

Table of Contents

[New User Guide](#)

[Overview](#)

[What is VSTS?](#)

[Overview of services](#)

[Quickstarts](#)

[Sign up and invite some teammates](#)

[Code with Git](#)

[Set up continuous integration & delivery](#)

[Plan & track work](#)

[Add & run manual tests](#)

[Install a Marketplace extension](#)

[View permissions](#)

[Tutorials](#)

[Set favorites](#)

[Follow work & pull requests](#)

[Get started as a Stakeholder](#)

[Concepts](#)

[Key concepts](#)

[Source control](#)

[Kanban & Agile tools](#)

[Clients & Tools](#)

[Software development roles](#)

[How do VSTS & TFS differ](#)

[How-to Guides](#)

[Enable preview features](#)

[Use @mentions to further discussion](#)

[Use #ID to link to work items](#)

[Navigate using your account home page](#)

[Go mobile](#)

[Manage your notifications](#)

[Set your preferences](#)

[Sign-in to the web or a client](#)

[Troubleshooting](#)

[Troubleshoot connection](#)

[TF31002: Unable to connect](#)

[Troubleshoot network connections and whitelist addresses](#)

[Get support, provide feedback](#)

[Reference](#)

[Features index](#)

[Permissions & access \(Security\)](#)

[Keyboard shortcuts](#)

[Markdown guidance](#)

[Navigate in the web portal](#)

[Navigate in Team Explorer](#)

[FAQs](#)

[Resources](#)

[Visual Studio IDE](#)

[Visual Studio Code](#)

[Visual Studio for Mac](#)

[Account Management \(VSTS\)](#)

[Security & Identity](#)

[Technical articles](#)

New User Guide

5/29/2018 • 1 min to read • [Edit Online](#)

VSTS

New to Visual Studio Team Services (VSTS)?

We'll walk you through the basics of the web interface and some common tasks.

5-Minute Quickstarts

Get started with a free account, share your code using Git, and track your work using a Kanban board.

- [Sign up and invite some teammates](#)
- [Code with Git](#)
- [Set up continuous integration & delivery](#)
- [Plan & track work](#)

Step-by-Step Tutorials

- [Set favorites](#)
- [Follow work and pull requests](#)
- [Enable preview features](#)

Concepts

- [Key concepts](#)
- [Source control](#)
- [Kanban & Agile tools](#)
- [Clients and tools](#)
- [Software development roles](#)
- [What's the difference between VSTS and TFS?](#)

Reference

- [Permissions and access](#)
- [Keyboard shortcuts](#)
- [Markdown guidance](#)

Resources

- [Visual Studio IDE](#)
- [Visual Studio Code](#)
- [Visual Studio for Mac](#)

What is VSTS?

5/14/2018 • 1 min to read • [Edit Online](#)

VSTS

Visual Studio Team Services (VSTS) is a cloud service for collaborating on code development. It provides an integrated set of features that you access through your web browser or IDE client, including:

- Git repositories for source control of your code
- Build and release management to support continuous integration and delivery of your apps
- Agile tools to support planning and tracking your work, code defects, and issues using Kanban and Scrum methods
- A variety of tools to test your apps, including manual/exploratory testing, load testing, and continuous testing
- Highly customizable dashboards for sharing progress and trends
- Built-in wiki for sharing information with your team

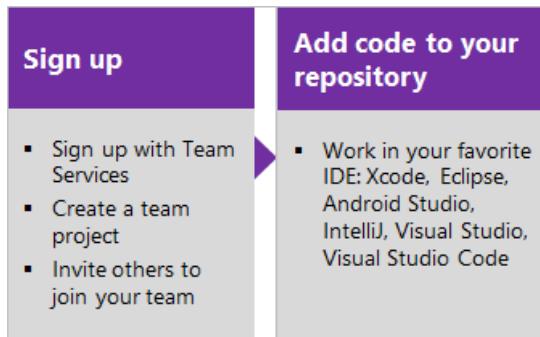
In addition, the VSTS ecosystem provides support for adding extensions, integrating with other popular services, such as: Campfire, Slack, Trello, UserVoice, and more, and developing your own custom extensions.

Choose VSTS when you want quick setup, maintenance-free operations, easy collaboration across domains, elastic scale, and rock solid security. You'll also have access to cloud load testing, cloud build servers, and application insights.

Where do I start?

We've made it easy for you to start for free and try out our service.

Sign up for free by creating an account and then, either upload your code to share or source control, or begin tracking your work using Scrum, Kanban, or a combination of methods.



Try this next

[Sign up and invite team mates](#)

To learn more, see these topics:

- [A tour of services](#)
- [Key concepts](#)
- [Client-server tools](#)
- [Software development roles](#)
- [Pricing - VSTS](#)

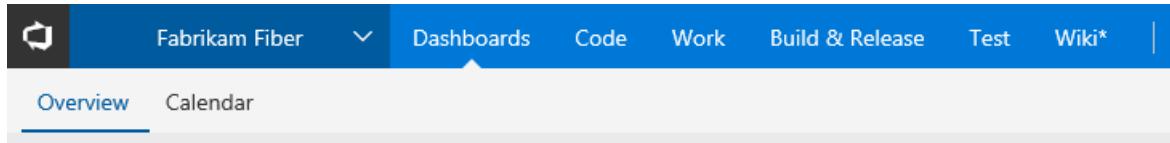
What do I get with VSTS or TFS?

6/1/2018 • 5 min to read • [Edit Online](#)

VSTS | TFS 2018 | TFS 2017 | TFS 2015 | TFS 2013

With VSTS and TFS, you gain an integrated set of services and tools to manage your software projects, from planning and development through testing and deployment. Services are delivered through a client-server model, many of which are delivered through an easy-to-use web interface that you can access from all major browsers. Some services, such as source control, build definitions, and work tracking can also be managed through a client.

Web services are accessed through the following main hubs as shown in the following image.



Many of our services are either free for small teams or available through a subscription model or per use model. Where needed, you can exercise a hybrid approach where you use an on-premises TFS to manage your code and work, and purchase cloud build or testing services on an as needed basis.

For information about client tools, see [Tools](#).

Dashboards

From the **Dashboards** hub you gain access to user-configurable dashboards.

Silence icon

Fabrikam Fiber

Dashboards Code Work Build & Release Test

Overview

New Work Item

Enter title

Bug

Create

Email Bugs

40

Work items

Voice Bugs

21

Work items

Work

Backlog

Board

Task board

Queries

FabFiber.Prestage

Completed 10/15/2015

Fabrikam Fiber

Delivering high-quality voice, email, and internet services to residential and business customers.

Team links

- Team Wiki
- Voice SDK
- Email SDK
- Internet SDK
- Customer Support Wiki

Active Bugs [12 weeks]

1 2 3

Tasks you can perform in this hub include:

- Add, configure, and manage dashboards
- Configure widgets that you add to dashboards
- Quickly navigate to different areas of your team project

To learn more, see [Dashboards](#).

Code

From the **Code** hub you gain access to your source control Git-based or TFVC repositories to support version control of your software projects. These repositories are private.

The screenshot shows the Microsoft DevOps interface for the 'Fabrikam Fiber' project. The top navigation bar includes links for Dashboards, Code, Work, Build & Release, Test, and Wiki*. The 'Code' tab is selected, and under it, the 'Files' tab is active. A breadcrumb trail indicates the current path: master / Fabrikam Fiber / Type to find a file or folder... The main content area displays a list of files in the 'master' branch:

	Contents	History	README	+ New file	Upload file(s)	
M+ page-1.md	↑ Name	Last change	Commits			
M+ page-2.md	M+ page-1.md	10/15/2015	3458a6c7	Added file page-1.md		
M+ page-3.md	M+ page-2.md	10/15/2015	01a447ca	Added file page-2.md		
M+ README.md	M+ page-3.md	9/21/2016	68385e28	Added file page-3.md		
	M+ README.md	5/19/2017	Eb9177d8	Merged PR 2: Updated		

From the Code hub for Git you can perform these tasks:

- Review, download, and edit files and review the change history for a file
- Review and manage commits that have been pushed
- Review, create, approve, comment, and complete pull requests
- Add and manage Git tags

To learn more, see the overviews for [Git](#) or [TFVC](#).

Plan and track work

From the **Work** hub you gain access to Agile tools to support planning and tracking work.

The screenshot shows the Microsoft DevOps interface for the 'Fabrikam Fiber' project, specifically the 'Work' hub. The top navigation bar includes links for Dashboards, Code, Work, Build & Release, Test, and Wiki*. The 'Work' tab is selected, and under it, the 'Backlogs' tab is active. On the left, a sidebar lists 'Epic', 'Features', and 'Stories'. The main content area shows a backlog of 'User Stories' for 'Sprint 1':

Type	Title	Order	State	Story Points	Title
User Story	Add an information form	1	New	5	Add an information form
User Story	Welcome back page	2	New	3	Welcome back page
User Story	Interim save on long forms	3	New	8	Interim save on long forms
User Story	Secure Sign-in	4	Active	5	Secure Sign-in
User Story	Canadian addresses don't display	5	Active	5	Canadian addresses don't display

Specifically, from the **Work** you can perform these tasks:

- Add and update work items
- Define work item queries and create status and trend charts based on those queries
- Manage your product backlog
- Plan sprints using sprint backlogs

- Review sprint tasks and update tasks through the task boards
- Visualize the work flow and update status using Kanban boards
- Manage portfolios by grouping stories under features and features under epics

See [Backlogs, boards, and plans](#) for an overview of each.

Build & Release

The **Build & Release** hub provides an integrated set of features to support building and deploying your applications.

The screenshot shows the 'Build Definitions' section of the hub. At the top, there's a search bar labeled 'Build ID or build number' with a magnifying glass icon, and two buttons: '+ New' and '+ Import'. Below the search bar are four filter tabs: 'Mine' (selected), 'All Definitions', 'Queued', and 'XAML'. A table lists four build definitions:

	Name	Status	Triggered by	7-day pass rate
	Content.VS Build : #Content.VS Build_20160609.1 requested a year ago	★ ✓ passing	Updated the overview s... ↳ 80496e4 in 80 users/...	0% →
	Content.VS.PR : #Content.VS.PR_20161019.14 requested 10 months ago	★ ✓ passing	Merge pull request 152... ↳ 2be71b1 in 152638	0% →
	MSDN.GatedCheck.ALM-master : #20170313.2 requested 5 months ago	★ ✓ passing	Merge pull request 194... ↳ 8f7955d in 194899	0% →
	MSDN.GatedCheck.VS-master : #20160725.1 requested a year ago	★ ✓ passing	Merge pull request 126... ↳ 2d56c79 in 126293	0% →

Use this hub to implement continuous integration and continuous delivery.

- **Build automation:** Define the steps to take during build and the triggers that will initiate a build.
- **Release management:** Supports a rapid release cadence and management of simultaneous releases. You can configure release definitions that represent your environments from development to production. Run automations to deploy your app to each environment. Add approvers to sign off that the app has been successfully deployed in an environment. Create your release manually or automatically from a build. Then track your releases as they are deployed to various environments.

To learn more, see [Continuous integration on any platform](#).

Test

Test features support manual and exploratory testing, load or performance testing, and continuous testing. Here we show the **Test** hub that supports creating and managing manual tests.

Outcome	Order	ID ↑	Title	Configuration
Active	1	474	[redacted]	Windows 8
Active	2	478	[redacted]	Windows 8

Test **Test** hub provides support for the following:

- Customization of workflows with test plan, test suite and test case work items
- End-to-end traceability from requirements to test cases and bugs with requirement-based test suites
- Criteria-based test selection with query-based test suites
- Excel-like interface with the grid for easy test case creation
- Reusable test steps and test data with shared steps and shared parameters
- Sharable test plans, test suites and test cases for reviewing with stakeholders
- Browser-based test execution on any platform
- Real-time charts for tracking test activity.

To learn more, see [Testing overview](#).

Collaboration services

In addition to the above "hub" services, the following services work across hubs to support:

- Linking of work items, commits, pull requests and other artifacts to support traceability
- Alerts and change notifications managed per user or for teams
- Request and manage feedback
- Team (chat) rooms
- Reporting

NOTE

Team rooms are deprecated for TFS 2017.2. Instead, we recommend you [use service hooks to integrate with Microsoft Teams](#).

Service hooks

Service hooks enable you to perform tasks on other services when events happen within your team project hosted on VSTS or TFS. For example, you can send a push notification to your team's mobile devices when a build fails. Service hooks can also be used in custom apps and services as a more efficient way to drive activities when events happen in your projects.

The following services are available as the target of service hooks. To learn about others apps and services that integrate with our VSTS or TFS, visit the [Visual Studio Marketplace](#)

For the latest set of supported services, see [Integrate with service hooks](#)

Cloud-hosted services based on usage

The following services support your DevOps operations.

- Cloud-based build and deployment Microsoft-hosted agents
- On-premises self-hosted agents to support build and deployment
- Cloud-based performance/load testing lets you load test your code by simulating high traffic

To learn more, see [Pricing](#).

Azure services

Azure provides a number of cloud-hosted services to support application development and deployment. You can make use of these services solely or in combination with VSTS or TFS.

To browse Azure's directory of integrated services, features, and bundled suites, see [Azure products](#).

For continuous delivery to Azure from VSTS, see [Automatically build and deploy to Azure web apps or cloud services](#).

Administrative services

There are a number of features and tasks associated with administrating a collaborate software development environment. You perform most of these tasks through the web portal.

The screenshot shows the VSTS web interface for the 'Fabrikam Fiber' project. The top navigation bar includes links for Dashboards, Code, Work, Build & Release, Test, Wiki*, and a gear icon. Below the navigation is a horizontal menu with links for Overview, Work, Security, Version Control, Policies, Agent queues, Notifications, and Service Hooks. The 'Overview' link is underlined, indicating it is the active page. On the left, there is a 'Project profile' section with fields for Name (Fabrikam Fiber), Process (Scrum), and Description (Web, voice, and phone apps). To the right, there is a 'Teams' section with a table listing teams and their members:

Team Name ↑	Members	Description
Customer Service	7	
Fabrikam Fiber Team	7	The default project team.
Management team	1	
Phone	1	
Voice	1	
Web	2	

ACCOUNT MANAGEMENT (VSTS)	ADMINISTRATION (TFS)
<ul style="list-style-type: none">- Manage users, access, and billing- Add and manage team projects and teams- Customize work tracking processes- Manage build retention policies- Add and manage build agent pools- Add and manage extensions	<ul style="list-style-type: none">- Manage users, access, and permissions- Add and manage teams, team projects, and collections- Customize work tracking processes- Manage build retention policies- Add and manage build agent pools- Add and manage extensions- Configure an SMTP server (supports feedback requests and notification features)- Configure a backup schedule and manage database backups- Manage upgrades

Related notes

- [Key concepts](#)
- [Client-server tools](#)
- [Software development roles](#)
- [Pricing](#)

Sign up for a free VSTS account and invite others to join your team

4/13/2018 • 3 min to read • [Edit Online](#)

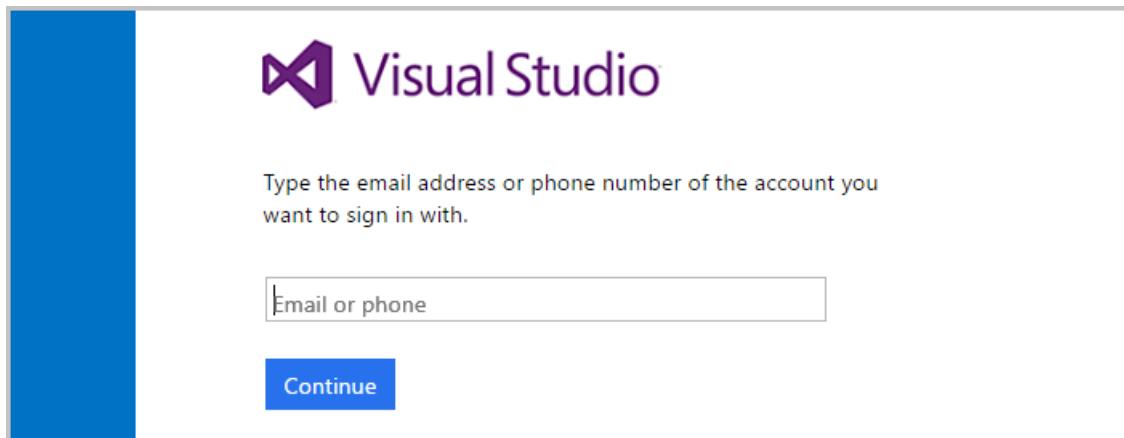
VSTS

Sign up for a VSTS account to upload and share code in a free unlimited private Git repository. You can then connect to your favorite development tool like Eclipse, Xcode, Visual Studio, IntelliJ, or Android Studio to work on apps anytime, anywhere.

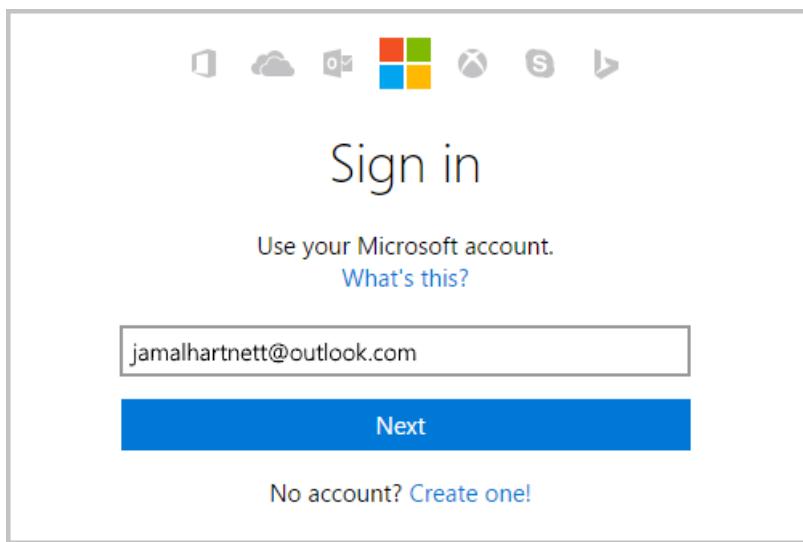
Sign up with a personal Microsoft account

1. Right-click the sign-up link, [VSTS](#), and enter your email address for your Microsoft account.

If you're a Visual Studio subscriber and get VSTS as a benefit, use the Microsoft account associated with your subscription.



2. On the Microsoft account sign-in page, enter your email address for your Microsoft account. Then enter your password, and finish signing in.

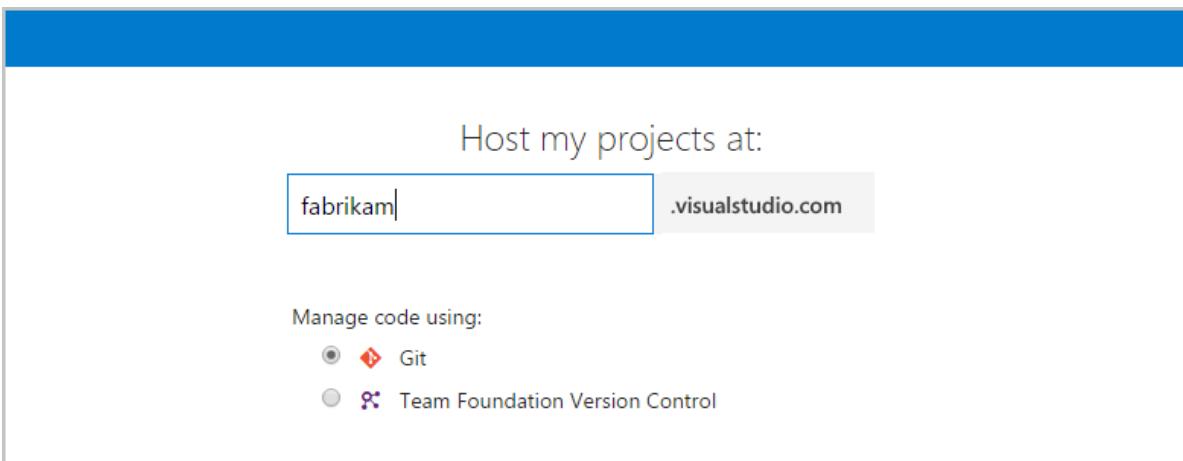


If you don't have a Microsoft account, you can create a Microsoft account at this time.

3. Enter a name for your account. The name you enter cannot contain spaces or special characters (such as /\ [] : | < > + = ; ? or *), cannot end in a period or comma, must be less than 256 characters, and must be

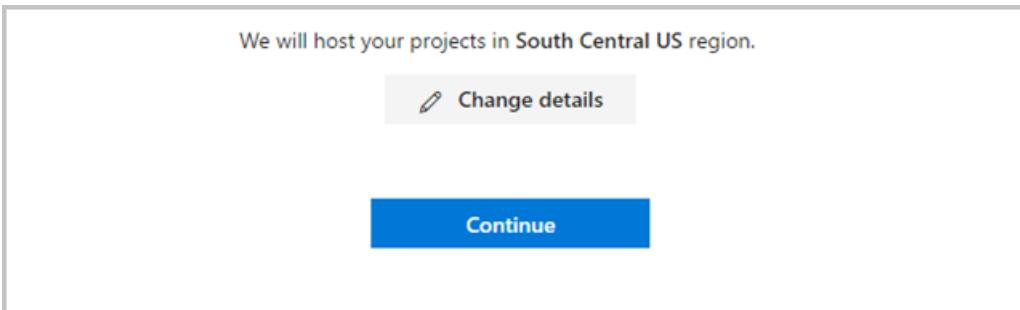
unique within the VSTS namespace.

To manage your code, choose Git or Team Foundation Version Control.



Choose Git for distributed source control and TFVC for centralized source control. To learn more, review [Git](#) or [Team Foundation Version Control](#).

4. (Optional) Click **Change details** to change default assignments. Otherwise, click **Continue** to confirm to initiate your account creation.



To change default assignments, use this guidance:

- **Project name:** You can specify your team project name. The name you enter cannot contain spaces or special characters (such as / :\ ~ & % ; @ ' " ? < > | # \$ * } { , + = [], cannot begin with an underscore or begin or end with a period, and must be 64 characters or less).
- **Organize work using:** The default work tracking process is set to **Agile**. If you want to work with Scrum or CMMI processes, then select those now. You can't change the process after the team project is created. (To learn more, see [Choose process](#).)
- **Host your projects in:** You can choose between [several locations for where you want your data hosted](#).

Host my projects at:

fabrikam

.visualstudio.com

Manage code using:

 Git

 Team Foundation Version Control

Project name:

MyFirstProject

Organize work using:

Agile

Host your projects in:

Central US

You can share the work with other users of:

Microsoft account ([Change](#))

Continue

To keep our lawyers happy:

By continuing, you agree to the [Terms of Service](#) and the
[Privacy Statement](#).

5. By default, VSTS creates your first team project as "MyFirstProject". After VSTS creates your account and team project, you can invite others to join your project, add code, start planning and tracking using work items, or rename your team project.

The screenshot shows the VSTS interface for the project 'MyFirstProject'. At the top, there's a navigation bar with 'MyFirstProject' and other links like 'Dashboards', 'Code', 'Work', etc. On the left, there's a red circular icon with a white letter 'M'. Below it, the project name 'MyFirstProject' is displayed with a star icon. A placeholder text 'Briefly describe your project...' is shown. There's a button 'Add tags'. The main content area says 'Get started with your new project!' and has a section for cloning the repository. It shows 'HTTPS' selected, with the URL 'https://fabrikam.visualstudio.com/DefaultCollection/_git/MyFirstProject'. There's also an 'SSH' option. Below this, there's a button 'Generate Git credentials'. Underneath, there's an 'OR' option followed by 'Clone in Visual Studio'. A note below explains cloning issues. To the right, there's a sidebar with sections for 'Members' (1), 'Activity', 'Code' (No code yet), 'Build & Release' (No builds yet), and 'Work' (No work items yet).

Get started with your new project!

Clone to your computer

HTTPS SSH https://fabrikam.visualstudio.com/DefaultCollection/_git/MyFirstProject

Generate Git credentials

OR [Clone in Visual Studio](#)

Having problems authenticating in Git? Be sure to get the latest version of [Git for Windows](#) or our plugins for [IntelliJ](#), [Eclipse](#), [Android Studio](#) or [Windows command line](#).

- ✓ or push an existing repository from command line
- ✓ or import a repository
- ✓ or initialize with a README or gitignore
- ✓ or build code from an external repository

Congratulations, you're now a VSTS account owner!

To sign in to your account at any time, go to <https://{youraccount}.visualstudio.com>.

Invite others to join your team

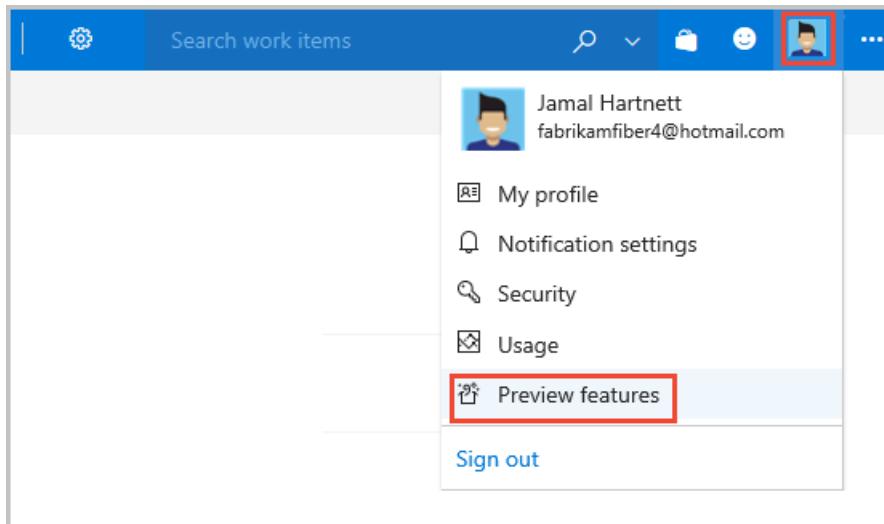
You provide others access to your account by adding their email address.

1. Turn on **Streamlined User Management** for your account.

NOTE

Streamlined User Management is in preview. Turning it on now shows you how to enable preview features, and also provides you access to the enhanced user interface for managing users.

