azure project				
Run Debug				
Test run passed Results: 1/1 passed; Item(s) checked: 0				
	Result	Test Name	ID	Error Message
<input checked="" type="checkbox"/>	Passed	TestMethod1	UnitTestProject1.UnitTest1.TestMethod1	

9. Try creating a test that will fail. Add a new test by copying the first one, rename it, and comment out the line of code that states NotImplementedException is an expected exception.

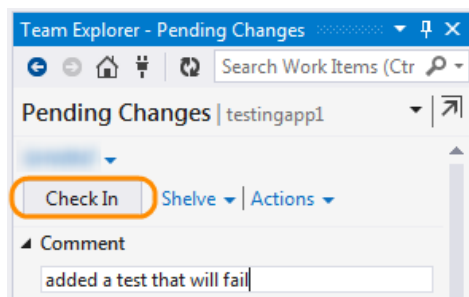
```

...
[TestMethod]
//[ExpectedException(typeof(NotImplementedException))]
public void TestMethod2()
{
    throw new NotImplementedException();
}
...

```

Copy

10. Check in the change to queue a new build.



11. View the test results to see details about the failure.



## WebsiteWithTesting\_CD\_20150217.3 - Build failed

[View Summary](#) | [View Log](#) | [Open Drop Folder](#) | [Diagnostics](#) | [<No Quality Assigned>](#) | [Actions](#)



triggered WebsiteWithTesting\_CD (Website1) for changeset 35  
Ran for 115 seconds (Hosted Build Controller), completed 7 minutes ago

### Latest Activity

Build last modified by 7 minutes ago.

### Request Summary

[Request 18](#), requested by 9.6 minutes ago, Completed

### Summary

#### Debug | Any CPU

0 error(s), 0 warning(s)

▸ \$/Website1/WebApplication1/WebApplication1.sln compiled

▴ 1 test run completed - 50% pass rate

▸ Unit Tests for Azure project, 1 of 2 test(s) passed

#### Test Results



Test run failed Results: 1/2 passed; Item(s) checked: 1

	Result	Test Name	ID	Error Message
<input type="checkbox"/>	Passed	TestMethod1	UnitTestProject1.UnitTest1.TestMethod1	
<input checked="" type="checkbox"/>	Failed	TestMethod2	UnitTestProject1.UnitTest1.TestMethod2	Test method Ur

### Next steps