- a. From your user account menu (you'll see a letter or an image of your profile), click the **Preview features** option.



b. In the first drop-down menu, choose the option for all accounts.

Preview features

The following preview features are available for your evaluation. Help us make them better!

for this account [fabrikam]

New Account Landing Page On
Updated Experience for the Account landing page for users.

New Release Definition Editor Off
Turn on the new release definition editor to visualize your deployment pipelines. [Learn more](#)

Streamlined User Management On
Improved user management page, ability to assign project permissions during user invitation.

TIP

If you don't see the user/account menu option, then you aren't an account administrator.

c. Enable the **Streamlined User Management** option.

Streamlined User Management On
Improved user management page, ability to assign project permissions during user invitation.

Click the close icon (X) to close the preview features dialog window.

2. Click the gear Settings icon, and choose the **Account Settings** option

The screenshot shows the 'Overview - Visual Studio' page for a project named 'MyFirstProject'. At the top, there's a navigation bar with links like 'MyFirstProject', 'Dashboards', 'Code', 'Work', 'Build and Release', 'Test', 'Wiki', and a gear icon. A red box highlights the gear icon. A secondary red box highlights the 'Account settings' option in the dropdown menu that appears when the gear icon is clicked.

3. Then, click **Users** to open the Manage users page. Click **Add new users** to open the dialog.

The screenshot shows the 'Manage users' page. The top navigation bar has tabs for 'Overview', 'Settings', 'Security', 'Users' (which is highlighted with a red box), 'Process', 'Build and Release', 'Agent Pools', and 'Notifications'. Below the navigation bar, there's a search bar with fields for 'Name' and 'Access Level', and a 'Clear' button. A red box highlights the 'Users' tab, and another red box highlights the '+ Add new users' button.

4. Fill out the form.

The screenshot shows the 'Add new users' dialog box. It has the following fields:

- Users ***: A list box containing three email addresses: 'fabrikamfiber2@hotmail.com', 'fabrikamfiber5@hotmail.com', and 'fabrikamfiber6@hotmail.com'. Each entry has a red 'X' icon to its right.
- Access level ***: A dropdown menu set to 'Basic'.
- Add to projects**: A list box containing the project 'MyFirstProject'.
- Projects**: A list box containing the project 'MyFirstProject'.
- VSTS Groups**: A dropdown menu set to 'Project Contributors'.
- Send email invites**: A checked checkbox.

At the bottom, there are 'Adding 3 users' status text, an 'Add' button, and a 'Cancel' button.

- **Users:** Enter the email address (Microsoft account address) for the user account. You can add several email addresses by separating them with a semicolon (;). Note that the email addresses display in red when they are accepted.
 - > [!NOTE]
 - > You must add email addresses for > "[personal Microsoft accounts](#)" > unless you plan to use [Azure Active Directory \(Azure AD\)](#). > to authenticates users and control account access.
 - > If your users don't have Microsoft accounts, > have them [sign up](#).
- **Access level:** Leave the Access level at **Basic** for those users who will contribute to the code base. To learn more, see [About access levels](#).
- **Add to projects:** Select the project that you named in the previous procedure.
- **VSTS Groups:** Leave this entry at Project Contributors, the default security group for people who will contribute to your project. To learn more, see [Default permissions and access assignments](#).

5. When done, click **Add** to complete your invitation.

Next steps

[Add code to your Git repository](#) or [Plan and track work](#)

For more information on managing users and account access, see [Add account users for VSTS](#).

Code with Git

5/29/2018 • 2 min to read • [Edit Online](#)

VSTS

After you create a new account and team project in VSTS, you can begin sharing your code with others.

To work with a Git repo, you clone it to your computer. Cloning a repo creates a complete local copy of the repo for you to work with, and downloads all [commits](#) and [branches](#) in the repo and sets up a named relationship with the repo on the server. Use this relationship to interact with the existing repo, pushing and pulling changes to share code with your team.

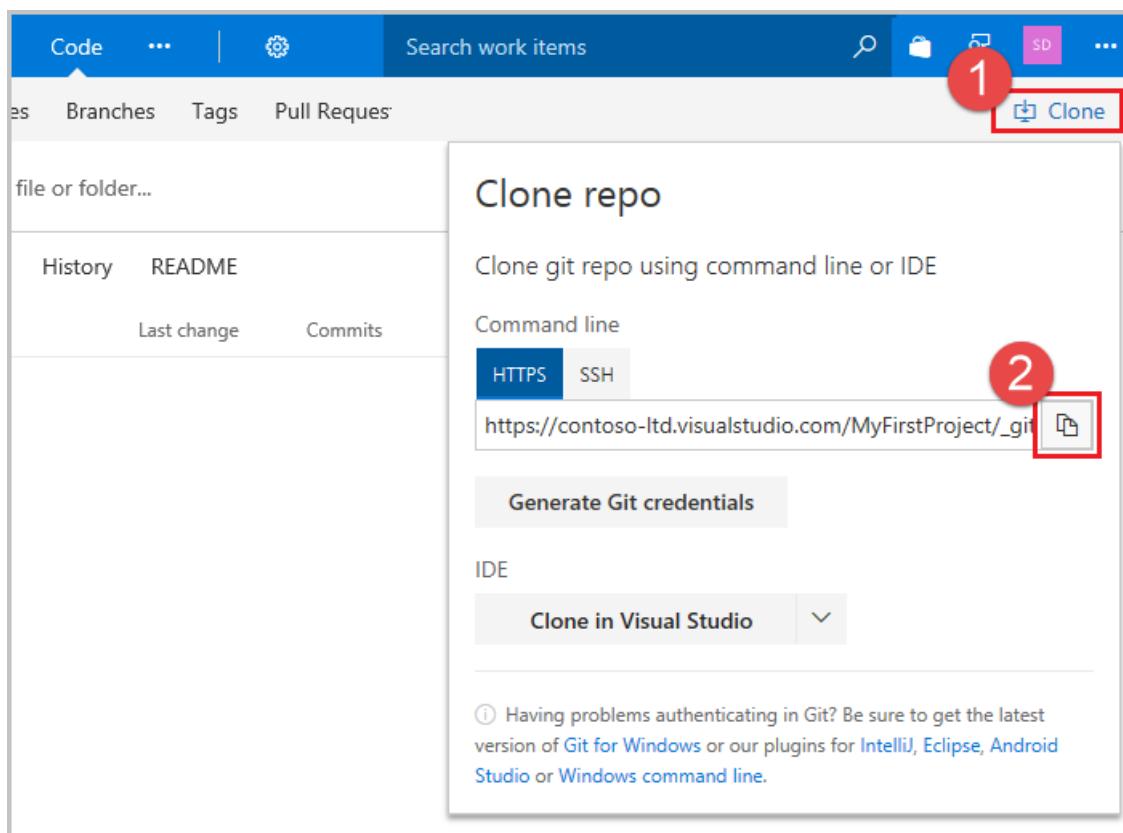
Install Git command line tools

1. Install one of the following Git command line tools:

- To install Git for Windows, including Git Credential Manager, see [Install the Git Credential Manager - Windows](#)
- To install Git for macOS and Linux, see [Install the Git Credential Manager - macOS and Linix](#)

Clone the repo to your computer

1. From your web browser, open the team project for your VSTS account and click the **Code** hub. If you don't have a team project, [create one now](#).
2. Select Clone in the upper-right corner of the **Code** window and copy the **Clone URL**.



3. Open the Git command window (Git Bash on Git for Windows), navigate to the folder where you want the code from the repo stored on your computer, and run `git clone` followed by the path copied from the

Clone URL in the previous step, as shown in the following example.

```
git clone https://contoso-ltd.visualstudio.com/MyFirstProject/_git/contoso-demo
```

Git downloads a copy of the code, including all **commits** and **branches** from the repo, into a new folder for you to work with.

Keep this command window open, as you'll use it in the following steps.

Work with the code

In this step, we'll make a change to the files on your computer, commit the changes locally, push the commit up to the repo that is stored on the server, and view the changes there.

1. Browse to the folder on your computer where you cloned the repo, open the `README.md` file in your editor of choice, make some changes, and save and close the file.
2. In the Git command window, navigate to the `contoso-demo` directory by entering the following command:

```
cd contoso-demo
```

3. Commit your changes by entering the following command in the Git command window:

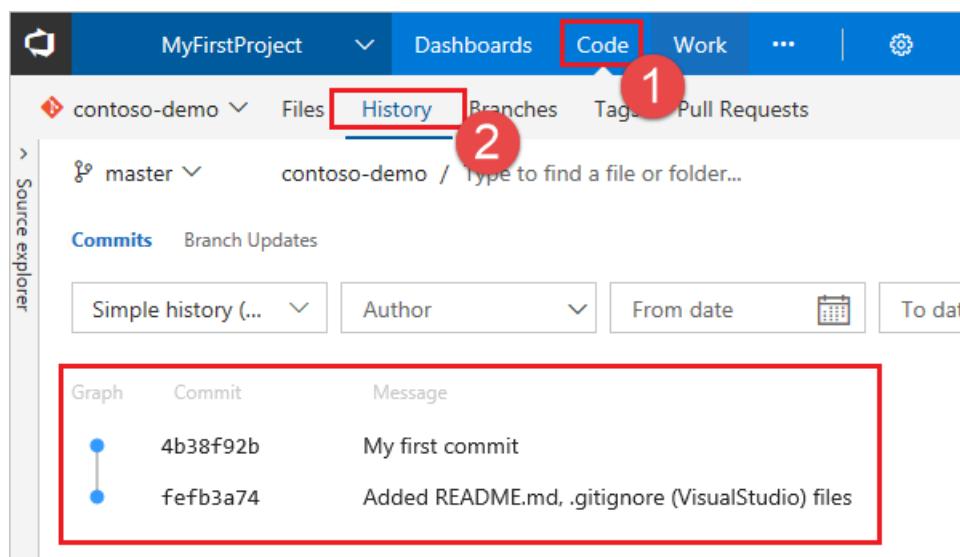
```
git commit -a -m "My first commit"
```

When using `git commit`, `-a` means to commit all changed files, and `-m` specifies a commit message.

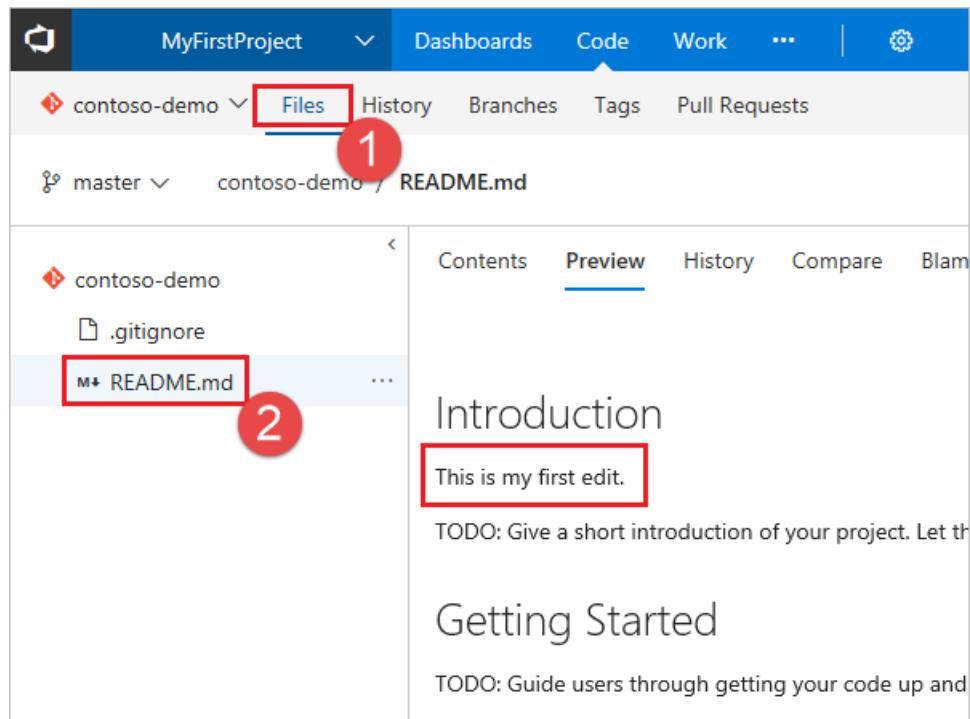
4. Push your changes up to the Git repo on the server by entering the following command into the Git command window:

```
git push
```

5. Switch back to the web portal and select **History** from the **Code** view to view your new commit. The new repo has two commits: the first commit where the README and .gitignore were added when the repo was created, and the commit you just made.



6. Switch to the **Files** tab and click on the README file to view your changes.



Try this next

[Set up continuous integration & delivery](#) or [Plan & track work](#)

Or, [learn more about working with a Git repo](#)

Create your first build and release

6/1/2018 • 14 min to read • [Edit Online](#)

We'll show you how to use VSTS pipelines to create a build that prints "Hello world" and then automatically creates a release that does the same. By the time you finish here, you'll see an end-to-end process run every time you push new code into your team project. You'll also become familiar with all the basic concepts of VSTS pipelines.

We'll show you how to use TFS to create a build that prints "Hello world" and then automatically creates a release that does the same. By the time you finish here, you'll see an end-to-end process run every time you push new code into your team project. You'll also become familiar with all the basic concepts of build and release in TFS.

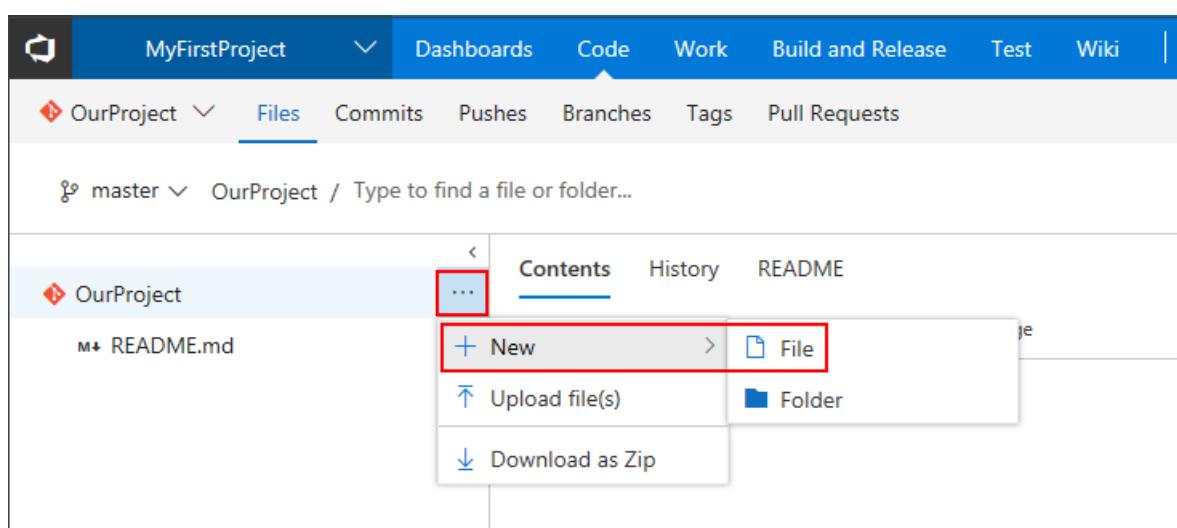
Prerequisites

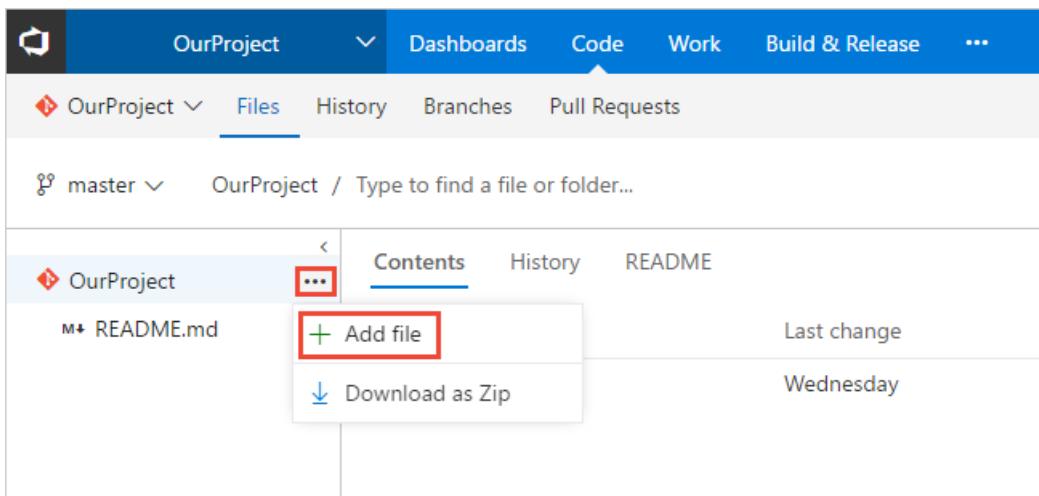
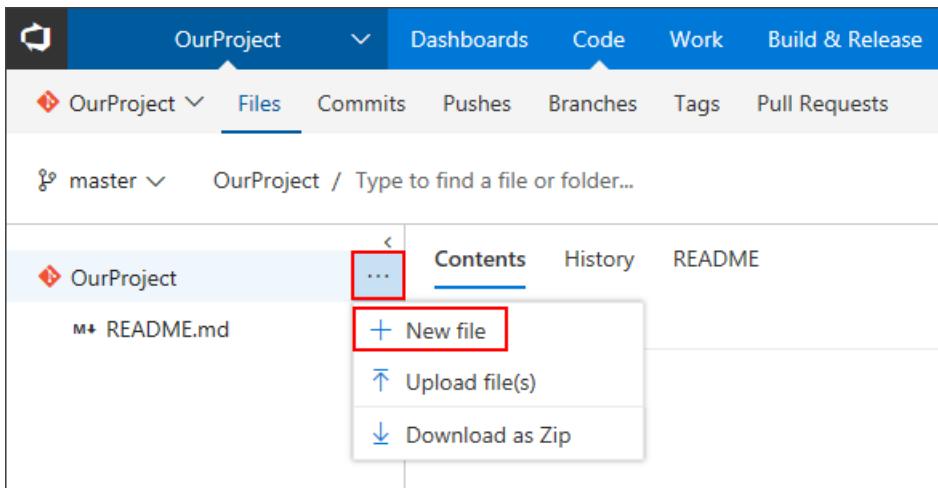
- A VSTS account. If you don't have one, you can [create one for free](#). If your team already has one, then make sure you are an administrator of the team project you want to use.
- A [self-hosted Windows agent](#).

Add a script to your repository

Create a PowerShell script that prints `Hello world`.

1. Go to the **Code** hub.
2. Add a file.





3. In the dialog box name your new file.

```
HelloWorld.ps1
```

4. Copy and paste this script.

```
Write-Host "Hello world"
```

5. **Commit** (save) the file.

In this tutorial, our focus is on CI/CD, so we're keeping the code part simple. We're working in a VSTS Git repository directly in your web browser.

When you're ready to begin building and deploying a real app, you can use a wide range of version control clients and services with VSTS CI builds. [Learn more](#).

Create a build definition

Create a build definition that prints "Hello world."

1. Select the **Build and Release** hub in your VSTS project, and then choose **Builds**.

The screenshot shows the Azure DevOps interface for a project named 'OurProject'. The top navigation bar includes 'OurProject', 'Dashboards', 'Code', 'Work', '...', and a gear icon. Below the navigation is a search bar: 'Search wiki in this project'. A dropdown menu for 'Build and Release' is open, showing options: 'Builds' (highlighted with a red box), 'Releases', 'Library', 'Task Groups', and 'Deployment Groups'. The main content area shows a file tree for 'master' branch: 'HelloWorld.ps1' and 'README.md'. Below the file tree are two table rows: one for 'HelloWorld.ps1' (last change 9 minutes ago) and one for 'README.md' (last change 17 minutes ago).

2. Create a new definition.

The screenshot shows the 'Builds' section of the Azure DevOps interface. The top navigation bar includes 'OurProject', 'Dashboards', 'Build and Release', '...', and a gear icon. Below the navigation is a search bar: 'Search wiki in this project'. The main content area shows tabs: 'Builds' (highlighted with a blue underline), 'Releases', 'Library', 'Task Groups', and 'Deployment Groups'. Below the tabs is a section titled 'Build Definitions' with a search bar 'Build ID or build number' and a button '+ New' (highlighted with a red box). At the bottom are buttons for 'Mine', 'Definitions', and 'Queued'.

3. Make sure that the **source**, **team project**, **repository**, and default **branch** match the location in which you created the script.

4. Start with an **empty process**

5. Select **Process** and specify whatever **Name** you want to use. For the **Agent queue**, select **Hosted VS2017**.

6. On the left side, select the plus sign (+) for Phase 1 to add a task to the phase, and then on the right side select the **Utility** category, select the **PowerShell** task, and then choose **Add**.

The screenshot shows the 'Tasks' tab of a build definition. The top navigation bar includes 'OurProject', 'Builds', 'Releases', 'Library', 'Task Groups', and 'Deployment Groups'. Below the navigation is a search bar 'Build ID or build number' and a button '+ New'. The main content area shows tabs: 'Tasks' (highlighted with a blue underline), 'Variables', 'Triggers', 'Options', 'Retention', and 'History'. The 'Tasks' tab displays a list of tasks: 'Process' (Build process) and 'Get sources' (OurProject master). Below this is a section for 'Phase 1' (Run on agent) with a plus sign (+) icon (highlighted with a red box) and a button 'Add a task to the phase'.

7. On the left side select your new **PowerShell** script task.

8. For the **Script Path** argument, select the ... button to browse your repository and select the script you created.

The screenshot shows the 'Tasks' tab of a VSTS build definition. On the left, under 'Process', there is a 'Get sources' task for 'OurProject' on the 'master' branch. Below it is a 'Phase 1' section containing a 'PowerShell Script' task. On the right, the configuration for the 'PowerShell Script' task is shown. It has a 'Display name' of 'PowerShell Script', a 'Type' of 'File Path', and a 'Script Path' of 'HelloWorld.ps1'. The 'HelloWorld.ps1' input field is highlighted with a red box.

9. Select **Save & queue**, and then select **Save**.

1. Select the **Build and Release** hub in your VSTS project, and then choose **Builds**.

The screenshot shows the 'Builds' hub in the 'Build and Release' section. It displays a list of builds for the 'OurProject' repository on the 'master' branch. The first build, 'HelloWorld.ps1', was created 9 minutes ago. The second build, 'README.md', was created 17 minutes ago. The 'Builds' section is highlighted with a red box.

2. Create a new definition.

The screenshot shows the 'Build Definitions' hub. It lists 'Mine', 'Definitions', and 'Queued' build definitions. At the top right, there is a search bar for 'Build ID or build number' and two buttons: '+ New' (highlighted with a red box) and '+ Import'.

3. Start with an **empty process**

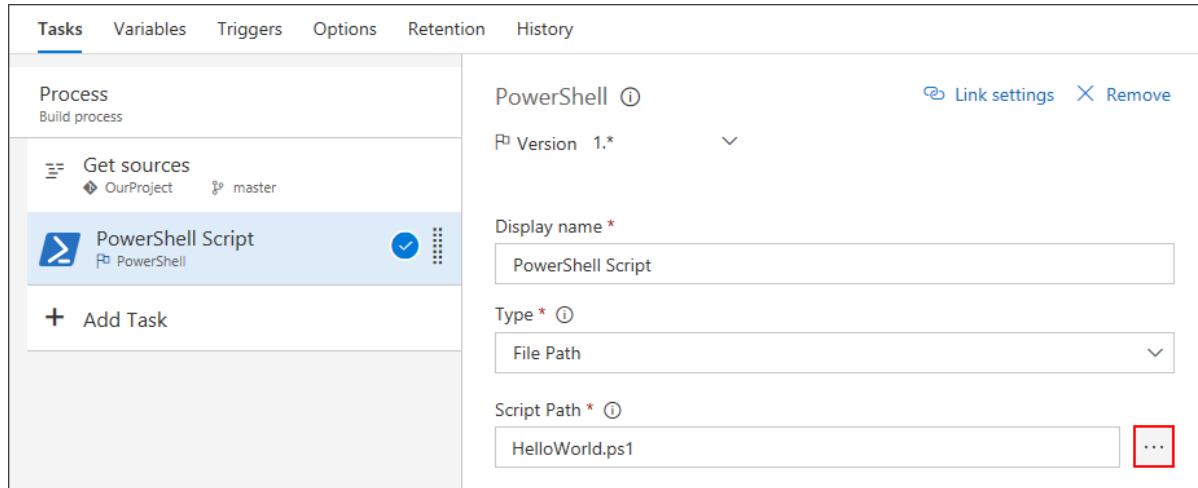
4. Select **Process** and specify whatever **Name** you want to use. For the **Agent queue**, select **Default**.

5. On the left side, select **+ Add Task** to add a task to the phase, and then on the right side select the **Utility** category, select the **PowerShell** task, and then choose **Add**.

The screenshot shows the 'Process' tab of a new build definition. It has a 'Get sources' task for 'OurProject' on the 'master' branch. At the bottom left, there is a red box around the '+ Add Task' button.

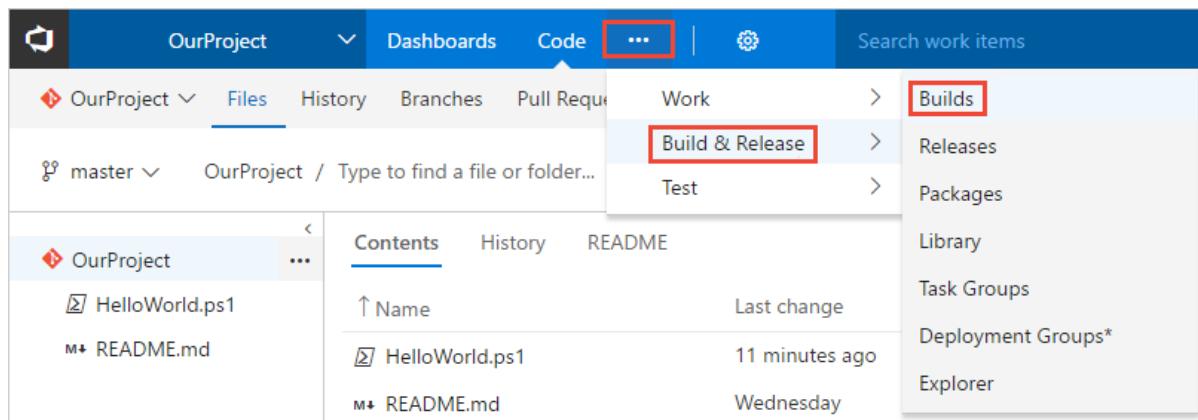
6. On the left side select your new **PowerShell** script task.

7. For the **Script Path** argument, select the **...** button to browse your repository and select the script you created.

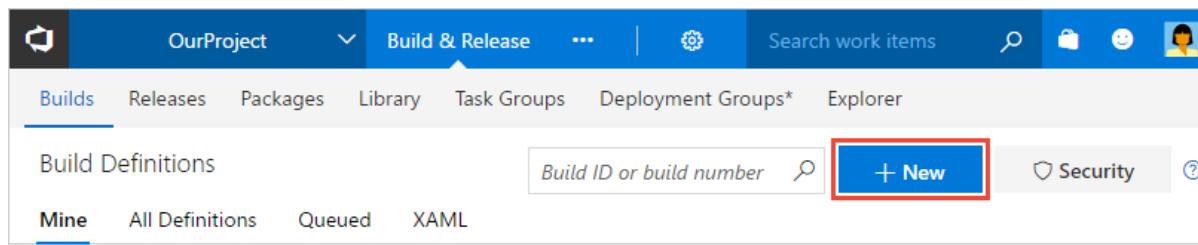


8. Select **Save & queue**, and then select **Save**.

1. Select the **Build and Release** hub in your VSTS project, and then the **Builds** tab.



2. Create a new definition.



3. Start with an **empty process**.

4. Select **Process** and specify whatever **Name** you want to use.
5. On the **Options** tab, select **Default** for the **Agent queue**, or select whichever queue you want to use that has Windows build agents.
6. On the **Tasks** tab, make sure that **Get sources** is set with the **Repository** and **Branch** in which you created the script.
7. On the left side select **Add Task**, and then on the right side select the **Utility** category, select the **PowerShell** task, and then select **Add**.
8. On the left side select your new **PowerShell** script task.
9. For the **Script Path** argument, select the **...** button to browse your repository and select the script you

created.

The screenshot shows the 'Tasks' tab of a build definition. On the left, under 'Process', there is a 'Get sources' task and a selected 'PowerShell Script' task. A red box highlights the '... (More options)' button next to the PowerShell task. On the right, the configuration pane for the PowerShell task is visible, showing 'PowerShell Version 1.*'. The 'Display name' is set to 'PowerShell Script'. The 'Type' is 'File Path', and the 'Script Path' is 'HelloWorld.ps1', with a red box highlighting the '...' button next to it.

10. Select **Save & queue**, and then select **Save**.

A build definition is the entity through which you define your automated build process. In the build definition, you compose a set of tasks, each of which perform a step in your build. The task catalog provides a rich set of tasks for you to get started. You can also add PowerShell or shell scripts to your build definition.

Publish an artifact from your build

A typical build produces an artifact that can then be deployed to various environments in a release. Here to demonstrate the capability in a simple way, we'll simply publish the script as the artifact.

1. On the **Tasks** tab, select the plus sign (+) for Phase 1 to add a task to the phase.
2. Select the **Utility** category, select the **Publish Build Artifacts** task, and then select **Add**.

The screenshot shows the 'Tasks' tab of a build definition. Under 'Phase 1', a 'Publish Artifact: drop' task is selected. On the right, the configuration pane for this task is shown. A red box highlights the entire configuration area, which includes:

- Display name: 'Publish Artifact: drop'
- Path to publish: 'HelloWorld.ps1'
- Artifact name: 'drop'
- Artifact publish location: 'Visual Studio Team Services/TFS'

Path to publish: Select the **...** button to browse and select the script you created.

Artifact name

Artifact publish location: Visual Studio Team Services/TFS.

1. On the **Tasks** tab, select **Add Task**.
2. Select the **Utility** category, select the **Publish Build Artifacts** task, and then select **Add**.

The screenshot shows the 'Tasks' tab selected in the build definition editor. A 'Publish Build Artifacts' task is selected and highlighted with a blue border. The configuration pane on the right shows the following settings:

- Path to Publish**: HelloWorld.ps1
- Artifact Name**: drop
- Artifact Type**: Server

Path to Publish: Select the **...** button to browse and select the script you created.

Artifact Name

drop

Artifact Type: Server.

Artifacts are the files that you want your build to produce. Artifacts can be nearly anything your team needs to test or deploy your app. For example, you've got a .DLL and .EXE executable files and .PDB symbols file of a C# or C++ .NET Windows app.

To enable you to produce artifacts, we provide tools such as copying with pattern matching, and a staging directory in which you can gather your artifacts before publishing them. See [Artifacts in Team Build](#).

Enable continuous integration (CI)

1. Select the **Triggers** tab.
2. Enable **Continuous integration**.

A continuous integration trigger on a build definition indicates that the system should automatically queue a new build whenever a code change is committed. You can make the trigger more general or more specific, and also schedule your build (for example, on a nightly basis). See [Build triggers](#).

Save and queue the build

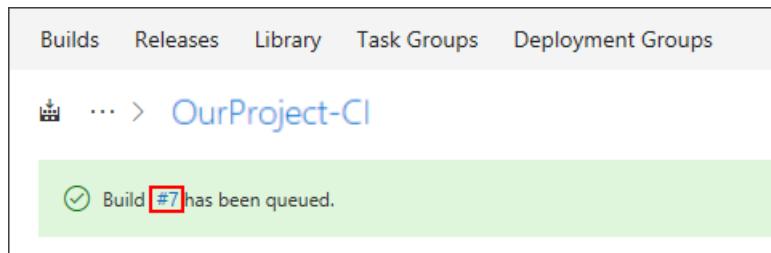
Save and queue a build manually and test your build definition.

1. Select **Save & queue**, and then select **Save & queue**.

2. On the dialog box select **Save & queue** once more.

This queues a new build on the Microsoft-hosted agent.

3. You see a link to the new build on the top of the page.



Choose the link to watch the new build as it happens. Once the agent is allocated, you'll start seeing the live logs of the build. Notice that the PowerShell script is run as part of the build, and that "Hello world" is printed to the console.

A screenshot of the build summary for 'Build 1722'. The left sidebar lists build steps: 'Build' (selected), 'Initialize Agent', 'Initialize Job', 'Get Sources', 'PowerShell Script', 'Publish Artifact: drop', 'Post Job Cleanup', 'Finalize build', and 'Report build status'. The right panel shows a green header 'Build succeeded'. It includes a 'Build' icon, a status message 'Ran for 4 seconds (Hosted Agent), completed 1 seconds ago', and tabs for 'Console', 'Logs', 'Code coverage*', and 'Tests'. The 'Console' tab displays the PowerShell command and its output: 'git checkout -b <new-branch-name>', 'HEAD is now at 0ab86c0... Updated HelloWorld.ps1', 'Finishing: Get Sources', 'Starting: PowerShell Script', 'Task : PowerShell', 'Description : Run a PowerShell script', 'Version : 1.2.3', 'Author : Microsoft Corporation', 'Help : [More Information](https://go.microsoft.com/fwlink/?LinkId=613736)', '., 'd:\a\1\s\HelloWorld.ps1'', and 'Hello world'.

4. Go to the build summary.

A screenshot of the build summary for 'Build 1722'. The left sidebar shows 'Build 1722' (selected) and its steps: 'Build' (selected) and 'Initialize Agent'. The right panel shows a green header 'Build succeeded'. It includes a 'Build' icon, a status message 'Ran for 4 seconds (Hosted Agent), completed 1 seconds ago', and tabs for 'Console', 'Logs', 'Code coverage*', and 'Tests'. The 'Console' tab displays the PowerShell command and its output: 'git checkout -b <new-branch-name>', 'HEAD is now at 0ab86c0... Updated HelloWorld.ps1', 'Finishing: Get Sources', 'Starting: PowerShell Script', 'Task : PowerShell', 'Description : Run a PowerShell script', 'Version : 1.2.3', 'Author : Microsoft Corporation', 'Help : [More Information](https://go.microsoft.com/fwlink/?LinkId=613736)', '., 'd:\a\1\s\HelloWorld.ps1'', and 'Hello world'.

5. On the **Artifacts** tab of the build notice that the script is published as an artifact.

The screenshot shows a 'Build succeeded' message for Build 1722. The 'Artifacts' tab is selected. A red box highlights the 'Explore' button. An 'Artifacts Explorer' window is open, showing a folder structure with 'drop' containing 'HelloWorld.ps1'. The 'HelloWorld.ps1' file is highlighted.

1. Select **Save & queue**, and then select **Save & queue**.

2. On the dialog box select the **Queue** button.

This queues a new build on the agent. Once the agent is allocated, you'll start seeing the live logs of the build. Notice that the PowerShell script is run as part of the build, and that "Hello world" is printed to the console.

The screenshot shows the build summary for Build 1722. The 'Build' step is expanded, showing sub-tasks like 'Initialize Agent', 'Initialize Job', etc. The 'Logs' tab is selected, displaying the build logs. The logs show the execution of a PowerShell script named 'HelloWorld.ps1' which prints 'Hello world' to the console.

```
git checkout -b <new-branch-name>
HEAD is now at 0ab86c0... Updated HelloWorld.ps1
=====
Finishing: Get Sources
=====
Starting: PowerShell Script
=====
Task      : PowerShell
Description : Run a PowerShell script
Version   : 1.2.3
Author    : Microsoft Corporation
Help      : [More Information](https://go.microsoft.com/fwlink/?LinkID=613736)
=====
. 'd:\a\1\s\HelloWorld.ps1'
Hello world
```

3. Go to the build summary.

The screenshot shows the build summary for Build 1722. The 'Build' step is selected. A red box highlights the build number 'Build 1722' in the URL bar.

4. On the **Artifacts** tab of the build notice that the script is published as an artifact.

The screenshot shows the Azure DevOps interface for a completed build. At the top, it says "Hello world / Build 1722" and "Build succeeded". Below that, it displays "Build 1722" and "Ran for 31 seconds (Hosted), completed 15.4 minutes ago". The "Artifacts" tab is selected and highlighted with a red box. A modal window titled "Artifacts Explorer" is open, also with a red box around its title bar. The modal shows a single item: "drop" which contains "HelloWorld.ps1". There are "Download" and "Explore" buttons at the bottom of the modal.

You can view a summary of all the builds or drill into the logs for each build at any time by navigating to the **Builds** tab in the **Build and Release** hub. For each build, you can also view a list of commits that were built and the work items associated with each commit. You can also run tests in each build and analyze the test failures.

Add some variables and commit a change to your script

We'll pass some build variables to the script to make our process a bit more interesting. Then we'll commit a change to a script and watch the CI process run automatically to validate the change.

1. Edit your build definition.
2. On the **Tasks** tab, select the PowerShell script task.
3. Add these arguments.

The screenshot shows the "Tasks" tab of a build definition. It lists several tasks: "Get sources", "Phase 1", "PowerShell Script" (which is currently selected and highlighted with a blue background), and "Publish Artifact: drop". The "PowerShell Script" task has its configuration details shown on the right. The "Arguments" field contains the value "-greeter "\$(Build.RequestedFor)" -trigger "\$(Build.Reason)". This argument is highlighted with a red box.

The screenshot shows the 'Tasks' tab selected in the build pipeline editor. A 'PowerShell Script' task is highlighted. The 'Arguments' field is highlighted with a red box and contains the command: `-greeter "$(Build.RequestedFor)" -trigger "$(Build.Reason)"`.

Arguments

```
-greeter "$(Build.RequestedFor)" -trigger "$(Build.Reason)"
```

4. Save the build definition.
 5. Go to the **Code** hub, **Files** tab.
 6. Select the **HelloWorld.ps1** file, and then **Edit** the file.
 7. Change the script as follows:
- ```
Param(
 [string]$greeter,
 [string]$trigger
)
Write-Host "Hello world" from $greeter
Write-Host Trigger: $trigger
```
8. **Commit** (save) the script.
  9. Go to the **Build and Release** hub, and notice that a build is automatically triggered by the change that you committed.
  10. Select the new build that was created and view its log.
  11. Notice that the person who changed the code has their name printed in the greeting message. You also see printed that this was a CI build.

The screenshot shows the Azure DevOps interface for a build definition named 'Build 1723'. The build has completed successfully. The log output shows the following command being executed:

```
1 2017-04-10T20:55:12.0502205Z ##[section]Starting: PowerShell Script
2 2017-04-10T20:55:12.0592196Z =====
3 2017-04-10T20:55:12.0602014Z Task : PowerShell
4 2017-04-10T20:55:12.0602014Z Description : Run a PowerShell script
5 2017-04-10T20:55:12.0602014Z Version : 1.2.3
6 2017-04-10T20:55:12.0602014Z Author : Microsoft Corporation
7 2017-04-10T20:55:12.0602014Z Help : [More Information](https://)
8 2017-04-10T20:55:12.0602014Z =====
9 2017-04-10T20:55:12.1292010Z ##[command]. 'd:\a\1\s\HelloWorld.ps1' -g
10 2017-04-10T20:55:12.8952061Z Hello world from Raisa Pokrovskaya
11 2017-04-10T20:55:12.8952061Z Trigger: IndividualCI
12 2017-04-10T20:55:12.9002073Z ##[section]Finishing: PowerShell Script
```

We just introduced the concept of build variables in these steps. We printed the value of a variable that is automatically predefined and initialized by the system. You can also define custom variables and use them either in arguments to your tasks, or as environment variables within your scripts. To learn more about variables, see [Build variables](#).

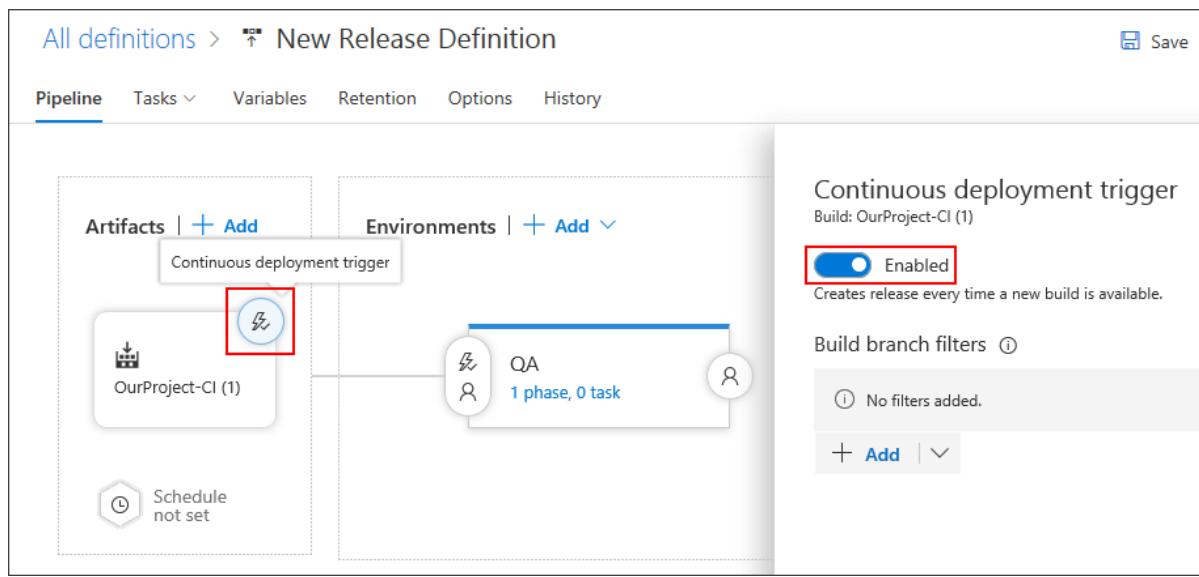
## You've got a build definition. What's next?

You've just created a build definition that automatically builds and validates whatever code is checked in by your team. At this point you can continue to the next section to learn about release definitions. Or, if you prefer, you can [skip ahead](#) to create a build pipeline for your app.

## Create a release definition

Define the process for running the script in two environments.

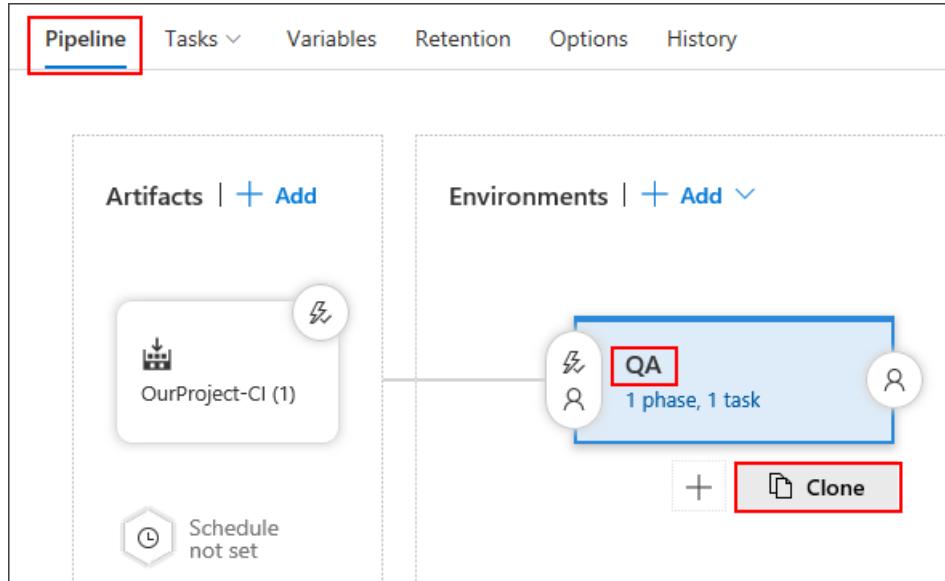
1. Go to the **Build and Release** tab, and then select **Releases**.
2. Select the action to create a **New definition**. If a release definition is already created, select the plus sign (+) and then select **Create release definition**.
3. Select the action to start with an **empty process**.
4. Name the environment **QA**.
5. In the Artifacts panel, select + **Add** and specify a **Source (Build definition)**. Select **Add**.
6. Select the **Lightning bolt** to trigger continuous deployment and then enable the **Continuous deployment trigger** on the right.



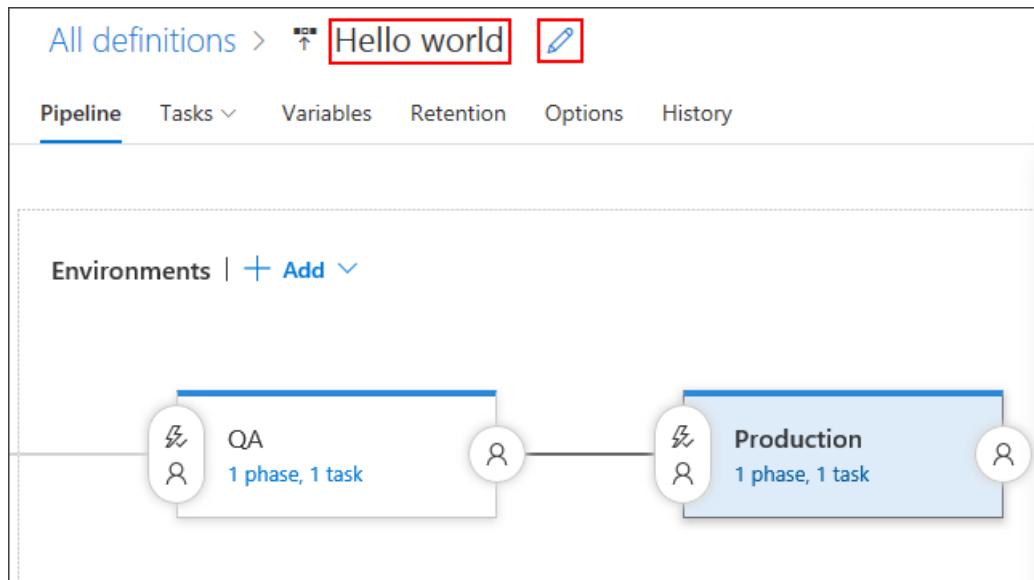
7. Select the **Tasks** tab and select your **QA** environment.
8. Select the plus sign (+) for the phase to add a task to the phase.
9. On the **Add tasks** dialog box, select **Utility**, locate the **PowerShell** task, and then select its **Add** button.
10. On the left side select your new **PowerShell** script task.
11. For the **Script Path** argument, select the ... button to browse your artifacts and select the script you created.
12. Add these **Arguments**:

```
-greeter "$(Release.RequestedFor)" -trigger "$(Build.DefinitionName)"
```

13. On the **Pipeline** tab, select the **QA** environment and select **Clone**.



14. Rename the cloned environment **Production**.
15. Rename the release definition **Hello world**.



16. Save the release definition.

1. Go to the **Build and Release** hub, and then to the **Releases** tab.
2. Select the action to create a **New definition**.
3. On the dialog box, select the **Empty** template and select **Next**.
4. Make sure that your **Hello world** build definition that you created above is selected. Select **Continuous deployment**, and then select **Create**.
5. Select **Add tasks** in the environment.
6. On the **Task catalog** dialog box, select **Utility**, locate the **PowerShell** task, and then select its **Add** button. Select the **Close** button.
7. For the **Script Path** argument, select the **...** button to browse your artifacts and select the script you created.
8. Add these **Arguments**:

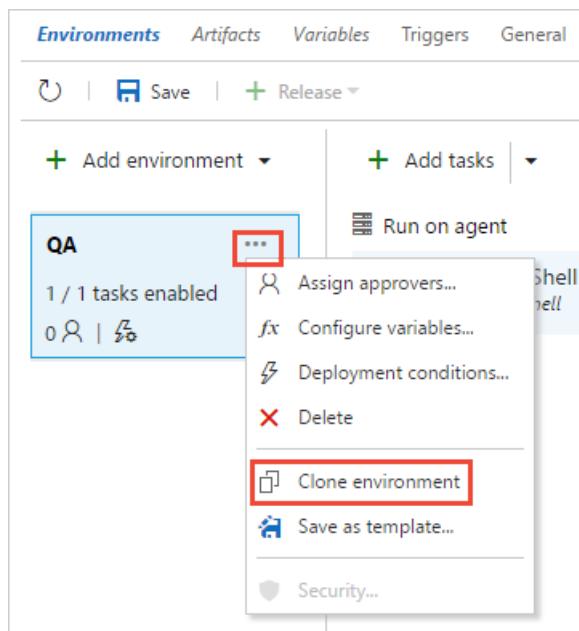
```
-greeter "$(Release.RequestedFor)" -trigger "$(Build.DefinitionName)"
```

9. Rename the environment **QA**.

The screenshot shows the configuration page for a new release definition. The environment 'QA' is selected and highlighted with a red box. A PowerShell task is added under the 'Run on agent' section. The task configuration includes:

- Type**: PowerShell
- Script Path**: (not explicitly shown)
- Arguments**: `-greeter "$(Release.RequestedFor)" -trigger "$(Build.DefinitionName)"`

10. **Clone** the **QA** environment.



Leave **Automatically approve** and **Deploy automatically...** selected, and select **Create**.

11. Rename the new environment **Production**.

12. Rename the release definition **Hello world**.

13. Save the release definition.

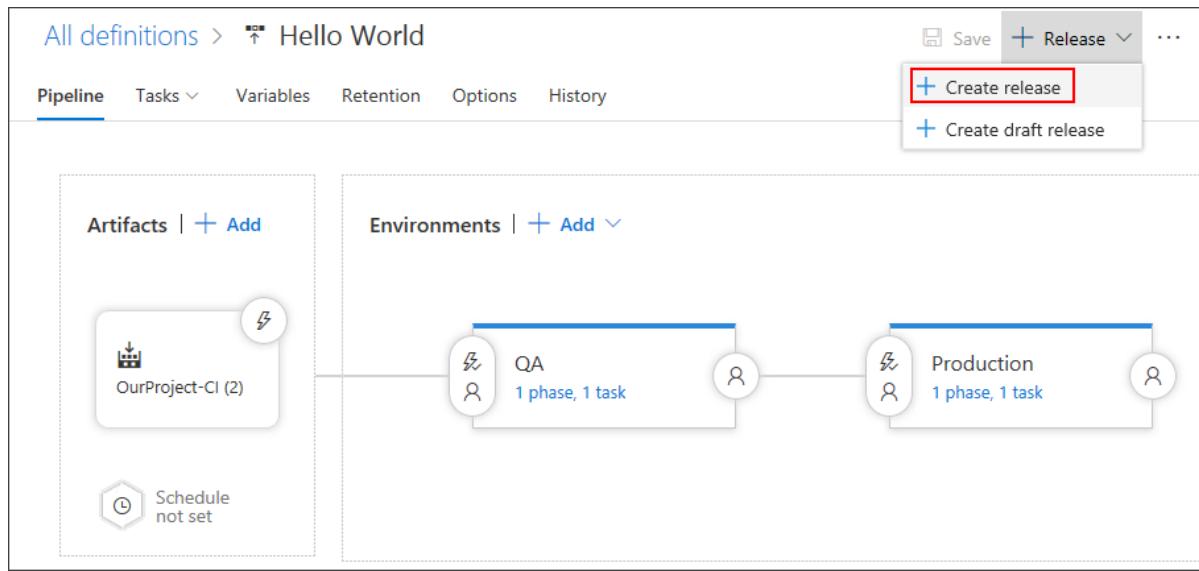
A release definition is a collection of environments to which the application build artifacts are deployed. It also defines the actual deployment process for each environment, as well as how the artifacts are promoted from one environment to another.

Also, notice that we used some variables in our script arguments. In this case, we used **release variables** instead of the build variables we used for the build definition.

## Deploy a release

Run the script in each environment.

1. Create a new release.



2. Define the trigger settings and artifact source for the release and then select **Create**.
3. Open the release that you just created.

The screenshot shows the 'All definitions' page with a green success message: 'Release Release-2 has been created'. Below the message, there is a navigation bar with tabs: Pipeline, Tasks, Variables, Retention, Options, and History. The 'Pipeline' tab is selected.

4. View the logs to get real-time data about the release.

The screenshot shows the 'Logs' tab for the 'Hello World / Release-2' pipeline. The tab bar includes Summary, Environments, Artifacts, Variables, General, Commits, Work items, Tests, and Logs. The 'Logs' tab is highlighted with a red box. The main area displays the log output for the 'QA' environment. It shows the following text:

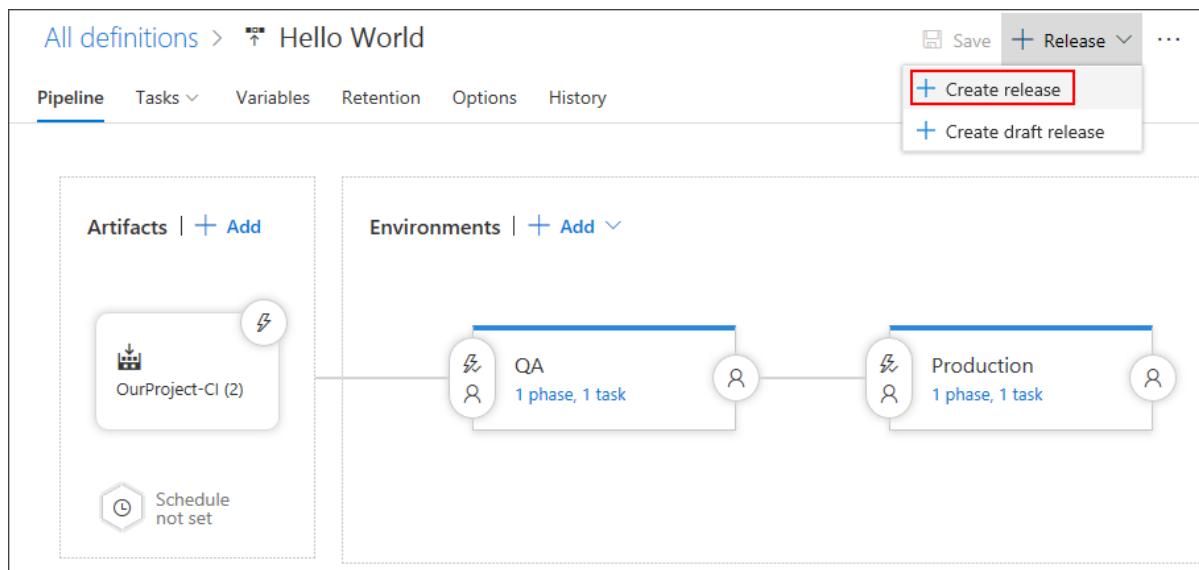
```

Agent queue: Hosted VS2017 |
Starting: initialize job

Prepare release directory.
ReleaseId=1, TeamProjectId=eb7
Release folder: d:\a\r1\a
Environment variables available

```

1. Create a new release.



2. Define the trigger settings and artifact source for the release and then select **Queue**.
3. Open the release that you just created.

The screenshot shows the 'All definitions > Hello World' page. A green banner at the top displays a checkmark and the text 'Release Release-2 has been created'. Below the banner, the 'Pipeline' tab is selected.

4. View the logs to get real-time data about the release.

The screenshot shows the 'Hello World / Release-2' logs. The 'Logs' tab is selected. In the 'Action' column, the 'QA' row is expanded, showing 'Pre-deployment approval' and 'Agent phase'. The 'Agent phase' row is selected. The right pane displays the log output for the 'Agent phase' step, which includes 'Agent queue: Hosted VS2017 | Starting: Initialize Job', 'Prepare release directory.', 'ReleaseId=1, TeamProjectId=eb7', 'Release folder: d:\a\r1\la', and 'Environment variables available'.

1. Create a new release.

The screenshot shows the 'Definition: Hello world' releases section. The 'Environments' tab is selected. The 'Create Release' button in the top right is highlighted with a red box. Below it, there is a 'Create Draft Release' button.

2. Open the release that you just created.

The screenshot shows the 'Releases' tab in the Azure DevOps interface. A message at the top says 'Release Release-2 has been created.' Below it, a table lists the release details: Title 'Release-2', Environments (empty), and a 'Logs' button.

3. View the logs to get real-time data about the release.

The screenshot shows the 'Logs' tab for 'Release-1'. It displays deployment steps: 'QA' (Pre-deployment approval) and 'Run on agent'. The 'Run on agent' step's log output is shown in a modal, detailing the agent type ('Hosted Agent'), job initialization, directory preparation, release ID, release folder, and environment variables.

You can track the progress of each release to see if it has been deployed to all the environments. You can track the commits that are part of each release, the associated work items, and the results of any test runs that you've added to the release process.

## Change your code and watch it automatically deploy to production

We'll make one more change to the script. This time it will automatically build and then get deployed all the way to the production environment.

1. Go to the **Code** hub, **Files** tab, edit the **HelloWorld.ps1** file, and change it as follows:

```
Param(
 [string]$greeter,
 [string]$trigger
)
Write-Host "Hello world" from $greeter
Write-Host Trigger: $trigger
Write-Host "Now that you've got CI/CD, you can automatically deploy your app every time your team checks
in code."
```

2. **Commit** (save) the script.

3. Select the **Builds** tab to see the build queued and run.

4. After the build is completed, select the **Releases** tab, open the new release, and then go to the **Logs**.

Your new code automatically is deployed in the **QA** environment, and then in the **Production** environment.

Hello World / Release-2

Summary Environments Artifacts Variables General Commits Work items Tests Logs History View All Details pane On

Abandon | Download all logs as zip | Send Email

| Step                                  | Action | Agent queue: Hosted VS2017   Agent: Hosted Agent                                 |
|---------------------------------------|--------|----------------------------------------------------------------------------------|
| > QA                                  | ...    | 1 2018-04-25T14:53:54.9742188Z ##[section]Starting: PowerShell Script            |
| Production                            | ...    | 2 2018-04-25T14:53:54.9746441Z =====                                             |
| Pre-deployment approval               | ...    | 3 2018-04-25T14:53:54.9746591Z Task : PowerShell                                 |
| Agent phase                           | ...    | 4 2018-04-25T14:53:54.9746697Z Description : Run a PowerShell scri               |
| Initialize Agent                      | ...    | 5 2018-04-25T14:53:54.9746796Z Version : 1.2.3                                   |
| Initialize Job                        | ...    | 6 2018-04-25T14:53:54.9746897Z Author : Microsoft Corporation                    |
| Download artifact - OurProject-CI (2) | ...    | 7 2018-04-25T14:53:54.9747808Z Help : [More Information](ht                      |
| PowerShell Script                     | ...    | 8 2018-04-25T14:53:54.9747921Z =====                                             |
| Post-deployment approval              | ...    | 9 2018-04-25T14:53:55.0138848Z ##[command]. 'D:\a\r1\a\OurProject-CI'            |
|                                       |        | 10 2018-04-25T14:53:57.2485315Z Hello world from Raisa Pokrovskaya               |
|                                       |        | 11 2018-04-25T14:53:57.2486035Z Trigger: Hello world                             |
|                                       |        | 12 2018-04-25T14:53:57.2486230Z Now that you've got CI/CD, you can automatically |
|                                       |        | 13 2018-04-25T14:53:57.3058801Z ##[section]Finishing: PowerShell Script          |
|                                       |        | 14                                                                               |

Hello world / Release-7

Summary Environments Artifacts Variables General Commits Work items Tests Logs History

Deploy | Save | Abandon | Download all logs as zip | Send Email

| Step                     | Action | Agent: Hosted Agent                                                               |
|--------------------------|--------|-----------------------------------------------------------------------------------|
| > QA                     | ...    | 1 2017-04-11T12:54:58.5891186Z ##[section]Starting: PowerShell Script             |
| Production               | ...    | 2 2017-04-11T12:54:58.6047463Z =====                                              |
| Pre-deployment approval  | ...    | 3 2017-04-11T12:54:58.6047463Z Task : PowerShell                                  |
| Run on agent             | ...    | 4 2017-04-11T12:54:58.6047463Z Description : Run a PowerShell script              |
| Initialize Agent         | ...    | 5 2017-04-11T12:54:58.6047463Z Version : 1.2.3                                    |
| Initialize Job           | ...    | 6 2017-04-11T12:54:58.6047463Z Author : Microsoft Corporation                     |
| Download Artifacts       | ...    | 7 2017-04-11T12:54:58.6047463Z Help : [More Information](https://go.micro         |
| PowerShell Script        | ...    | 8 2017-04-11T12:54:58.6047463Z =====                                              |
| Post-deployment approval | ...    | 9 2017-04-11T12:54:58.6672458Z ##[command]. 'd:\a\r1\Hello_world\drop\HelloWorld' |
|                          |        | 10 2017-04-11T12:54:59.3703946Z Hello world from Raisa Pokrovskaya                |
|                          |        | 11 2017-04-11T12:54:59.3703946Z Trigger: Hello world                              |
|                          |        | 12 2017-04-11T12:54:59.3703946Z Now that you've got CI/CD, you can automatically  |
|                          |        | 13 2017-04-11T12:54:59.4641245Z ##[section]Finishing: PowerShell Script           |
|                          |        | 14                                                                                |

In many cases, you probably would want to edit the release process so that the production deployment happens only after some testing and approvals are in place. See [Approvals and gates overview](#).

## Put CI/CD to work for you

We hope this tutorial gave you an understanding of the basic concepts of Team Build and Release Management. To get started building and deploying an app, we suggest you proceed next to one of these topics:

- [ASP.NET](#)
- [ASP.NET core](#)
- [Node.js](#)
- [Build and deploy your app](#)

## Next steps

You've just learned the basics of using the designer to create and run a VSTS build and release process. Now you're ready to configure your build definition for the programming language you're using. Go ahead and create a

new build pipeline, and this time, use one of the following templates.

| LANGUAGE   | TEMPLATE TO USE                            |
|------------|--------------------------------------------|
| .NET       | ASP.NET                                    |
| .NET Core  | ASP.NET Core                               |
| C++        | .NET Desktop                               |
| Go         | Go                                         |
| Java       | Gradle                                     |
| JavaScript | NodeJS with Gulp (Grunt is also an option) |
| Xcode      | Xcode                                      |

## Q&A

### Where can I read articles about DevOps and CI/CD?

[What is Continuous Integration?](#)

[What is Continuous Delivery?](#)

[What is DevOps?](#)

### What kinds of version control can I use

We've used a Git repository in VSTS to keep things focused on CI/CD for this tutorial.

When you're ready to get going with CI/CD for your app, you can use the version control system of your choice:

- Clients
  - [Visual Studio Code for Windows, macOS, and Linux](#)
  - [Visual Studio with Git for Windows](#) or [Visual Studio for Mac](#)
  - [Visual Studio with TFVC](#)
  - [Eclipse](#)
  - [Xcode](#)
  - [IntelliJ](#)
  - [Command line](#)
- Services
  - [VSTS](#)
  - Git service providers such as GitHub and Bitbucket
  - Subversion

### How do I replicate a definition?

If your definition has a pattern that you want to replicate in other definitions, clone it, export it, or save it as a template.

The screenshot shows the 'Build Definitions' section of the Azure DevOps interface. A context menu is open over the 'HelloWorld-CI' definition. The menu includes options like 'Queue new build...', 'Move definition', 'View definition summary', 'Edit...', 'Add to my favorites', 'Add to team favorites', 'Clone...' (which is highlighted with a red box), 'Export' (which is also highlighted with a red box), 'Save as a template...' (which is also highlighted with a red box), 'Rename...', 'Delete definition', 'Security...', and 'Add to dashboard'.

After you clone a definition, you can make changes and then save it.

After you export a definition, you can import it from the **All Definitions** tab.

After you create a template, your team members can use it to follow the pattern in new definitions.

#### TIP

If you're using the **New Build Editor**, then your custom templates are shown at the bottom of the list.

## How do I work with drafts?

If you're editing a build definition and you want to test some changes that are not yet ready for production, you can save it as a draft.

The screenshot shows the 'Build Definition' editor for a process-based build. In the top right, there's a 'Save & queue' button with a dropdown arrow. A secondary dropdown menu is open, showing 'Save & queue', 'Save', and 'Save as draft'. The 'Save as draft' option is highlighted with a red box. To the right of the dropdown, there are buttons for 'Discard' and 'Save'.

You can edit and test your draft as needed.

The screenshot shows the 'Build Definitions' interface. At the top, there are tabs for 'Builds', 'Releases', 'Packages', 'Library', 'Task Groups', 'Deployment Groups\*', and 'Explorer'. Below these are buttons for 'Mine', 'All Definitions' (which is underlined), 'Queued', and 'XAML'. A search bar says 'Search all definitions' with a magnifying glass icon, and a '+ New' button. The main area has a header 'Default branch summary' and a section for 'Artifacts'. Under 'Artifacts', there is a list of definitions: 'Build.ArtifactStagingDirectory test', 'Build.BinariesDirectory test', 'Build.BuildNumber\_Test', and 'Build.ArtifactStagingDirectory test'. To the right of the list is a context menu with options: 'Queue new build...', 'Move definition', 'View definition summary', and 'Edit...'. The 'Edit...' option is highlighted with a red box.

When you're ready you can publish the draft to merge the changes into your build definition.

The screenshot shows the 'Artifacts' page. At the top, there are tabs for 'Builds', 'Releases', 'Packages', 'Library', 'Task Groups', 'Deployment Groups\*', and 'Explorer'. Below these are buttons for 'Artifacts', 'Save draft & queue', 'Publish draft' (which is highlighted with a red box), 'Discard', 'Queue', and '...'. The main area shows a list of artifacts.

Or, if you decide to discard the draft, you can delete it from the **All Definition** tab shown above.

### What else can I do when I queue a build?

You can queue builds [automatically](#) or manually.

When you manually queue a build, you can, for a single run of the build:

- Specify the [queue](#) into which the build goes.
- Add and modify some [variables](#).
- Add [demands](#).
- In a Git repository
  - Build a [branch](#) or a [tag](#).
  - Build a [commit](#).
- In a TFVC repository
  - Specify the source version as a [label](#) or [changeset](#).
  - Run a private build of a [shelveset](#). (You can use this option on either a [Microsoft-hosted agent](#) or a [self-hosted agent](#).)

### Where can I learn more about build definition settings?

To learn more about build definition settings, see:

- [Getting sources](#)
- [Tasks](#)
- [Variables](#)
- [Triggers](#)

- [Options](#)
- [Retention](#)
- [History](#)

## How do I programmatically create a build definition?

[REST API Reference: Create a build definition](#)

### NOTE

You can also manage builds and build definitions from the command line or scripts using the [VSTS CLI](#).

# Plan and track work

4/13/2018 • 2 min to read • [Edit Online](#)

## VSTS

You add work items to plan and manage your project. You use different types of work items to track different types of work—such as user stories or product backlog items, tasks, bugs, or issues. You can describe the work to be done, assign work, track status, and coordinate efforts within your team.

Here we show how to add work items from the web portal and view work items you've created.

## Prerequisites

You can start adding work items once you connect to a team project. If you don't have an account or team project yet, create one in [VSTS](#).

## Add a work item

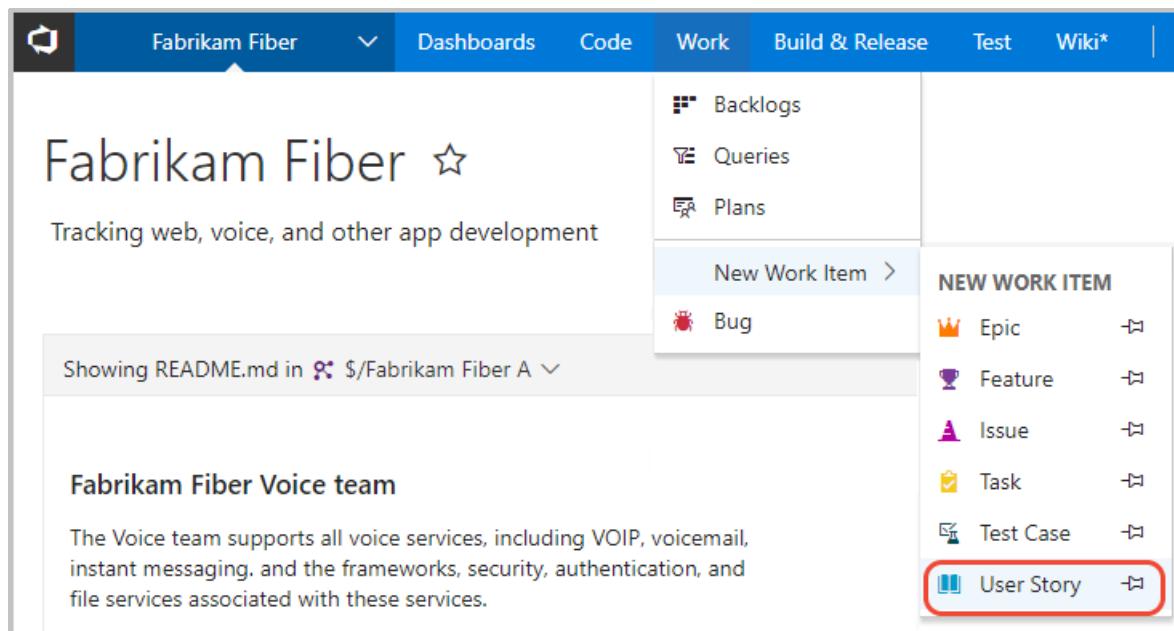
1. From your web browser, open the team project for your VSTS account. If you don't have a team project, [create one now](#). If you haven't been added as a team member, [get invited now](#).

The web browser URL follows this pattern: `https://{account name}.visualstudio.com/{project name}`

You can use this URL to quickly open the team project, substituting the {account name} and {project name} with your specific account and project name (remove braces).

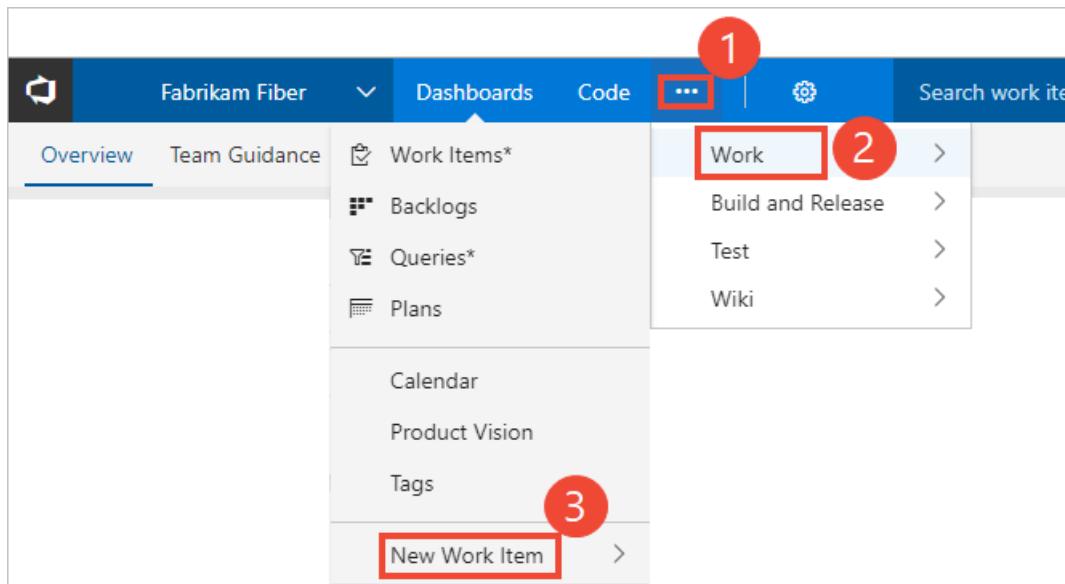
If you don't see the team or team project you want, click the  VSTS icon to [browse all team projects and teams](#).

2. Click **Work>New Work Items** and choose the work item type you want. Here, we choose to create a **User Story**.



The screenshot shows the VSTS web interface. At the top, there's a navigation bar with links for Dashboards, Code, Work, Build & Release, Test, and Wiki\*. Below the navigation bar, the main area displays the "Fabrikam Fiber" team project. The "Fabrikam Fiber" logo is at the top left, followed by the text "Tracking web, voice, and other app development". A message below says "Showing README.md in \$/Fabrikam Fiber A". On the right side, there's a sidebar titled "NEW WORK ITEM" with a list of work item types: Epic, Feature, Issue, Task, Test Case, and User Story. The "User Story" item is circled in red. At the bottom of the screen, there's a section for the "Fabrikam Fiber Voice team" with a brief description of its responsibilities.

If you don't see the **Work** hub, your screen size may be reduced. Click the three dots () , then click **Work**, **New Work Items**, and then choose the work item type you want.



3. Enter a title and then save the work item. Before you can change the State from its initial default, you must save it.

This screenshot shows a 'USER STORY 398' work item in Microsoft Azure DevOps. The title is 'Cancel order form'. The 'State' is set to 'New'. The 'Area' and 'Iteration' both point to 'Fabrikam Fiber'. The 'Reason' is 'New'. The 'Priority' is '2'. The 'Risk' is listed as 'Development hasn't started on this item.' The 'Classification' section includes 'Value area' and 'Business'. The 'Acceptance Criteria' and 'Discussion' sections are present. The 'Save & Close' button is highlighted with a red box and a red circle with the number '3'.

That's it!

Create as many work items as you need of the type you need to track the work you want to manage.

#### NOTE

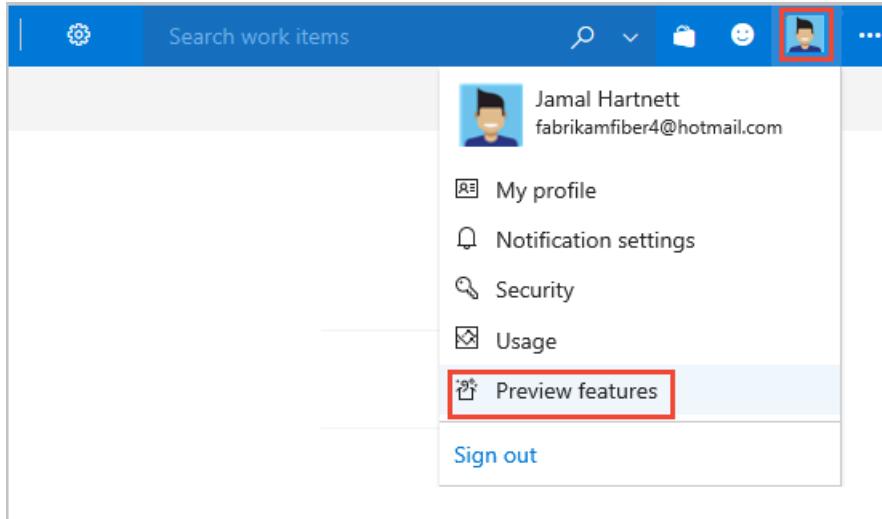
Depending on the process chosen when the team project was created—[Scrum](#), [Agile](#), or [CMMI](#)—the types of work items you can create will differ. For example, backlog items may be called product backlog items (Scrum), user stories (Agile), or requirements (CMMI). All three are similar: they describe the customer value to deliver and the work to be performed.

For an overview of all three processes, see [Choose a process](#).

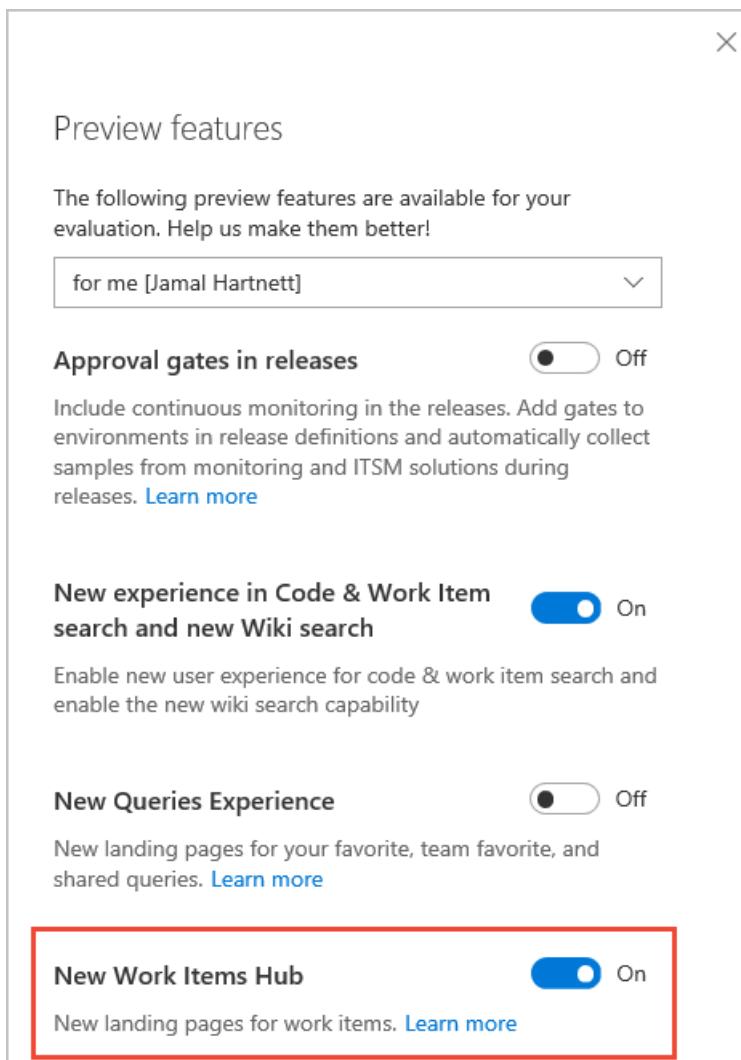
## View the work items you've just created

To view work items you just created, open the **Work Items** page. Since this feature is in preview, you'll need to turn it on.

1. From your user account menu, click the **Preview features** option.



2. Click the slider for the **New Work Items Hub** feature so that the slider is on.



3. Now, click the **Work** hub, the **Work Items** page, and then **My activity**. This page lists all work items you've recently viewed, created, or modified.

The screenshot shows the Microsoft Azure DevOps interface for the 'Work Items' section under the 'Fabrikam Fiber' project. The 'My activity' tab is currently selected, as indicated by a red box around its title. Other tabs available include 'Work Items\*', 'Backlogs', 'Queries\*', 'Plans', 'Dashboards', 'Code', 'Work', 'Build & Release', 'Test', and 'Wiki\*'. Below the tabs, there are several filter options: 'Assigned to me', 'Following', 'Mentioned', 'Recently created', 'Unassigned', and 'New'. A search bar at the top displays the query '529 Cancel order form'. On the right side, there is a button labeled '+ New Work Item'.

4. To view any work item listed, click the title.

For more information on using the Work Items page, see [View and add work items](#).

## Try this next

[Add & run manual tests](#)

To quickly add backlog items, such as user stories or requirements, see these topics:

[Create your backlog Kanban quickstart](#)

Or, [learn more about planning and tracking work](#).

# Add, run, and update inline tests

6/1/2018 • 2 min to read • [Edit Online](#)

## VSTS

A quick and easy way to start manual testing is to add the test to the user story or bug you want to test. From the Kanban board, you can quickly define inline tests, or a set of manual tests, for a backlog item. Not only can you add tests, you can run them and update their status. If you're new to working with the Kanban board, see [Kanban quickstart](#).

Tests you create from the Kanban board are automatically linked to the user story or backlog item.

## Open your Kanban board

1. From your web browser, open the team project for your VSTS account and click the **Work** hub. If you don't have a team project, [create one now](#). If you haven't been added as a team member, [get invited now](#).

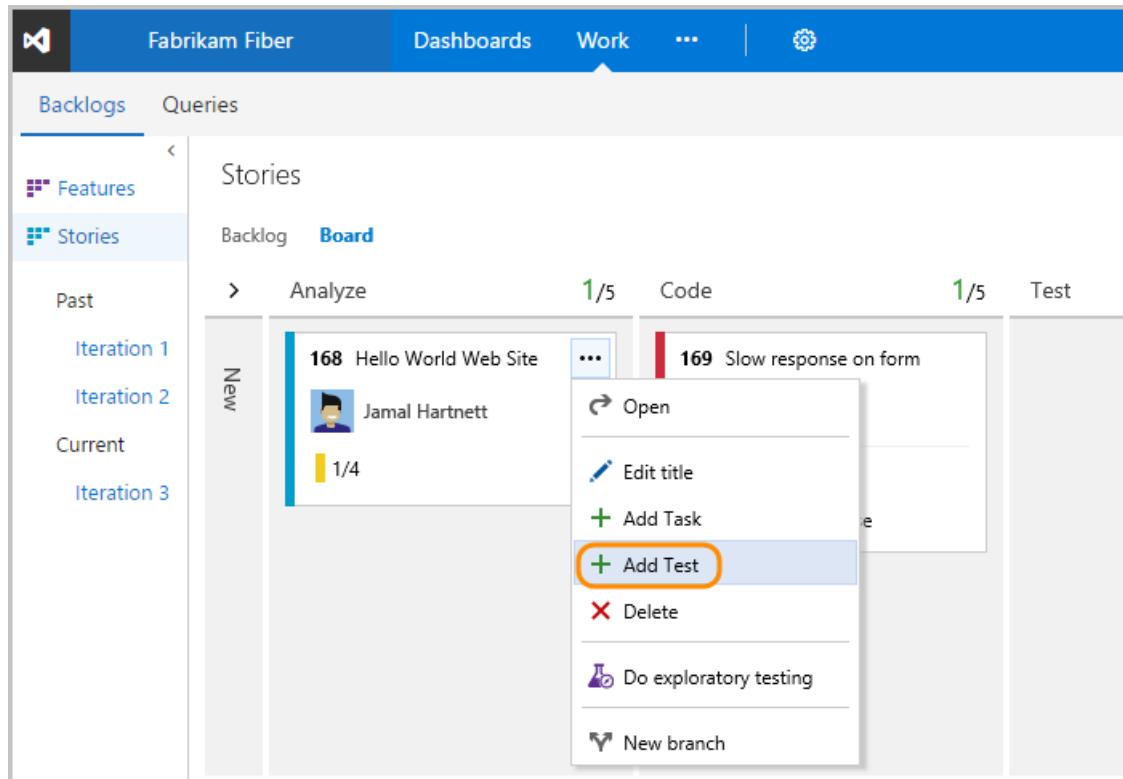
The URL follows this pattern: `https://{account name}.visualstudio.com/{project name}/_backlogs`

If you don't see the team or team project you want, click the  VSTS icon to [browse all team projects and teams](#).

2. Click **Board** to open the Kanban board.

## Add tests

1. To start adding tests, open the menu for the work item.



Adding inline tests is the same as adding test cases to a test suite. A default test plan and test suite are automatically created under which the manual test cases are grouped.

For example, a test suite is created for each user story, and all inline tests are added to that suite. Below, user story 152 is highlighted which has three manual tests defined with IDs of 153, 155, and 161.

The screenshot shows the Microsoft Test Plan interface. At the top, there are tabs for HOME, CODE, WORK, BUILD, and TEST. The TEST tab is selected. Below it, there's a sub-menu with 'Test plan' (which is underlined in blue), Parameters, Runs, and Machines\*. On the left, there's a navigation pane with a tree view. The root node is 'FabrikamFiber: FabrikamFiber Team\_Stories\_FabrikamFiber (Id: 157)'. Under it, '151 : Customer log in (2)' is collapsed. '152: Customer welcome page (3)' is expanded, and its title is highlighted with a light blue background. Underneath it, '169 : Slow response on form (1)' is collapsed. On the right, there's a main content area titled 'Test suite: 152: Customer welcome page'. It has two tabs: 'Tests' (which is selected) and 'Charts'. Under 'Tests', there are buttons for '+ New', 'Add existing', 'X', 'Import', and 'Refresh'. A table lists the tests:

| Outcome | ID  | Title                         |
|---------|-----|-------------------------------|
| Active  | 153 | Change colors on initial view |
| Active  | 155 | Change initial page size      |
| Active  | 161 | Log in with email             |

To learn more about test plans and test suites, see [Plan your tests](#).

2. If you have a number of tests to add, simply keep typing each title and click Enter.

This screenshot shows a detailed view of a test case for user story 152. The title is '152 Customer welcome page'. It includes a profile picture of Raisa Pokrovskaya and two progress bars, both at 0/3. Below that is a section for adding a new test, with a button '+ Add Test'. A list of three tests is shown, each preceded by a blue circular icon:

- Change colors on initial view
- Change initial page size
- Log in with email

To add details to the test case, open it. You can click the title, double-click the inline item, or open the context menu and choose Open.

[TEST CASE 153](#)

153 Change colors on initial view

Design Raisa Pokrovskaya 0

Area Iteration  
Fabrikam Fiber Fabrikam Fiber\Iteration 1

Add Tag Steps Summary Associated Automation (1)

**Steps**

Action Click or type here to add a step

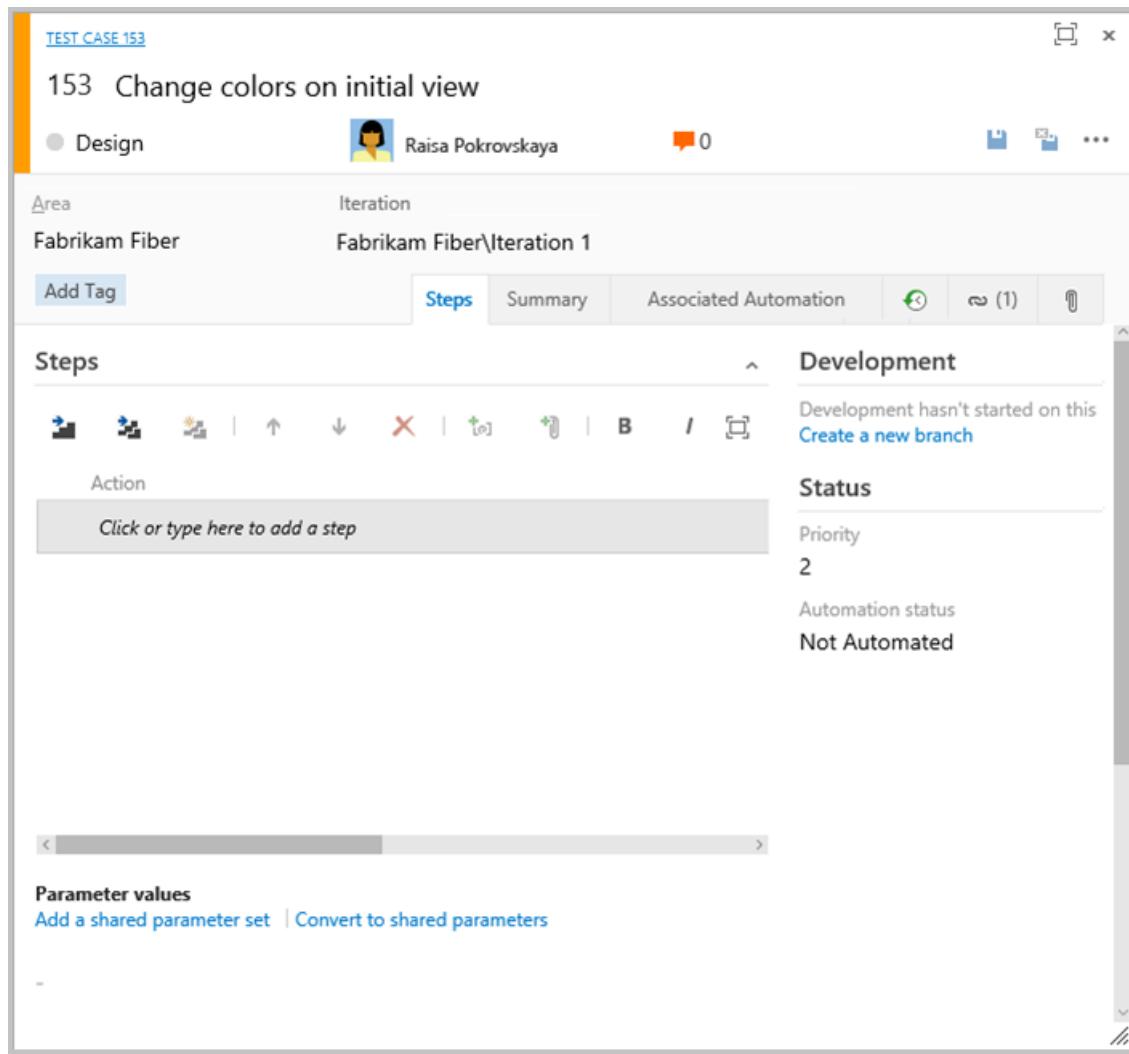
**Development**

Development hasn't started on this [Create a new branch](#)

**Status**

Priority 2  
Automation status Not Automated

**Parameter values**  
[Add a shared parameter set](#) | [Convert to shared parameters](#)



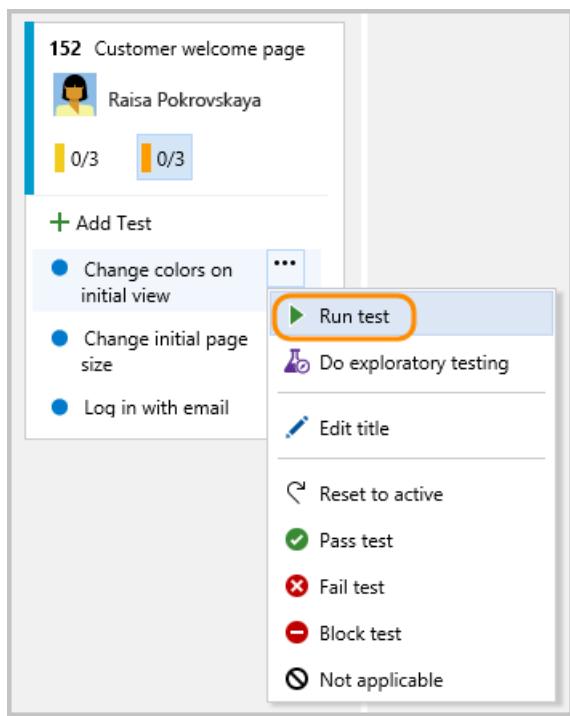
See [Create manual tests](#) to learn more about defining tests.

**IMPORTANT**

Prior to running the test, you must add details.

## Run a test

Run the test by selecting Run test from the actions menu for the inline test.



Microsoft Test Runner starts in a new browser instance. For details on running a test, see [Run manual tests](#).

## Update the status of a test

You can update the status of the test from the \*\*\* actions menu .

The screenshot shows two test cards. The first card on the left is for 'Customer log in' (Code 151) and the second card on the right is for 'Slow response on form' (Code 169). Both cards show a user profile and a progress bar. The 'Customer log in' card has a checklist with three items: 'Log in with email', 'Create new account', and 'Change initial page size'. The 'Slow response on form' card has a checklist with one item: 'Pass test' (highlighted with an orange circle). A context menu is open over the 'Slow response on form' card, listing 'Run test', 'Do exploratory testing', 'Edit title', 'Reset to active', 'Pass test' (highlighted with an orange circle), 'Fail test', 'Block test', and 'Not applicable'.

Updating the status of tests enable you to [track test results](#).

## Expand or collapse inline tests

Upon first opening the Kanban board, you'll see an unexpanded view of checklists.

|     | Analyze                                                   | Code                                          | Test                                                  |     |
|-----|-----------------------------------------------------------|-----------------------------------------------|-------------------------------------------------------|-----|
| New | 168 Hello World Web Site<br>Jamal Hartnett<br>1/4         | 151 Customer log in<br>Christie Church<br>0/3 | 169 Slow response on form<br>Raisa Pokrovskaya<br>0/1 | 1/5 |
|     | 152 Customer welcome page<br>Raisa Pokrovskaya<br>0/3 0/3 |                                               |                                                       |     |

Simply click the inline test summary to expand a collapsed set of tests. Click the same summary to collapse an expanded list.

| Code                                          | 1/5                                                                                                                                          |
|-----------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------|
| 151 Customer log in<br>Christie Church<br>0/3 | 151 Customer log in<br>Christie Church<br>0/3<br><br>+ Add Test<br>● Log in with email<br>● Create new account<br>● Change initial page size |

## Try this next

Use inline tests for lightweight traceability and to manage manual tests for user stories or other backlog items that they support.

[Learn more about test case management Kanban quickstart](#)

To initiate web-based exploratory testing for a user story, you need to install the Exploratory testing , see [Exploratory test your web app directly in your browser](#).

# Install free extensions for VSTS

4/27/2018 • 1 min to read • [Edit Online](#)

## VSTS

To add new features and capabilities to your Visual Studio Team Services (VSTS) account, install extensions from the [Visual Studio Marketplace](#). You can install [free](#), [preview](#), or [paid](#) extensions, this quickstart goes covers installing a free extension.

### TIP

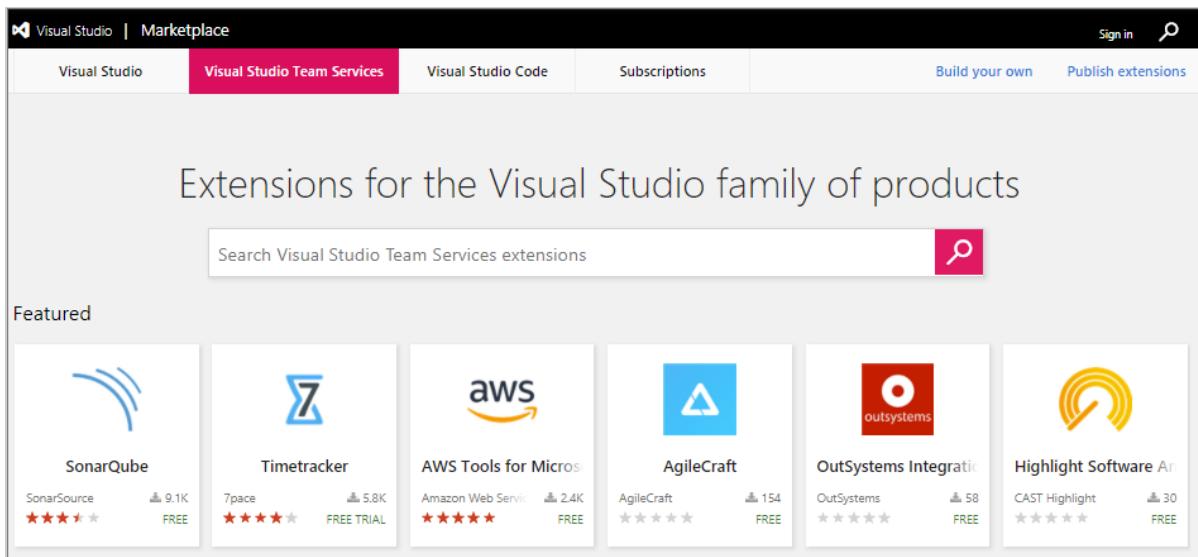
To learn about building your own VSTS extensions, see [developing](#) and [publishing](#) extensions.

## What do I need to install an extension?

- Only VSTS [project collection administrators or account owners](#) can install extensions. If you don't have permissions, you can [request extensions](#) instead.
- Private extensions must be shared with your VSTS account to be installed. Check out the [publishing documentation](#) for information on how to share private extensions.

## Install the extension

- Sign in to the [Visual Studio Marketplace > VSTS](#).



- Find and select the extension that you want to install. For this Quickstart, you can choose [Code Search](#).
- Click *Get it free*.

**Code Search**  
Microsoft | 61,097 installs | ★★★★★ (63) | Free  
Code Search provides fast, flexible and accurate search across all your code  
**Get it free**

- Now you're on the acquisition page, select your VSTS account and click *Install* to install this extension.

Code Search

Select a Visual Studio Team Services account

FabrikamDev

Install

- Why don't I see any VSTS accounts?
- Why can't I install this extension?

- Your extension is now installed! You can now go to your VSTS account to use your extension. Also, tell your team about this extension, so they can start using its capabilities too.

Code Search

You are all set!

Proceed to account   Go to Marketplace

Additionally:  
[Learn more about Code Search](#)

## Next Steps

You can find answers to common problems on the [troubleshooting](#) page.

# Quickstart: View permissions for yourself or others

5/29/2018 • 2 min to read • [Edit Online](#)

[VSTS](#) | [TFS 2018](#) | [TFS 2017](#) | [TFS 2015](#) | [TFS 2013](#)

You can view your permissions or those defined for another which have been set in Visual Studio Team Services (VSTS) or Team Foundation Server (TFS). That way, if you don't have the permission to access a feature or function, you can request it from the right resource.

Permissions are set at the collection, team project, and object level as described in [About permissions and groups](#). So to view the permissions you have, you need to open the permissions at the object, project, or collection level.

## Prerequisites

- You must have a team project to connect to. If you don't have a team project yet, create one in [VSTS](#) or set one up in an [on-premises TFS](#).
- You must be a member of the Project Valid Users Group or Project Collection Valid Users Group to view permissions.

### NOTE

This topic shows how to view permissions assigned to a user as the project-level. However, the steps are similar whether you work from the Security dialog of an object or at the account/collection level.

## View project-level permissions

1. Open the admin context from the user/team project context. Click the gear settings icon, and click the **Security** tab.
2. Begin typing the name into the *Filter users and groups* box. The system will automatically show the names that begin with the characters you type.

The screenshot shows the VSTS Admin interface for the 'Fabrikam Fiber' collection. The 'Customer Service' team project is selected. In the 'Security' tab, a search bar has 'Jamal' typed into it, resulting in a list of users: 'Jamal Hartnett' (fabrikamfiber4@hotmail.com). This list is highlighted with a red box. To the right, the 'Permissions' section displays various project-level permissions for the user, such as 'Create tag definition' (Allow (inherited)), 'Delete and restore work items' (Not set), and 'Edit project-level information' (Not set).

| Permission                     | Status            |
|--------------------------------|-------------------|
| Create tag definition          | Allow (inherited) |
| Create test runs               | Allow (inherited) |
| Delete and restore work items  | Not set           |
| Delete team project            | Not set           |
| Delete test runs               | Allow (inherited) |
| Edit project-level information | Not set           |
| Manage project properties      | Not set           |

3. Click the name you want. The project-level permissions you have set are based on the groups you belong to or those specifically set for your account.

The screenshot shows the 'Security' tab for the user 'Jamal'. The 'Member of' section is highlighted with a red box. It lists several security groups that the user belongs to:

| Display Name                      | Username Or Scope  | Action |
|-----------------------------------|--------------------|--------|
| Fabrikam Fiber A Team             | [Fabrikam Fiber A] | Remove |
| Fiber Suite                       | [Fabrikam Fiber A] |        |
| Customer Service                  | [Fabrikam Fiber]   |        |
| Fabrikam Fiber Team               | [Fabrikam Fiber]   |        |
| Web                               | [Fabrikam Fiber]   |        |
| Project Collection Administrators | [kelliott]         |        |

4. Click **Member of** to see which security groups the user belongs to.

Here we see that the user account, Jamal Hartnett, belongs to several teams as well as the Project Collection Administrators group.

The screenshot shows the 'Security' tab for the user 'Jamal'. The 'Member of' section is highlighted with a red box. It lists several security groups that the user belongs to:

| Display Name                      | Username Or Scope  | Action |
|-----------------------------------|--------------------|--------|
| Fabrikam Fiber A Team             | [Fabrikam Fiber A] | Remove |
| Fiber Suite                       | [Fabrikam Fiber A] |        |
| Customer Service                  | [Fabrikam Fiber]   |        |
| Fabrikam Fiber Team               | [Fabrikam Fiber]   |        |
| Web                               | [Fabrikam Fiber]   |        |
| Project Collection Administrators | [kelliott]         |        |

## View collection-level permissions

1. Open the admin context from the account context. Click the gear settings icon, and click the **Security** tab.
2. Follow steps 2 through 4 in the procedure outlined previously for view project-level permissions.

## View object-level permissions

There are a number of objects that maintain permissions. You access them from the context menu of the object.

From the web portal, open the Security dialog for the object whose permissions you want to set. For specific instructions, see these topics:

| WIKI & DASHBOARD PERMISSIONS                                                             | DEVOPS PERMISSIONS                                                                                                                                                                            | AGILE/WORK TRACKING PERMISSIONS                                                                                                            |
|------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------|
| <ul style="list-style-type: none"><li>- README &amp; Wiki</li><li>- Dashboards</li></ul> | <ul style="list-style-type: none"><li>- Git branch</li><li>- Git repository</li><li>- TFVC</li><li>- Builds</li><li>- Release definition security</li><li>- Approvals and approvers</li></ul> | <ul style="list-style-type: none"><li>- Area and iteration paths</li><li>- Work item query and folder</li><li>- Plan permissions</li></ul> |

## Next steps

[Look up the account owner or a project administrator](#)

# Set personal or team favorites

4/13/2018 • 2 min to read • [Edit Online](#)

## VSTS | TFS 2017.1

As your code base, work tracking efforts, developer operations, and organization grows, you'll want to be able to quickly navigate to those objects of interest to you and your team. Setting favorites allows you to do just that.

This topic shows you how to:

- Favorite a repository, build definition, shared query, delivery plan, or test plan
- Favorite a team or team project
- View your personal favorites
- Unfavorite an object

### NOTE

Changes based on preview features.

You can set favorites for yourself or your team. You can set them for these objects, from the hub or page listed:

- Code repository -> **Code>Branches** (personal favorite only)
- Build definition -> **Build & Release>Queries**
- Queries -> **Work>Queries**
- Delivery plans -> **Work>Plans** (personal favorite only)
- Test Plans -> **Test>Test Plans** (personal favorite only)
- Team project or team -> **Account>Projects** (personal favorite only)

Delivery Plans requires installation of the [Delivery Plans extension](#).

## Favorite a code repository

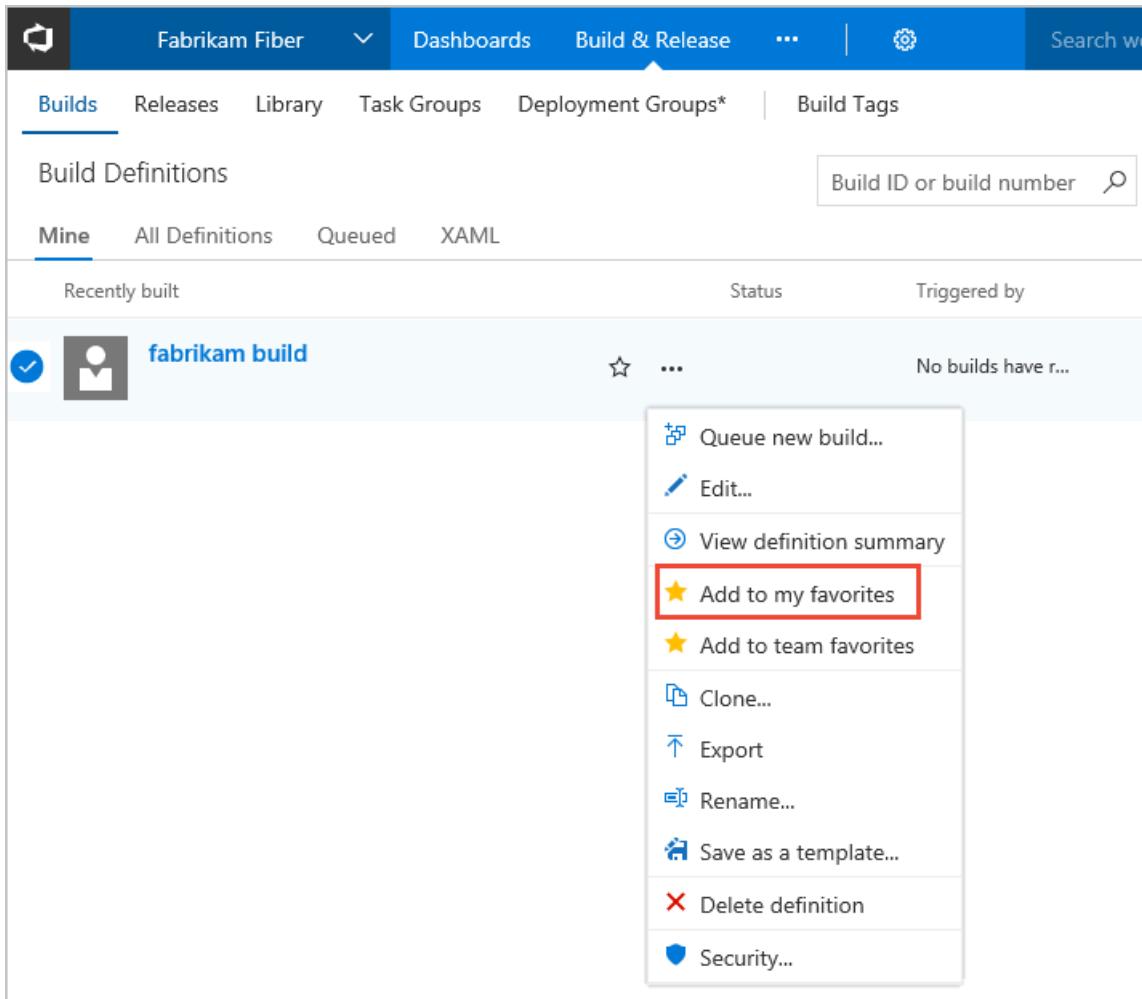
From your web browser, open the **Code** hub, open the repository menu and click the star icon next to the repository you want to favorite.

The screenshot shows the VSTS Code hub interface. At the top, there's a navigation bar with links for Dashboards, Code, Work, and more. Below the navigation bar is a search bar and a repository selector for 'Fabrikam Fiber'. The main area is divided into two sections: a left sidebar and a right content area. The sidebar contains tabs for 'Favorites' and 'All repositories', with 'All repositories' currently selected. It also includes a 'Filter repositories' input field and a list of repositories: '\$/Fabrikam Fiber', 'Fabrikam Fiber' (which has a yellow star icon highlighted with a red box), 'Testing 1 2 3', 'New repository', 'Import repository', and 'Manage repositories'. The right content area shows the contents of the 'Fabrikam Fiber' repository, including files like 'page-1.md', 'page-2.md', 'page-3.md', and 'README.md' with their respective last change dates and commit hash IDs.

| Name      | Last change | Commits  |
|-----------|-------------|----------|
| page-1.md | 10/15/2015  | 3458a6c7 |
| page-2.md | 10/15/2015  | 01a447ca |
| page-3.md | 9/21/2016   | 68385e28 |
| README.md | 5/19/2017   | fb9177d8 |

## Favorite a build definition

From your web browser, open the **Build-Release** hub, **Builds>All Definitions** page. Next, open the context menu of the build definition you want to favorite, and then select **Add to my favorites** or **Add to team favorites**.



## Favorite a shared query

From your web browser, open the **Work** hub, Queries page. Next, open the context menu of the shared query you want to favorite, and then select **Add to my favorites** or **Add to team favorites**.

The screenshot shows the 'Queries' page in the 'Fabrikam Fiber' project. A context menu is open over a work item, specifically item 358, which is a 'Product Backlog Item'. The menu includes options like 'Manage Tags', 'Run', 'Edit', 'Delete', 'Rename', 'Add to my favorites', 'Add to team favorites', 'Security...', and 'Add to dashboard'. The 'Add to my favorites' option is highlighted with a yellow star icon.

| ID  | Work Item Type       |
|-----|----------------------|
| 358 | Product Backlog Item |
| 360 | Product Backlog Item |
| 361 | Product Backlog Item |
| 362 | Product Backlog Item |
| 363 | Product Backlog Item |
| 364 | Bug                  |

## Favorite a Delivery Plan

To mark a Delivery Plan as a favorite, open the **Work>Plans** page and click the star icon next to the Delivery Plan.

## Favorite a test plan

To mark a test plan as a favorite, open the **Test>Test Plans** page and click the star icon next to a test plan from the menu that shows All test plans.

## Favorite a team or team project

1. Open your account page by clicking the project icon as shown from anywhere in the web portal.

The screenshot shows the 'Overview' page in the 'Fabrikam Fiber' project. The 'Project' icon in the top left corner is highlighted with a red box. The page displays basic project information and navigation links.

2. You'll see something similar to the following welcome page.

Welcome back, Jamal Hartnett

Projects   Favorites   Work items   Pull requests   ...

Filter projects and teams

New Project

Recent

- Fabrikam Fiber
- Fabrikam Fiber / Web

- From the **Projects** page, click the star icon next to the team or team project you want to favorite.

## View personal favorites through your account hub

From your account hub, open the **Favorites** page to quickly access any object or item that you've marked as a favorite.

Favorites

Filter favorites

Queries

| Object            | Team           | Location                             | Star |
|-------------------|----------------|--------------------------------------|------|
| Bug Triage        | Fabrikam Fiber | .../Shared Queries/Current Iteration | ★    |
| My Bugs           | Contoso        | Shared Queries                       | ★    |
| Open User Stories | Contoso        | .../Shared Queries/Current Iteration | ★    |
| Product Planning  | Fabrikam Fiber | Shared Queries                       | ★    |
| Product Planning  | Contoso        | Shared Queries                       | ★    |

## Unfavorite an object

You can unfavorite an object from your account hub by going to your account hub **Favorites** page and clicking the star icon of a currently favorited object.

Similarly, you can unfavorite an object from the same page where you favorited it.

## Try this next

[Work effectively from the account home page](#) or [Manage personal notifications](#)

# Follow a work item or pull request

5/31/2018 • 2 min to read • [Edit Online](#)

VSTS | TFS 2018 | TFS 2017

## NOTE

The Follow a work item feature is available from TFS 2017 and later versions. The Follow a pull request feature is available from TFS 2017.1 and later versions. To update your on-premises TFS, visit the [Visual Studio downloads page for Team Foundation Server](#).

To get notified of changes made to a work item or a pull request, you can elect to follow them.

This topic shows you how to:

- Follow a work item
- Follow a pull request
- Manage work items that you're following

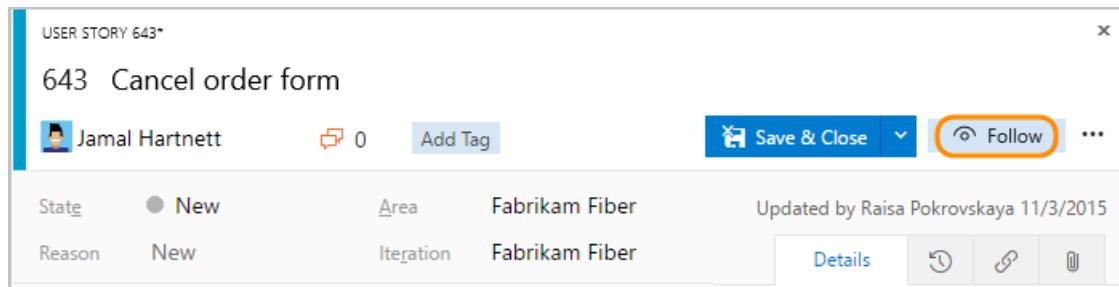
You must configure an [SMTP sever](#) in order for team members to receive notifications.

## NOTE

The Follow a pull request feature is available from TFS 2017.1 and later versions. To update your on-premises TFS, visit the [Visual Studio downloads page for Team Foundation Server](#).

## Follow a work item

When you want to track the progress of a single work item, click the  [Follow](#) icon. This signals the system to notify you when changes are made to the work item.



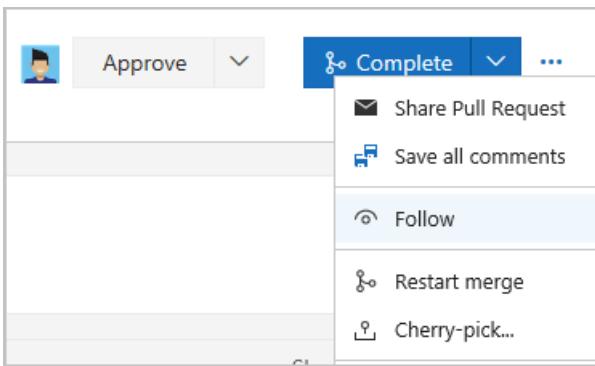
You'll only receive notifications when other members of your team modifies the work item, such as adding to the discussion, changing a field value, or adding an attachment.

Notifications are sent to your preferred email address, which [you can change from your account preferences](#).

To stop following changes, click the  [Following](#) icon.

## Follow a pull request

To track the progress of a single pull request, click the  [Follow](#) option from the context menu. This signals the system to notify you when changes are made to the PR.



You'll only receive notifications when other members of your team modifies the PR, such as adding to the discussion or adding an attachment.

Notifications are sent to your preferred email address, which [you can change from your account preferences](#).

To stop following changes, open the PR context menu and click the icon.

## Manage work items that you're following

You can review and manage all the work items you've selected to follow from the Followed work items page. You access this page from the **Work>Queries** page.

The screenshot shows the 'Followed work items' page in Microsoft Team Services. The left sidebar has 'Backlogs' and 'Queries' sections, with 'Followed work items' highlighted and circled in orange. The main area is titled 'Followed work items' and contains a 'Results' table with three items:

| ID | Work Item Type | Title                 | State    |
|----|----------------|-----------------------|----------|
| 3  | Bug            | Slow response on form | Resolved |
| 2  | User Story     | Cancel order form     | Active   |
| 1  | User Story     | Welcome page          | Active   |

From this view, you can view all items you're following across all team projects within the account. Also, you can perform similar actions supported with a query results view, such as:

- Refresh the view
- Add or remove visible columns
- Sort the order of specific columns
- Filter results by text or tags
- Set work item pane
- Enter full screen mode.

However, this view isn't based on a query so you can't modify the parameters of the view.

You can also view and manage work that you're following from the Account home pages. To learn more, see [Work effectively from your account hub](#).

Projects Favorites Work items Pull requests ... | 🔍

## My work items

Assigned to me **Following** My activity

Filter your work items... ✖

|                                                                                                                                           |               |                                                                                     |
|-------------------------------------------------------------------------------------------------------------------------------------------|---------------|-------------------------------------------------------------------------------------|
|  140 Convert legacy OData service interfaces to Rest API | ● In Progress |  |
|  104 Create model report                                 | ● In Progress |  |
|  580 Migrate legacy code to portable frameworks          | ● In Progress |  |
|  621 Interim save on long form                           | ● Completed   |  |
|  665 Check issues with permissions                       | ● Resolved    |  |

## Related articles

- [Manage personal notifications](#)
- [Set team notifications](#)
- [Set personal or team alerts](#)
- [View and update work items via the mobile work item form](#)

**Q: Can I add someone else to follow a work item or PR?**

**A:** You can't add another team member to follow a work item or pull request at this time. You can subscribe them to get notified based on select criteria, such as when a work item is created or modified, or a pull request is created. For details, see [Manage team notifications](#).

# Get started as a Stakeholder

5/31/2018 • 8 min to read • [Edit Online](#)

**VSTS | TFS 2018 | TFS 2017 | TFS 2015 | TFS 2013**

With Stakeholder access, you can add and modify work items, approve releases, and view dashboards. You can check project status and provide direction, feedback, feature ideas, and business alignment to a team.

Use this topic to learn:

- How to sign-in to an account
- How to add a work item
- How to view the product backlog and add new work to it
- How to view work in progress on the Kanban board
- Find work assigned to you, or query for other work items
- Understand the set of features you have access to

## First time signing in

1. Click the link provided in the email invitation you should have received. Or, open a browser window and enter the URL for the web portal.

`http://AccountName.visualstudio.com/DefaultCollection/ProjectName`

`http://ServerName:8080/tfs/DefaultCollection/ProjectName`

For example, to connect to the server named *FabrikamPrime* and project named *Contoso*, type

`http://FabrikamPrime:8080/tfs/DefaultCollection/Contoso`.

2. Enter your credentials. If you aren't able to sign in, ask the account owner or project administrator to add you as a member of the team project with Stakeholder access.

## Add a work item

You might see different work item types in your view based on the process selected for your team project: [Scrum](#), [Agile](#), or [CMMI](#).

### TIP

Use the [Work Items page](#) which supports personalized views of work items assigned to you or ones you've recently viewed or updated. Also, you can add work items from this page.

From the Work hub, choose a work item, for example User Story, from the New Work Item list of options. Click the  pin icon to have it show up within the Work hub drop down menu.

Fabrikam Fiber    Dashboards    Code    Work    Build & Release    Test    Wiki\*

# Fabrikam Fiber ☆

Tracking web, voice, and other app development

Showing README.md in \$/Fabrikam Fiber A

## Fabrikam Fiber Voice team

The Voice team supports all voice services, including VOIP, voicemail, instant messaging, and the frameworks, security, authentication, and file services associated with these services.

New Work Item >

Bug

**NEW WORK ITEM**

Epic

Feature

Issue

Task

Test Case

User Story

Enter a title and then save the work item. Before you can change the State from its initial default, you must save it. For descriptions of each field, see [Work item field index](#).

**USER STORY 398**

Cancel order form

Jamal Hartnett 0 Add Tag

Save & Close

Follow ...

State: New    Area: Fabrikam Fiber    Reason: New    Iteration: Fabrikam Fiber    Updated by Raisa Pokrovskaya 11/3/2015

Description

Planning

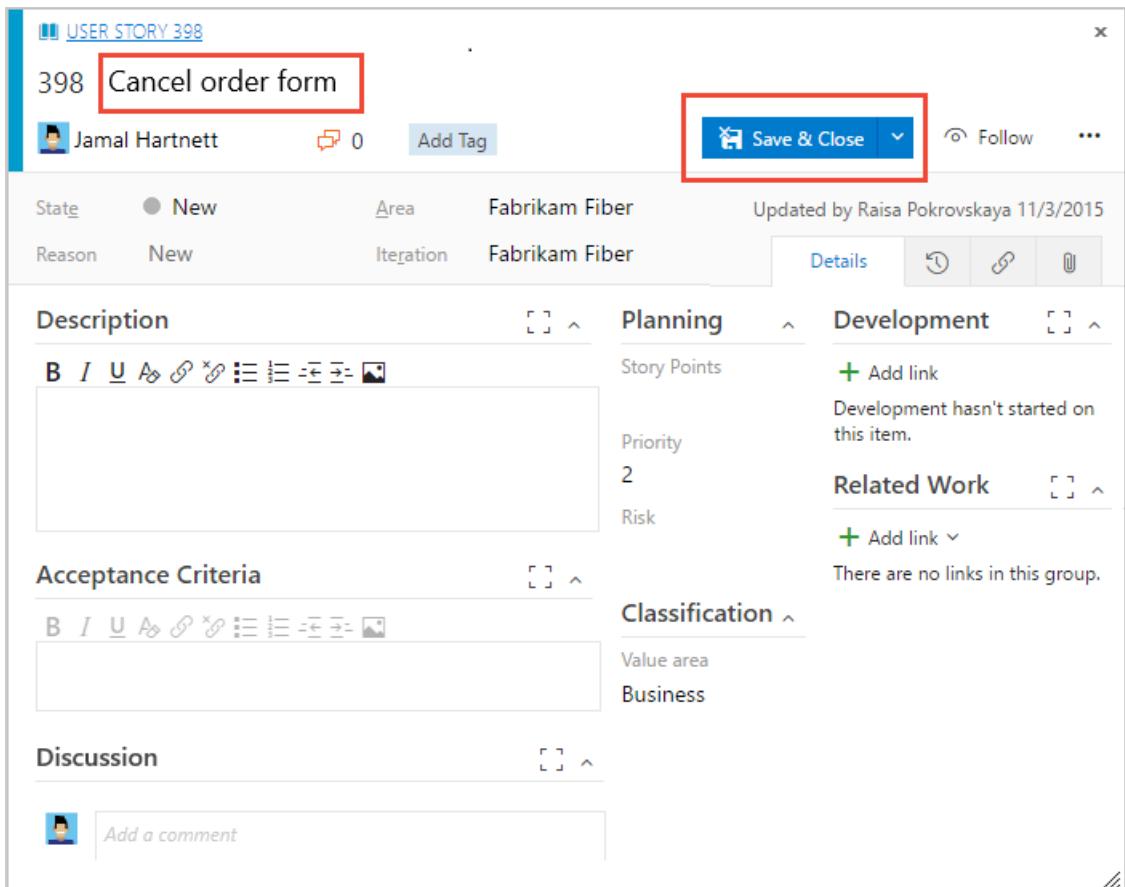
Development

Acceptance Criteria

Classification

Discussion

Add a comment



#### NOTE

A caution icon on a tab indicates values that violate validation rules. You must correct information on that tab in order to save the work item.

From the Queries page, choose a work item from the New drop down menu.

The screenshot shows the 'Queries' tab selected in the top navigation bar. On the left, there's a sidebar with a 'New' button, a 'New query' button, and a list of work item types: Bug, Epic, Feature, Issue, Task, Test Case, and User Story. The 'User Story' option is highlighted with an orange border. The main area is titled 'Assigned to me' and shows a table of results. The columns are 'ID', 'Work Item...', and 'Title'. The first row is selected and shows details: ID 466, Work Item... Task, Title Develop standards guidelines. Other rows include ID 346, Work Item... User Story, Title Add animated emoticons; and ID 512, Work Item... Task, Title Welcome screen.

Enter a title and then save the work item. Before you can change the State from its initial default, you must save it.

You can [add existing tags to any work item to support filter backlog and queries](#).

Work items you add are automatically scoped to your [team's area and iteration paths](#). To change the team context, see [Switch team project or team focus](#).

#### NOTE

Depending on the process chosen when the team project was created—[Scrum](#), [Agile](#), or [CMMI](#)—the types of work items you can create will differ. For example, backlog items may be called product backlog items (Scrum), user stories (Agile), or requirements (CMMI). All three are similar: they describe the customer value to deliver and the work to be performed.

For an overview of all three processes, see [Choose a process](#).

## Check the backlog or add new work

From your web browser, open your product backlog from the **Work** hub, **Backlogs** page. Work appears in the backlog in priority order.

The screenshot shows the 'Work' hub with the 'Backlogs' page selected. The top navigation bar includes links for 'Fabrikam Fiber', 'Dashboards', 'Code', 'Work' (selected), 'Build & Release', 'Test', and a gear icon. Below the navigation is a search bar with placeholder text 'Briefly describe your project...'. A dropdown menu is open on the right side, showing options: 'Backlogs' (highlighted with an orange border), 'Queries', 'New Work Item', and 'Bug'.

Visual Studio Team Foundation Server 2015 / Fabrikam

HOME CODE **WORK** BUILD TEST RELEASE

**Backlogs** Queries

**Features**

**Backlog items**

**Current**

Sprint 1

**Future**

Sprint 2

Sprint 3

Backlog items

Backlog Board Forecast Off Mapping On Parents Hide In progress items Show

New  Create query Column options  Filter

Type Product Backlog Item

Title  Add

#### TIP

If you don't see the team or team project you want, click the project icon to [browse all team projects and teams](#).

To view or edit a work item, select it and choose Enter.

To add a new item, select the type and then name it. Your items are added to the bottom of the list.

Backlog items

Backlog Board

New  Create query Column options

Type Product Backlog Item

Title Cancel order form

| Order | State       | Effort | Title                               | Tags       |
|-------|-------------|--------|-------------------------------------|------------|
| 1     | ● Committed | 8      | >  Slow response on welcome page    | Web        |
| 2     | ● Committed | 5      | >  Secure sign-in                   | Mobile Web |
| 3     | ● New       | 5      | >  Change the initial view          | Web        |
| 4     | ● New       | 3      | >  Welcome back page                |            |
| 5     | ● New       | 3      | >  Canadian addresses don't display | RC Review  |

## Check work in progress

To view the team's work status, click **Board** to open the Kanban board. Click the title of an item to open or edit it.

The screenshot shows the 'Backlog items' page in the 'Board' view. On the left, a sidebar lists 'Epics', 'Features', 'Backlog items' (selected), 'Past', 'Current' (with 'Sprint 4'), and 'Future' (with 'Sprint 5', 'Sprint 6'). The main area has tabs for 'Backlog' (selected) and 'Board'. Below are sections for 'Backlog' (3 items), 'Analyze' (3/10 items), and 'Develop' (4/6 items). Each item card includes a title, assignee, points, and labels like 'Phone', 'Service', 'Mobile', 'Web'. A chart at the top right shows progress over time.

## Find work assigned to you, or query for other work items

Click the **Work** hub, and then the **Work Items** page.

The screenshot shows the 'Work Items' page under the 'Work' hub. The top navigation bar includes 'Fabrikam Fiber', 'Dashboards', 'Code', 'Work' (selected), 'Build and Release', 'Test', and 'Wiki'. Below is a sub-navigation bar with 'Work Items' (selected), 'Backlogs', 'Queries\*', and 'Plans'. The main area is titled 'Work Items' and features a toolbar with 'Assigned to me' (selected), 'New Work Item', 'Open filtered view in Queries', 'Recycle Bin', and filtering options for 'Types', 'States', 'Area', and 'Tags'. A list of work items is shown, each with a title, ID, status, and area:

| Work Item                                | Status   | Area           |
|------------------------------------------|----------|----------------|
| 348 This is the new mobile experience!   | Resolved | Fabrikam Fiber |
| 512 Welcome screen                       | New      | Fabrikam Fiber |
| 498 Secure Sign-in                       | Active   | Fabrikam Fiber |
| 468 Customer account history             | New      | Fabrikam Fiber |
| 342 Integrate client app with IM clients | Resolved | Fabrikam Fiber |
| 486 Welcome back page                    | Closed   | Fabrikam Fiber |

Choose **Assigned to me** from the drop-down menu, you can focus on relevant items inside a team project using one of the seven pivots as described next. Additionally, you can filter and sort each pivot view. For details, see [View and add work items using the Work Items page](#).

## Work Items

Assigned to me ▾ | + New Work Item ▾ | Open in Queries | Recycle Bin

| Assigned to me     | Types                                | States        |
|--------------------|--------------------------------------|---------------|
| Following          |                                      |               |
| Mentioned          | <input type="button" value="Clear"/> |               |
| My activity        |                                      |               |
| Recently updated   | with permissions                     | • New         |
| Recently completed | hitecture changes                    | • New         |
| Recently created   |                                      | ● In Progress |

Fabrikam Fiber\Voice

Fabrikam Fiber\Voice

Fabrikam Fiber\Voice

Open the Queries page to see the list of work items assigned to you.

HOME WORK **Queries**

Backlogs **Queries**

New

Assigned to me

Assigned to me 2 work items (1 sel...)

Results Editor Work item pane Bottom...

Save query      Column options

| ID  | Work Item Type | Title                                    | State |
|-----|----------------|------------------------------------------|-------|
| 190 | Bug            | Simplify the search experience           | New   |
| 191 | Bug            | Log-in button needs to be more prominent | New   |

Bug 190: Simplify the search experience

Tags Add...

Simplify the search experience

Or, open any of the queries defined in the Shared Queries folder.

Visual Studio Team Foundation Server 2015 / Fabrikam Fiber

Christie Church

HOME WORK

Backlogs Queries

New |

Assigned to me  
Unsaved work items

▲ My favorites  
Drag queries here to add t...

▲ Team favorites  
Drag queries here to add t...

▷ My Queries

▲ Shared Queries

▲ Current Sprint

- Blocked Tasks
- Open Impediment
- Sprint Backlog
- Test Cases
- Unfinished work

▼ Work in Progress

Work in progress

Results Editor

Save query Column

| ID  | Work Item Type | State       | Remaining Work |
|-----|----------------|-------------|----------------|
| 164 | Task           | In Progress | 8              |
| 165 | Task           | In Progress | 8              |
| 166 | Task           | In Progress | 6              |
| 167 | Task           | In Progress | 2              |
| 168 | Task           | In Progress | 2              |
| 169 | Task           | In Progress | 1              |
| 170 | Task           | In Progress | 4              |
| 173 | Task           | In Progress | 2              |
| 174 | Task           | In Progress | 1.5            |
| 181 | Task           | In Progress | 1              |
| 186 | Task           | In Progress | 1              |

And, you can [create new queries or edit existing queries](#) and save them under My Queries folder.

Work in Progress

Results **Editor** Charts

Column options Copy query URL

Type of query  Flat list of work items Query across projects

Filters for top level work items

| ( And/Or                   | Field          | Operator | Value                  |
|----------------------------|----------------|----------|------------------------|
| + <input type="checkbox"/> | Iteration Path | Under    | Fabrikam\Sprint 1      |
| + <input type="checkbox"/> | Work Item Type | In Group | Microsoft.TaskCategory |
| + <input type="checkbox"/> | State          | =        | In Progress            |
| + Add new clause           |                |          |                        |

## Stakeholder feature access

The following features are available to Stakeholders from the web portal.

| WORK                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | ACCOUNT, DASHBOARDS, WIKI, AND NOTIFICATIONS                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <ul style="list-style-type: none"> <li>- <a href="#">View, create, and modify work items</a> <sup>1</sup></li> <li>- <a href="#">View, add, and modify items on backlogs</a> <sup>2</sup></li> <li>- <a href="#">View, and modify items on sprint backlogs</a> <sup>2</sup></li> <li>- <a href="#">View, and modify items on the task board</a> <sup>2, 3</sup></li> <li>- <a href="#">View, and modify items (Kanban)</a> <sup>2, 3</sup></li> <li>- <a href="#">Add tasks to the checklist (Kanban)</a> <sup>5, 3</sup></li> <li>- <a href="#">Follow changes made to work items</a></li> <li>- <a href="#">View the cumulative flow diagram</a></li> <li>- <a href="#">View, create, and save queries</a> <sup>4</sup></li> <li>- <a href="#">Submit, view, and change feedback responses</a></li> <li>- <a href="#">Change work item type</a></li> </ul> | <ul style="list-style-type: none"> <li>- <a href="#">Navigate to teams, team projects, and more</a></li> <li>- <a href="#">View project welcome pages</a> <sup>6</sup></li> <li>- <a href="#">View team dashboards</a></li> <li>- <a href="#">Manage personal notifications</a></li> <li>- <a href="#">Invite users and assign licenses</a> <sup>7</sup></li> <li>- <a href="#">View wiki pages</a> <sup>8</sup></li> </ul> <p><b>Build &amp; Release</b></p> <ul style="list-style-type: none"> <li>- <a href="#">View releases</a> <sup>5</sup></li> <li>- <a href="#">Approve a release</a></li> </ul> |

#### Notes:

1. Stakeholders can assign existing tags to work items, but not create new tags.
2. Stakeholders cannot change the backlog priority order (all items are added at the end of the backlog), assign items to an iteration using drag and drop, use the mapping pane or forecasting.
3. Stakeholders cannot move cards on the board to update status, set the values of fields shown on cards, or set or view team capacity.
4. Stakeholders can save queries under My Queries but cannot save under Shared Queries.
5. Stakeholders can only view and approve releases.
6. Stakeholders cannot view markdown README files defined for repositories.
7. In order to add users and assign licenses, stakeholders must be added to the [Project Collection Administrators](#) group. To learn more, see [Manage users and access](#).
8. Stakeholders have read-only permissions to wiki pages. These permissions can't be changed.

The following features are available to Stakeholders from the web portal.

| WORK                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | ACCOUNT, DASHBOARDS, WIKI, AND NOTIFICATIONS                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <ul style="list-style-type: none"> <li>- <a href="#">View, create, and modify work items</a> <sup>1</sup></li> <li>- <a href="#">View, add, and modify items on backlogs</a> <sup>2</sup></li> <li>- <a href="#">View, and modify items on sprint backlogs</a> <sup>2</sup></li> <li>- <a href="#">View, and modify items on the task board</a> <sup>2, 3</sup></li> <li>- <a href="#">View, and modify items (Kanban)</a> <sup>2, 3</sup></li> <li>- <a href="#">Add tasks to the checklist (Kanban)</a> <sup>5, 3</sup></li> <li>- <a href="#">Follow changes made to work items</a></li> <li>- <a href="#">View the cumulative flow diagram</a></li> <li>- <a href="#">View, create, and save queries</a> <sup>4</sup></li> <li>- <a href="#">Submit, view, and change feedback responses</a></li> <li>- <a href="#">Change work item type</a></li> </ul> | <ul style="list-style-type: none"> <li>- <a href="#">Navigate to teams, team projects, and more</a></li> <li>- <a href="#">View project welcome pages</a> <sup>6</sup></li> <li>- <a href="#">View team dashboards</a></li> <li>- <a href="#">Manage personal notifications</a></li> <li>- <a href="#">View wiki pages</a> <sup>7</sup></li> </ul> <p><b>Build &amp; Release</b></p> <ul style="list-style-type: none"> <li>- <a href="#">View releases</a> <sup>5</sup></li> <li>- <a href="#">Approve a release</a></li> </ul> |

#### Notes:

1. Stakeholders can assign existing tags to work items, but not create new tags.
2. Stakeholders cannot change the backlog priority order (all items are added at the end of the backlog), assign items to an iteration using drag and drop, use the mapping pane or forecasting.
3. Stakeholders cannot move cards on the board to update status, set the values of fields shown on cards, or set or view team capacity.
4. Stakeholders can save queries under My Queries but cannot save under Shared Queries.
5. Stakeholders can only view and approve releases.
6. Stakeholders cannot view markdown README files defined for repositories.
7. Stakeholders have read-only permissions to wiki pages. These permissions can't be changed.

The following features are available to Stakeholders from the web portal of the listed TFS or later version. Those not annotated are available from all versions. To determine your platform or TFS version, see [Platform and version support](#).

| WORK                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | ACCOUNT, DASHBOARDS, AND NOTIFICATIONS                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <ul style="list-style-type: none"><li>- <a href="#">View, create, and modify work items</a> <sup>1</sup></li><li>- <a href="#">View, add, and modify items on backlogs</a> <sup>2</sup></li><li>- <a href="#">View, and modify items on sprint backlogs</a> <sup>2</sup></li><li>- <a href="#">View, and modify items on the task board</a> <sup>2, 3</sup></li><li>- <a href="#">View, and modify items (Kanban)</a> <sup>2, 3</sup></li><li>- <a href="#">Add tasks to the checklist (Kanban)</a> <sup>2, 3</sup> (TFS 2015.1)</li><li>- <a href="#">Follow changes made to work items</a> (TFS 2017)</li><li>- <a href="#">View the cumulative flow diagram</a></li><li>- <a href="#">View, create, and save queries</a> <sup>4</sup></li><li>- <a href="#">Submit, view, and change feedback responses</a></li></ul> | <ul style="list-style-type: none"><li>- <a href="#">Navigate to teams, team projects, and more</a> (TFS 2017)</li><li>- <a href="#">View project welcome pages</a> <sup>6</sup> (TFS 2017)</li><li>- <a href="#">View team dashboards</a> (TFS 2015)</li><li>- <a href="#">Manage personal notifications</a> (TFS 2017)</li><li>- <a href="#">Set personal alerts for changes to work items</a> (TFS 2013, 2015)</li><li><br/></li><li>- <b>Build &amp; Release</b></li><li>- <a href="#">View releases</a> <sup>5</sup> (TFS 2015.2)</li><li>- <a href="#">Approve a release</a> <sup>5</sup> (TFS 2015.2)</li></ul> |

#### Notes:

1. Stakeholders can assign existing tags to work items, but not create new tags.
2. Stakeholders cannot change the backlog priority order (all items are added at the end of the backlog), assign items to an iteration using drag and drop, use the mapping pane or forecasting.
3. Stakeholders cannot move cards on the board to update status, set the values of fields shown on cards, or set or view team capacity.
4. Stakeholders can save queries under My Queries but cannot save under Shared Queries.
5. Stakeholders can only view and approve releases.
6. Stakeholders cannot view markdown README files defined for repositories.

If you choose a feature that's not available to you as a stakeholder, you'll receive an error message indicating that you have insufficient permissions when you try to complete the task.

#### Features stakeholders can't access

If you need access to the following features—which support the daily work of product owners, team leads, developers, testers, and project administrators—you need to be have Basic access:

- Change the priority of an item within a backlog
- Delete work items or move work items to another team project
- Create shared queries, view charts, and modify the home page
- View Delivery Plans (a Marketplace extension)
- Access the full set of features of the Code, Build, Test, and Release hubs
- Participate in team rooms, which capture interactive, detailed conversations about the project.

#### NOTE

Stakeholders can view administrative pages that support managing permissions, area and iteration paths, and more; however, for the most part, they can't modify any objects on these pages. The one exception is their ability to [manage users and access](#).

## Related articles

For a comparison chart of Stakeholder vs Basic access, see this [feature matrix](#). See also these quickstart guides:

- [Add work items](#)
- [Create your backlog](#)

- [Kanban quickstart](#)

If you want to provide a group of users access to provide feedback, then you don't need to give them Stakeholder access. Instead, simply [give reviewers permissions to provide feedback](#).

# Key concepts for working with VSTS and TFS

4/13/2018 • 6 min to read • [Edit Online](#)

## VSTS | TFS 2018 | TFS 2017 | TFS 2015

The set of platforms, services, and tools you have access to through Visual Studio Team Services (VSTS) can be overwhelming. Before you start using our products, you'll want to become familiar with how they fit together. You'll gain that understanding here as well as pointers to additional topics and tutorials to gain confidence in using our products to develop your software.

## Collaborative, integrated software development

VSTS, our hosted cloud offering, and Team Foundation Server (TFS), our on-premises platform, provide small teams as well as enterprises the services and tools to support developing and continuously deploying software. Even sole developers can use our platforms to manage their software and deploy their apps.

The three main areas that support software development include:

- Source control to manage versioning of software files
- Tracking tools to support planning and tracking work, code defects, issues and more
- DevOps tools to support building, testing, and continuous release of software apps.

### Source control

Source or version control systems allow developers to collaborate on code and track changes made to the code base. Source control is an essential tool for multi-developer projects.

Our systems support two types of source control: Git (distributed) or Team Foundation Version Control (TFVC), a centralized, client-server system. Both systems enable you to check-in files and organize files within folders, branches, and repositories.

With Git, each developer has a copy on their dev machine of the source repository including all branch and history information. Each developer works directly with his or her own local repository, and changes are shared between repositories as a separate step.

Developers can commit each set of changes and perform version control operations such as history and compare without a network connection. Branches are lightweight. When devs need to switch contexts, they create a private local branch. Devs can quickly switch from one branch to another to pivot among different variations of the codebase. Later, they can merge, publish, or dispose of the branch.

#### NOTE

Git in VSTS and TFS is standard Git. You can use Visual Studio with third-party Git services, and you can also use third-party Git clients with TFS.

With TFVC, devs have only one version of each file on their dev machines. Historical data is maintained only on the server. Branches are path-based and created on the server.

### Work tracking and Agile tools

Software development projects require ways to easily share information and track the status of work, tasks, issues, or code defects. In the past, you might have planned and track work using one or more tools such as Microsoft Excel, Microsoft Project, a bug tracking system, or a combination of tools. Now, many teams have

adopted Agile methods and practices to support planning and development.

Our systems provide several types of work items which you use to track features, requirements, user stories, tasks, bugs, and issues. Each work item is associated with a work item type and a set of fields that team members update as information becomes available and progress is made.

For planning purposes, you have access to several types of backlogs and boards to support the main Agile methods—Scrum, Kanban, or Scrumban.

- Product backlog, used to create and prioritize stories or requirements
- Kanban, used to visualize and manage the flow of work as it moves from inception to in progress to done
- Sprint backlogs, used to plan work to complete during a sprint cycle, a regular 2 to 4 week cadence teams use when implementing Scrum
- Task board, used during daily Scrum meetings to review work completed, remaining, or blocked

Project managers and developers share information by tracking work items on the backlogs and boards. Useful charts and dashboards round out the picture helping teams monitor progress and trends.

### **DevOps and continuous integration**

Rapid and reliable release of software comes from automating as many processes as possible. Our systems support build, test, and release automation.

- You can define builds to automatically run whenever a team member checks in code changes
- Your build definitions can include instructions to run tests after the build runs
- Release definitions support managing deployment of your software builds to staging or production environments



## **Scaling**

Both VSTS and TFS are enterprise-ready, supporting teams of any size, from tens to thousands. VSTS provides a scalable, reliable, and globally available hosted service. It is backed by a 99.9% SLA, monitored by our 24x7 operations team, and available in local data centers around the world.

You can scale the system in the following ways:

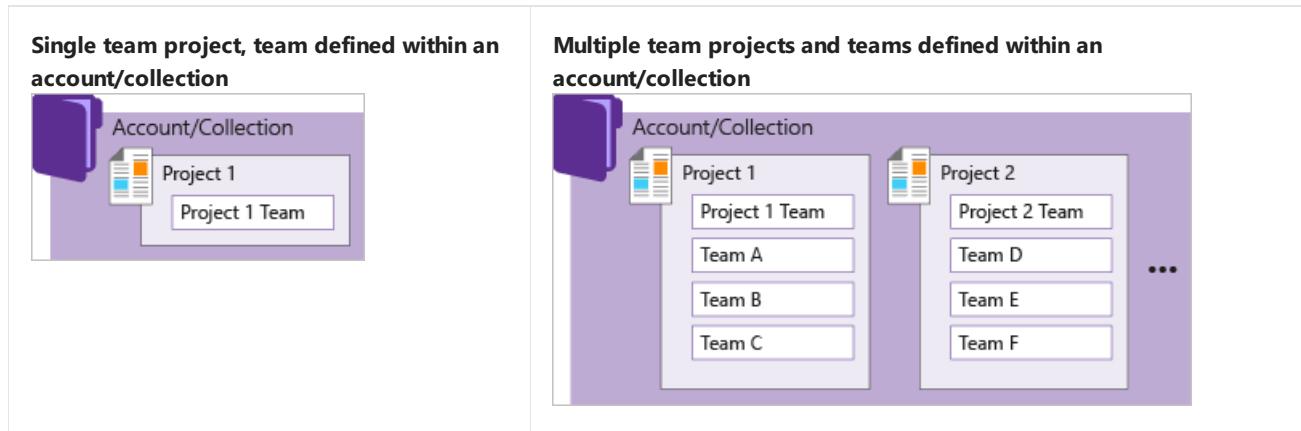
- Within a team project, you can add teams
- Within a project collection, you can add team projects
- Within source control, you can add repositories and branches
- To manage a large number of users, you can manage access through Azure Active Directory (cloud) or Active Directory (on-premises)

### **Software projects versus team projects**

To build and deploy a software application, you begin by defining a software project. Software projects differ from team projects.

A team project defines a process and data storage in which you manage your software projects from planning to deployment. When you connect to VSTS or an on-premises TFS, you connect to an account or team project collection. Within that collection, one or more team projects may be defined. At a minimum, at least one team project must be created in order to use the system.

When you create your team project, a team of the same name is automatically created. For small teams, this is sufficient. However, for enterprise-level organizations, it may be necessary to scale up, to create additional teams and/or team projects. These can be created within the single account or collection.



The collection-project-team structure provides teams a high-level of autonomy to configure their tools in ways that work for them. It also supports administrative tasks to occur at the appropriate level.

### Scaling Agile across the enterprise

To learn how Microsoft transitioned from waterfall to Agile, review the stories and short videos available here: [Scaling Agile Across the Enterprise](#).

## Customization

You can configure and customize most elements to support your business needs or the way your team works.

- Source control: You can apply branch policies, define branch permissions, and set up continuous integration
- Work tracking: You can customize work item types, add custom fields, and set permissions to control who can modify what
- Build & Release: You can fully customize your build and release definitions, defining build steps, release environments, and deployment
- Test: You can define and configure your test plans, test suites, and test cases as well as configure test environments; additionally you can add test steps within your build definitions
- Dashboard: Each team can configure their set of dashboards to share information and monitor their progress

## Extensibility

In addition to all the pre-built functionality available to you, you can add to it in the following ways:

- [Visual Studio Marketplace](#): Provides extensions that you can install either on your account, server, or Visual Studio client
- [Service hooks](#): Enable you to perform tasks on other services when events happen within your team project hosted on VSTS or TFS
- [REST APIs](#): Provide the ability to create custom extensions that plug into VSTS or TFS
- [Visual Studio SDK](#): Helps you extend Visual Studio features or integrate new features into Visual Studio. You can distribute your extensions to other users, as well as to the Visual Studio Marketplace.

## Resources

- [Pricing](#)

# Source control

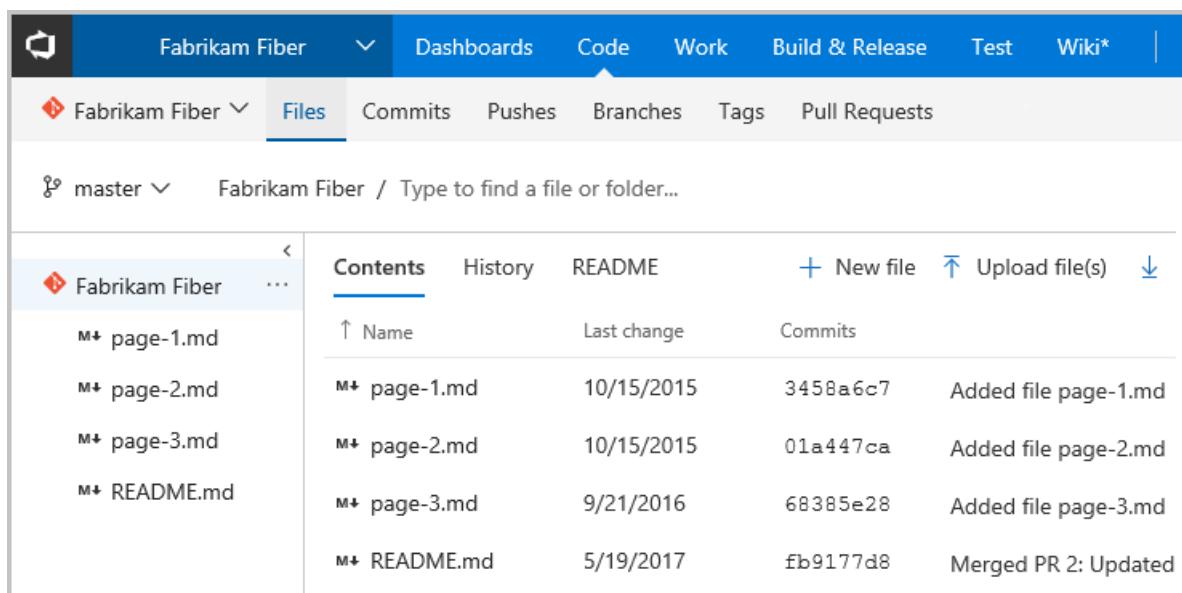
4/13/2018 • 1 min to read • [Edit Online](#)

## VSTS| TFS 2018 | TFS 2017 | TFS 2015

Source control, also referred to as version control, systems allow developers to collaborate on code and track changes made to the code base. Source control is an essential tool for multi-developer projects.

Our systems support two types of source control: Git (distributed) or Team Foundation Version Control (TFVC), a centralized, client-server system. Both systems enable you to check-in files and organize files within folders, branches, and repositories.

You manage your repos, branches, and other code development operations from the **Code** hub.



The screenshot shows the VSTS Code hub interface. At the top, there's a navigation bar with tabs for Dashboards, Code, Work, Build & Release, Test, and Wiki\*. Below the navigation bar, a secondary navigation bar has 'Files' selected. The main area displays a file list for the 'master' branch of the 'Fabrikam Fiber' repository. The list includes four files: 'page-1.md', 'page-2.md', 'page-3.md', and 'README.md'. Each file entry shows its name, last change date, commit hash, and a brief description of the change (e.g., 'Added file page-1.md').

| File      | Last change | Commit   | Description          |
|-----------|-------------|----------|----------------------|
| page-1.md | 10/15/2015  | 3458a6c7 | Added file page-1.md |
| page-2.md | 10/15/2015  | 01a447ca | Added file page-2.md |
| page-3.md | 9/21/2016   | 68385e28 | Added file page-3.md |
| README.md | 5/19/2017   | fb9177d8 | Merged PR 2: Updated |

With Git, each developer has a copy on their dev machine of the source repository including all branch and history information. Each developer works directly with his or her own local repository, and changes are shared between repositories as a separate step.

Developers can commit each set of changes and perform version control operations such as history and compare without a network connection. Branches are lightweight. When developers need to switch contexts, they create a private local branch. Developers can quickly switch from one branch to another to pivot among different variations of the codebase. Later, they can merge, publish, or dispose of the branch.

### NOTE

Git in Visual Studio, VSTS and TFS is standard Git. You can use Visual Studio with third-party Git services, and you can also use third-party Git clients with TFS.

With TFVC, developers have only one version of each file on their dev machines. Historical data is maintained only on the server. Branches are path-based and created on the server.

## Try this next

Start sharing your code or getting your code under source control.

[Code with Git](#)

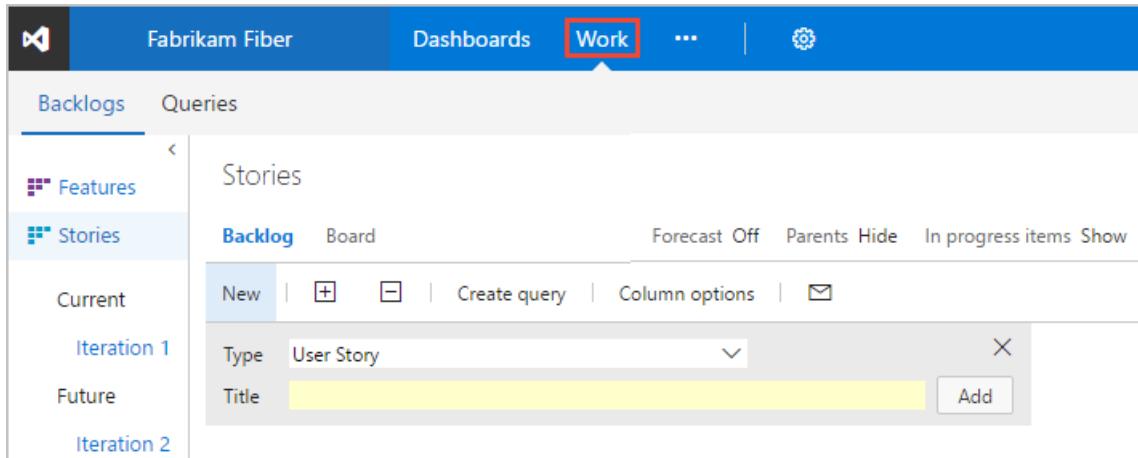
# About Agile tools and Agile project management

5/1/2018 • 2 min to read • [Edit Online](#)

## VSTS | TFS 2018 | TFS 2017 | TFS 2015 | TFS 2013

You plan and track your project using the suite of Agile tools you access from the web portal. Agile tools support the core Agile methods—Scrum and Kanban—used by software development teams today. Scrum tools support defining and managing work within sprints, setting capacity, and tracking tasks. Kanban tools allow you to manage a continuous flow of work via an interactive sign board.

You access all Agile tools from the **Work** hub. If you're new to Agile, see [What is Agile?](#) for an overview.



Most Agile tools are [scoped to a team](#). This supports team autonomy as well as scaling the system.

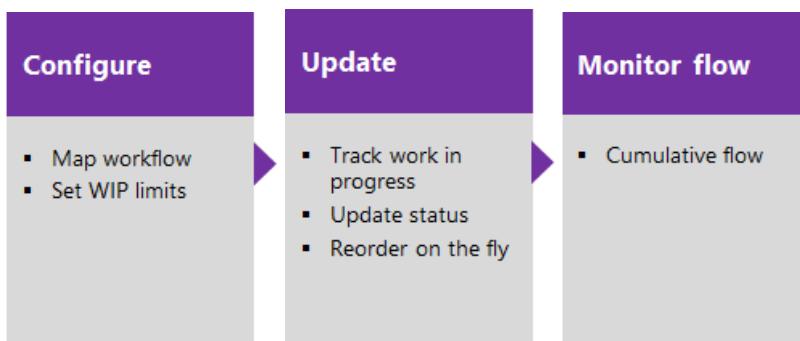
| BACKLOGS                                                                                                                                   | TASK BOARDS                                                                                                         | KANBAN BOARDS                                                                                                                  | OTHER                                                                                                  |
|--------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------|
| <ul style="list-style-type: none"><li>- Product backlog</li><li>- Portfolio (Epics, Features) backlogs</li><li>- Sprint backlogs</li></ul> | <ul style="list-style-type: none"><li>- Task boards</li><li>- Sprint burndown</li><li>- Capacity planning</li></ul> | <ul style="list-style-type: none"><li>- Kanban board</li><li>- Task checklists</li><li>- Epics &amp; Features boards</li></ul> | <ul style="list-style-type: none"><li>- Delivery plans</li><li>- Forecast</li><li>- Velocity</li></ul> |

### NOTE

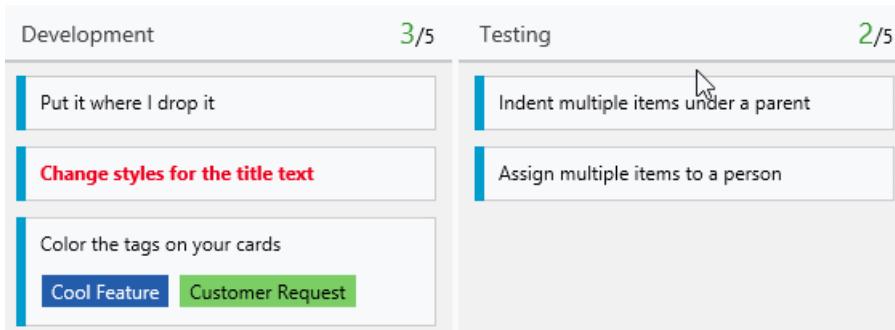
To understand the differences between backlogs, boards and Delivery plans, see [Backlogs, boards, and plans](#).

## Kanban method and tools

Kanban uses a visual interactive board to plan and show progress using cards. Your Kanban board is fully customizable to support the workflow used by your team.

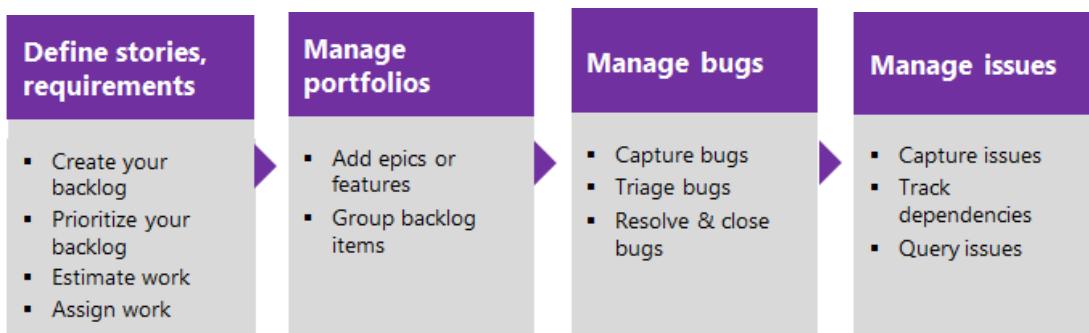


You update the status of work by dragging card to another column on the Kanban board. You can even change the order of items as you move a card to a new column.



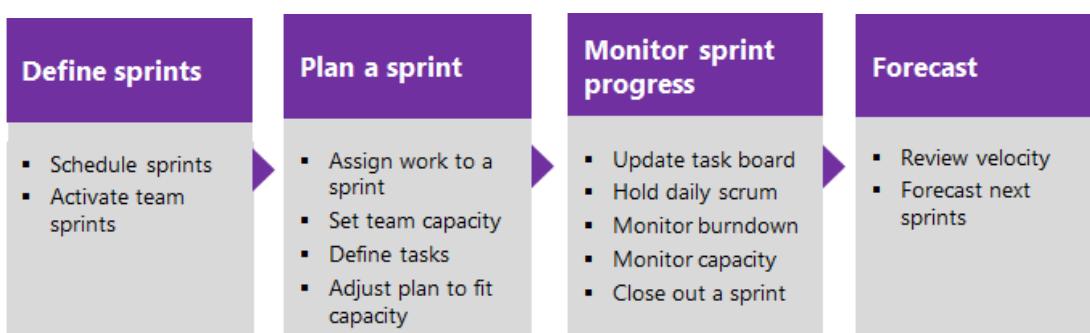
## Define work items and create your backlog

You build your project plan by creating a backlog of work items that represent the features, requirements, user stories, or other work to perform. Portfolio backlogs provide support for organizing work in a hierarchical fashion and tracking major product initiatives or scenarios that rely on many stories or requirements. Different types of work items help you track different types of work, such as user stories, tasks, bugs, issues, and more.



## Scrum method and tools

The Scrum method uses sprints to plan work to perform by a team within a specific time period and cadence. To get started, several sprints are predefined for your team. If you're new to Scrum, get an overview from [What is Scrum?](#).



You can quickly assign work items to a sprint by dragging and dropping them from the product backlog to the

sprint.

## Try this next

Take these tools for a test run by [creating an account on VSTS for free](#). From there, you're ready to [create your backlog](#).

Once you've started tracking work, you'll want to monitor and track progress, identify trends, and share your plans. See [Charts, dashboards, and widgets](#).

## Related articles

You access tools provided by VSTS and TFS by connecting from a client to the server, either in the cloud or on-premises. Some web portal tools require additional Visual Studio Subscriptions or Advanced/VS Enterprise access. To learn more, see [Permissions and access for work tracking](#).

For an overview of all your customization options, see [Customize your work tracking experience](#).

### Work across team projects

If you work in VSTS and TFS 2017.1 or later version, you can use your account hub to view and quickly navigate to teams, team projects, branches, work items, pull requests and other objects that are relevant to you. For details, see [Work effectively from your account hub](#).

# Tools and clients that connect to VSTS and TFS

6/1/2018 • 7 min to read • [Edit Online](#)

## VSTS | TFS 2018 | TFS 2017 | TFS 2015 | TFS 2013

Our platform of software development tools began over 20 years ago with the releases of Visual Basic and Visual Studio as an integrated development environment (IDE). Visual Studio supports a number of plug-ins which extend its functionality. In particular, the Team Explorer plug-in allows the Visual Studio client to connect to VSTS and TFS to support source control, work tracking, build, and test operations.

The set of tools available to you that interface with VSTS and TFS include:

- Desktop client developer tools
- Office integration tools
- Web based tools
- Command-line tools
- Marketplace extensions
- REST APIs

## Desktop client developer tools

Developers have access to a variety of tools through these versions of Visual Studio and plug-ins. To download any version of Visual Studio, visit the [Visual Studio Downloads page](#). To understand what features you get with the Visual Studio versions, see [Compare Visual Studio Offerings](#).

- **Visual Studio Community:** A fully-featured and extensible IDE for creating modern applications for Android, iOS, and Windows, as well as web applications and cloud services. (Replaces Visual Studio Express)
- **Visual Studio Professional:** Development tools and services to support individual developers or small teams
- **Visual Studio Enterprise:** Integrated, end-to-end development tools and solutions for teams of any size and those with a need to scale. Supports designing, building and managing complex enterprise applications
- **Visual Studio Test Professional:** Provides access to Microsoft Test in addition to development tools to support quality and collaboration throughout the development process
- **Visual Studio Team Explorer:** A free solution for non-developers to interact with Team Foundation Server and Visual Studio Team Services.
- **Eclipse/Team Explorer Everywhere:** Free plug-in to support teams running Eclipse on Linux, macOS, or Windows that connect to VSTS or TFS
- **Android Studio with the VSTS Plugin for Android Studio:** Free plug-in to support Android developers and connect to Git repositories on VSTS or TFS
- **IntelliJ with the VSTS Plugin for IntelliJ:** Free plug-in to support developers who use IntelliJ IDEA or Android Studio to connect to Git repositories on VSTS or TFS
- **Visual Studio Code:** Free, open-source code editor with a free extension to support connecting to Git repositories on VSTS or TFS.

## Team Explorer plug-in

Team Explorer, a plug-in to all Visual Studio versions, provides connects Visual Studio to team projects defined in VSTS or TFS. You can manage source code, work items, and builds. To learn more, see [Work in Team Explorer](#).

## HOME PAGE WITH GIT

The screenshot shows the Team Explorer - Home interface for a Git repository named 'Fabrikam Fiber'. The top navigation bar includes icons for Back, Forward, Home, and Refresh, along with a search bar labeled 'Search Work Items (C)'.

The main content area displays the following sections:

- Team Foundation Server:** Shows the URL <http://vs-2015-test:8080/tfs/defaultco...>.
- Project:** Includes links to 'Web Portal', 'Task Board', and 'Team Room'.
- Changes:** A list of items including 'Changes', 'Branches', 'Pull Requests', 'Sync', 'Work Items', 'Builds', 'Team Members', and 'Settings'.
- Solutions:** A link to 'New...' or 'Open...'.

At the bottom, a message states: 'There were no solutions found.'

## HOME PAGE WITH TFVC

The screenshot shows the Team Explorer - Home interface for a TFVC repository named 'Fabrikam Fiber'. The top navigation bar includes icons for Back, Forward, Home, and Refresh, along with a search bar labeled 'Search Work Items (C)'.

The main content area displays the following sections:

- Team Foundation Server:** Shows the URL <http://vs-2015-test:8080/tfs/defaultco...>.
- Project:** Includes links to 'Web Portal', 'Task Board', and 'Team Room'.
- My Work:** A list of items including 'Pending Changes', 'Source Control Explorer', 'Work Items', 'Builds', 'Team Members', and 'Settings'.
- Solutions:** A link to 'New...' or 'Open...'.

At the bottom, a message states: 'There were no solutions found.'

## Office integration tools

When you install any edition of Visual Studio or [Team Foundation Server Standalone Office Integration 2015 \(free\)](#), the Team Foundation plug-in installed to integrate work item tracking with select Office clients. The Team Foundation plug-in installs to your existing Office client. The plug-in supports Office 2007, Office 2010, or Office 2013 versions.

- **Excel:** Use Excel to add and bulk modify work items.
- **Project:** Using Project you can plan projects, schedule tasks, assign resources, and track changes. You have access to features that TFS doesn't support, such as a project calendar, Gantt charts, and resource views.
- **Project Professional:** With Project Professional and the Team Foundation Server Extensions for Project Server you can manage projects that synchronize data that exists in both TFS and Project Server. Project managers and software development teams can use the tools that they prefer, work at the level of precision that supports their needs, and easily share information.
- **PowerPoint Storyboarding:** Lets you illustrate user stories and requirements using PowerPoint. The Team Foundation plug-in installs to your existing PowerPoint client.

### IMPORTANT

Support for integrating TFS with Project Server is deprecated for TFS 2017. However, synchronization support is provided by a third party. See [Synchronize TFS with Project Server](#) for details.

## Task-specific clients

The following clients support specific tasks, such as managing testing efforts, providing feedback, or modifying work items.

- **Microsoft Test Manager**: Allows you to manage your test efforts, create and run manual tests, and create and track bugs that are found during test efforts. Test Manager installs with Visual Studio Test Professional and Visual Studio Enterprise.
- **Test & Feedback extension (previously called the Exploratory Testing extension)**: Provides a lightweight, plug-in to a web browser. Stakeholders can respond to feedback requests for user stories and features generated in VSTS or TFS. This extension is free to stakeholders.
- **Microsoft Feedback Client**: Your stakeholders can use **Microsoft Feedback Client** to record feedback for your application as video, audio, or type-written comments. This client installs with all versions of Visual Studio, or can be [installed from the free download](#). All feedback is stored in the work item data store and requires [stakeholders to have required permissions](#).

#### IMPORTANT

Test Manager is deprecated for TFS 2017.

## Browser-based web tools

### Web portal

The collaboration tools supported through the web portal are summarized under [Essential services](#). On VSTS, new features are deployed usually every three weeks, and for TFS, usually quarterly. For release notes, see [VSTS Features Timeline](#).

You can use these browsers to access the web portal (VSTS and TFS).

| VERSION  | EDGE        | INTERNET EXPLORER | SAFARI (MAC)  | FIREFOX     | CHROME      |
|----------|-------------|-------------------|---------------|-------------|-------------|
| VSTS     | most recent | 11 and later      | 9.1 and later | most recent | most recent |
| TFS 15   | most recent | 11 and later      | 9.1 and later | most recent | most recent |
| TFS 2015 | most recent | 9 and later       | 5 and later   | most recent | most recent |
| TFS 2013 |             | 9 and later       | 5 and later   | most recent | most recent |

Edge, Firefox, and Chrome automatically update themselves, so VSTS and TFS support the most recent version.

To learn more, see [Work in the web portal](#).

### Browser-based extensions

The following extensions are available from the Visual Studio Marketplace and are built and maintained by the VSTS product team.

- **Test Manager**: Run tests using your browser with simple pass/fail of steps, add comments/attachments, take screenshots and file bugs. You can accomplish all of this with automatic end-to-end traceability.
- **Package Management**: Build packages of reusable code components and share them within your organization. The Package Management extension enables continuous delivery workflows by supporting multiple packaging protocols such as NuGet and npm . It makes packages available to your team, your builds, and your releases.
- **Code search**: Increases cross-team collaboration and code sharing by enabling developers to quickly locate relevant information within the code base of all team projects hosted within an account or collection. With it, you can discover implementation examples, browsing definitions, and find error text.
- **Work item search**: Quickly find relevant work items by searching across all work item fields over all projects in an account. Perform full text searches across all fields to efficiently locate relevant work items. Use in-line

search filters, on any work item field, to quickly narrow down to a list of work items.

Find additional extensions from the [Marketplace](#)

## Application monitoring tools

To monitor your applications you can use Application Insights for web apps or HockeyApp for mobile apps.

### Monitor web applications with Application Insights

Application Insights is an extensible Application Performance Management (APM) service for web developers. Use it to monitor your live web application. It will automatically detect performance anomalies. It includes powerful analytics tools to help you diagnose issues and to understand what users actually do with your app. It's designed to help you continuously improve performance and usability. It works for apps on a wide variety of platforms including .NET, Node.js and J2EE, hosted on-premises or in the cloud.

With Application Insights you can:

- Gain actionable insights through application performance management and instant analytics
- Detect and diagnose exceptions and application performance issues
- Monitor Azure websites, including those hosted in containers, plus websites on-premises and with other cloud providers
- Seamlessly integrate with your DevOps pipeline using VSTS, GitHub, and our webhooks
- Get started from within Visual Studio, or monitor existing apps without re-deploying

To learn more, see [Microsoft Azure - Application Insights](#).

### Monitor mobile applications with HockeyApp

With HockeyApp you can develop, distribute, and beta-test your mobile apps. HockeyApp supports:

- Android, Cordova, iOS, macOS, Unity, Windows, and Xamarin apps
- Live, reliable crash reports
- Collect in-app feedback from real users
- Open-source SDKs to let you know what code is running in your apps
- Integration with your existing build system and work item management solution

To learn more, see [Microsoft Azure - HockeyApp](#).

## Command-line tools

You can perform many code development and administrative tasks using command line tools.

- [Git commands](#)
- [TFVC commands](#)
- [TFSConfig](#)
- [TFSDeleteProject](#)
- [TFSSecurity](#)
- [TFSServiceControl](#)
- [witadmin \(work item tracking\)](#)

## Marketplace extensions

While Visual Studio, VSTS, and TFS provide a wealth of features and functionality, they also provide a means to extend and share that functionality.

Extensions are simple add-ons that you can use to customize and extend your DevOps and work tracking experiences. Written with standard technologies—HTML, JavaScript, CSS—you can develop your own extensions

using your preferred dev tools.

You build extensions using our RESTful API Library. You publish them to the Visual Studio Marketplace, where you can privately maintain them or share with millions of developers that use Visual Studio, VSTS, and TFS.

To learn more, visit the [Marketplace](#) and [Overview of extensions](#).

## REST APIs

The VSTS and TFS APIs are based on REST, OAuth, Json and service hooks—all standard web technologies broadly supported in the industry.

REST APIs are provided to support building extensions to VSTS and TFS. To learn more, see [REST API overview](#).

## Related notes

- [Key concepts](#)
- [Essential services](#)
- [Software development roles](#)
- [Pricing](#)

# Software development roles supported by VSTS and TFS

6/1/2018 • 4 min to read • [Edit Online](#)

## [VSTS | TFS 2018 | TFS 2017 | TFS 2015 | TFS 2013](#)

If you are a sole developer, or work on a small team, chances are that you participate in many activites—performing tasks associated with issue tracking, feature planning, coding, testing, build, and deployment.

However, if you work within a large organization, you're probably more focused on a specific set of tasks that are traditionally aligned with one or two specific roles, such as software development, project management, and DevOps.

This topic provides a roadmap to support you in quickly coming up to speed on the features and tasks available to you based on the role you perform.

## Contributor roles

Team members are contributors who have access to the code base, work item tracking, Agile tools, build definitions, test tools, and more. If you need to lock down specific areas to a select set of contributors, you can do that through the [permission management](#).

### Software developers

Developers use Visual Studio or other [tools](#) to develop their applications. They then check in their changes to a Git or TFVC repository hosted in VSTS or TFS. From the web portal or supported IDE, they can view repositories, check history, and more.

- To get started using Git, see one of these resources:
  - [Share your code with Git and Visual Studio](#).
  - [Share your code in Git using Eclipses](#).
  - [Share your code in Git using Xcode](#).
  - [Share your code in Git using IntelliJ](#).
  - [Get Started with Git and VSTS](#).
- To get started using TFVC, see one of the following resources:
  - [Develop and share your code in TFVC using Visual Studio](#)
  - [Share your code in TFVC using Eclipse](#)
  - [Share your code in TFVC using Xcode](#)

### Project managers

The role of project manager typically encompasses planning the feature set to deliver, setting priorities, and tracking the status of work, code defects, and customer issues. The suite of web-based Agile tools provide PMs with the views and features they need to perform these tasks. All work is captured within a work item. Each work item represents a specific type such as a user story, task, or bug.

- Use the product backlog to quickly define and prioritize user stories, features, and other work items
- Use the sprint backlog and task board to implement Scrum practices
- Use the Kanban board to work with Kanban methods
- Use queries to list and update work items, create status and trend charts, and post charts to dashboards
- Use dashboards to share information, status, and trends with your team or organization

To get started, see [Get started with Agile tools to plan and track work](#).

If you are used to using Excel or Project to plan and track your work, you can still use these tools and integrate with VSTS and TFS. See [Bulk modify using Excel](#) and [Create your backlog and tasks using Project](#).

### **DevOps: builders, testers, and release managers**

One of the main advantages to working with VSTS or TFS is the suite of tools and integrated functionality that supports build, testing, and deploying software applications. Here are the main DevOps associated tasks supported by VSTS and TFS:

- Define builds
- Unit test your code
- Run tests with your builds
- Performance test your apps
- Perform exploratory tests
- Define, manage, track, and approve releases
- Deploy applications to Azure, a virtual machine, Docker containers, and more

To get started, see the overviews provided here: [Build & Release](#) and [Test](#).

### **Stakeholders**

With stakeholder access, anyone within your organization can check project status and provide feedback.

Stakeholders can track project priorities and provide direction, feature ideas, and business alignment to a team. They can contribute to plans by adding and modifying work items. They can't, however, contribute to the code base or exercise test tools.

Stakeholder access essentially provides free access to a limited set of features to project sponsors and supporters. To learn more, see [Work as a Stakeholder](#).

## **Administrator roles**

A distinct advantage to working in VSTS is the reduced overhead of server maintenance. That said, there are still several administrative tasks required to support a collaborative, integrated software development environment.

The main tasks are grouped here by membership within a security group or role:

### **Team administrators**

Responsible for configuring team settings which include:

- Backlog and board settings
- Team area(s) and iterations (sprints)
- Team members
- Team dashboards
- Team work item templates
- Team alerts

To get started, see [Manage team assets](#).

### **Project administrators**

Responsible for project level settings, including:

- [Area paths](#) and [Iteration paths](#)
- [Project permissions and repository security](#)
- [Customize work tracking objects \(TFS only\)](#)
- [Build agents, pools, and service endpoints](#)

- Test and [release](#) retention policies

## Project collection administrators

Responsible for account or collection-level settings. These include:

- Manage billing
- Add and manage team projects
- Manage collection-level settings and permissions
- Customize work tracking processes
- Install and manage extensions (install custom or [Marketplace extensions](#))

To get started, see [Account Management](#).

## TFS administrators

Responsible for installing, upgrading, and maintaining an on-premises TFS deployment. Tasks include:

- Install TFS
- Update servers running TFS
- Manage database backups
- Server administrative settings and permissions
- Build retention policies
- Add and manage team project collections

To get started, see [Server Administration \(TFS\)](#).

## Related notes

- [Key concepts](#)
- [Essential services](#)

# Understand differences between VSTS and TFS

5/31/2018 • 10 min to read • [Edit Online](#)

## [VSTS | TFS 2018 | TFS 2017 | TFS 2015 | TFS 2013](#)

VSTS and Team Foundation Server (TFS) both provide an integrated, collaborative environment that supports Git, continuous integration, and Agile tools for planning and tracking work.

VSTS is the cloud offering that provides a scalable, reliable, and globally available hosted service. It is backed by a 99.9% SLA, monitored by our 24-7 operations team, and available in local data centers around the world.

Team Foundation Server is the on-premises offering built on a SQL Server backend. Organizations typically choose on-premises TFS when they need their data to stay within your network, or they want access to SharePoint sites and SQL Server reporting services that integrate with TFS data and tools.

While both offerings provide the same [essential services](#), compared with TFS, VSTS provides organizations these added benefits:

- Simplified server management
- Immediate access to the latest and greatest features
- Improved connectivity with remote sites
- A transition from capital expenditures (servers and the like) to operational expenditures (subscriptions).

Use this topic to determine which offering—cloud or on-premises—meets your organizational needs by considering these important areas:

- Fundamental differences between TFS and VSTS
- Differences in specific feature areas between TFS and VSTS

For each area, we'll discuss both the current state of the world and the expected impacts from short and medium-term plans. Check back here for updates, because this information may change frequently.

If you're on TFS and considering moving to VSTS, read [Migrate data from TFS to VSTS](#) to understand your options.

## Fundamental differences between TFS and VSTS

When you plan a move, there are a few fundamental differences between TFS and VSTS that are important for you to understand.

### Scope and scale data

TFS has three options for scoping and scaling data—deployments, team project collections, and team projects. In the simplest case, deployments are just servers. Deployments can also be more complicated, however, including everything from a two-server deployment where SQL is split out on a separate machine to high availability farms comprising lots of servers. Team project collections serve as containers for security and administration in addition to serving as physical database boundaries. They are also used to group related team projects. Finally, team projects are used to encapsulate the assets of individual software projects, including source code, work items, and so on. Learn more about these concepts at [Manage team project collections](#).

VSTS is slightly different. It currently only has two options for scoping and scaling data—accounts and team projects. Accounts in VSTS get their own URLs (for example, <https://contoso.visualstudio.com>) and always contain exactly one team project collection. Accounts can contain multiple team projects, like TFS team project collections.

We are planning a third option for scoping and scaling data in VSTS—a new entity called an Organization. Rather than adding support for multiple team project collections within an account, multiple accounts could be grouped within an organization. Additionally, we will merge accounts and their single team project collections into a single entity. The organization will be similar to the TFS deployment, and the account will be similar to the TFS collection.

To be ready to use the organization entity, we recommend that you create accounts in VSTS whenever you would have created collections in TFS. In the short term, having your work split across multiple accounts can cause some problems, but we plan to address these when the organization entity is introduced. In particular:

- You purchase VSTS users per account, meaning that paid users only have access to the VSTS account in which the payment is made. If you have users who need access to multiple accounts, Visual Studio subscriptions can be an attractive option, since subscribers can be added to any number of VSTS accounts at no charge. We are also considering other ways we might make access to multiple accounts grouped into an organization available.
- You currently have to administer accounts one at a time, which can be cumbersome when you have many accounts. We're working to support organization-wide policies.

## Authentication

With TFS, you typically connect to an intranet server (for example, <https://tfs.corp.contoso.com:8080/tfs>). You authenticate with Windows Authentication and your Active Directory (AD) domain credentials. Usually this process is transparent, and you'll never see any kind of sign-in experience.

With VSTS, you connect over the public internet (for example, <https://contoso.visualstudio.com>). You'll either authenticate with [Microsoft Account](#) credentials or with [Azure Active Directory \(Azure AD\)](#) account credentials, depending on your VSTS account setup. You can also set up Azure AD to require features like multi-factor-authentication, IP address restrictions, and so on.

We recommend that organizations configure their VSTS accounts to use Azure AD rather than Microsoft Accounts. This provides a better experience in many scenarios and more options for enhanced security.

## Users and groups

In TFS, you provide users access to deployments by adding Active Directory (AD) groups to various TFS groups (for example the Project Contributors group for an individual team project). The AD group memberships are kept in sync. As users are added and removed in AD they also gain and lose access to TFS.

In VSTS, you can use a similar mechanism to [provide access to groups of users](#) by adding Azure AD groups to TFS groups. If you use Microsoft Accounts instead of Azure AD, you will have to [add users](#) one at a time.

## Manage user access

In TFS and VSTS, you can give free access to work item features to an unlimited number of Stakeholders. Also, unlimited Visual Studio subscribers can have access to all Basic features at no additional charge. You only need to pay for other users who need access.

In TFS, all use is on the honor system. To set access levels for users based on their licenses, use specify their [access levels](#) administration page. For example, assign unlicensed users Stakeholder access only. Users with a TFS Client Access License (CAL) can have Basic access. Visual Studio subscribers can have either Basic or Advanced access, based on their subscriptions. Note that TFS does not attempt to verify these licenses or enforce compliance.

In VSTS, you must [assign an access level](#) to each user in your account's Users hub. VSTS validates Visual Studio subscribers as they sign in. You can assign Basic access for free to five users without Visual Studio subscriptions. To give Basic access to more users, you'll need to set up billing for your account and [pay for more users](#). Otherwise, all other users get Stakeholder access.

If you use Azure AD groups to provide access to groups of users, VSTS will assign appropriate access levels to them automatically when they sign in for the first time. For VSTS accounts configured to use Microsoft Accounts

for sign-in, you will have to assign access levels to each user explicitly.

## Security and data protection

Many organizations want to know more about data protection when they consider moving to the cloud. Microsoft is committed to ensuring that VSTS projects stay safe and secure. We have technical features and business processes in place to deliver on that commitment. You can also take steps to secure your data. Learn more in our [Data Protection Overview whitepaper](#).

# Key feature differences between VSTS and TFS

Even though VSTS is a hosted version of TFS, there are some differences between the features available in the two products. Some TFS features are not supported in VSTS at all—for example, VSTS does not support integration with SharePoint or Project Server.

## Process customization

You customize the work tracking experience in two different ways depending on the supported process model:

- For VSTS, you use the **Inheritance** process model which supports WYSIWYG customization
- For TFS, you use the **On-premises XML** process model which supports customization through import/export of XML definition files for work tracking objects

While the **On-premises XML** process model option is quite powerful, it also can cause a number of problems. Chief among these is that processes for existing team projects do not update automatically when TFS is upgraded.

For example, TFS 2013 introduced several new features which depended on new work item types and other process template changes. When you upgrade from TFS 2012 to TFS 2013, each team project collection gets new versions of each of the "in the box" process templates which include these changes. However, these changes are not automatically incorporated in existing team projects. Instead, after you finish upgrading you have to include them in each team project by using the [Configure Features](#) wizard or a more manual process.

To avoid these issues in VSTS, custom process templates and **witadmin.exe** have always been disabled (only export functions are enabled). This has enabled us to automatically update all team projects with each VSTS upgrade. Meanwhile, the product team has been working hard to make customizing processes possible in ways that we can support easily and continuously. These first of these changes was recently introduced, and more changes are on the way.

With these new VSTS process customization capabilities, you can make customizations directly within the VSTS Web UI. If you want to customize your processes programmatically, you can also make customizations through REST endpoints. When you customize team projects in this way, those projects will continue to update automatically when we release new versions of their base processes with VSTS upgrades.

To learn more, see [Customize your work tracking experience](#).

Over time we will support more and more types of process customizations with this new approach. If you need process customization features which are not yet available and cannot wait for them, a second option for process customization in VSTS is available, referred to as **Hosted XML** process model, and in private preview and by request only.

With this option, you [import customized process templates](#). This option is quite similar to using custom process templates in TFS, except that:

- [Restrictions](#) exist in the customizations that can be imported into VSTS.
- Process templates are associated with all team projects created from them, and changes made to the process are reflected in each team project.

Team projects in accounts which participate in this process customization private preview will not update automatically with VSTS upgrades.

## Reporting

Both TFS and VSTS have a variety of tools to give you insight into the progress as well as the quality of your software projects. These include:

- [Dashboards](#) and lightweight [charts](#), available in both TFS and VSTS. These are very easy to set up and use.

In addition, with VSTS you have access to the following services:

- [Analytics service](#) and [Analytics widgets](#). The Analytics service is optimized for fast read-access and server-based aggregations.
- [PowerBI integration](#) which supports getting Analytics data into Power Bi reports, providing a nice combination of simplicity and power.
- [OData support](#) which allows you to directly query the Analytics Service from a supported browser and then use the returned JSON data as you desire. Enterprise organizations can generate queries that span multiple team projects or their entire VSTS account.

We plan to make these services available in TFS in a future release.

The following reports and dashboards are only available in TFS:

- [Excel reports](#)
- [SQL Server Reporting Services \(SSRS\) reports](#)
- [SharePoint dashboards](#)

And, available today only in VSTS:

- A [PowerBI connector](#) which provides a nice combination of simplicity and power. We plan to make it available in TFS in a future release.
- [Analytics](#) which is the reporting platform for Visual Studio Team Services (VSTS), which answer quantitative questions about the past or present state of your projects. This service provides a concise data model over the VSTS suite. Built for reporting, the Analytics Service is optimized for fast read-access and server-based aggregations. We plan to make it available in TFS in a future release.

## Related notes

- [Key concepts](#)
- [Essential services](#)
- [Client-server tools](#)
- [Software development roles](#)
- [Pricing - VSTS](#)
- [Pricing - TFS](#)

# Enable preview features

6/1/2018 • 2 min to read • [Edit Online](#)

## VSTS

As new features are introduced, you can turn them on or off. That way, you can try them out, provide feedback, and work with those features that meet your requirements.

Some features provide a new user interface and functionality, which can be managed per user or team member. Others support a default experience for the account and are managed by an account administrator.

### NOTE

You can turn on or off select features for VSTS. Preview features become available first on VSTS and then subsequently are made available with an update to TFS. At some point, the preview feature will be moved out of preview status and become a regular feature of the web portal.

#### PREVIEW FEATURES PER USER

- Approval gates in releases
- New Dashboards Experience
- New Queries Experience
- New release progress views

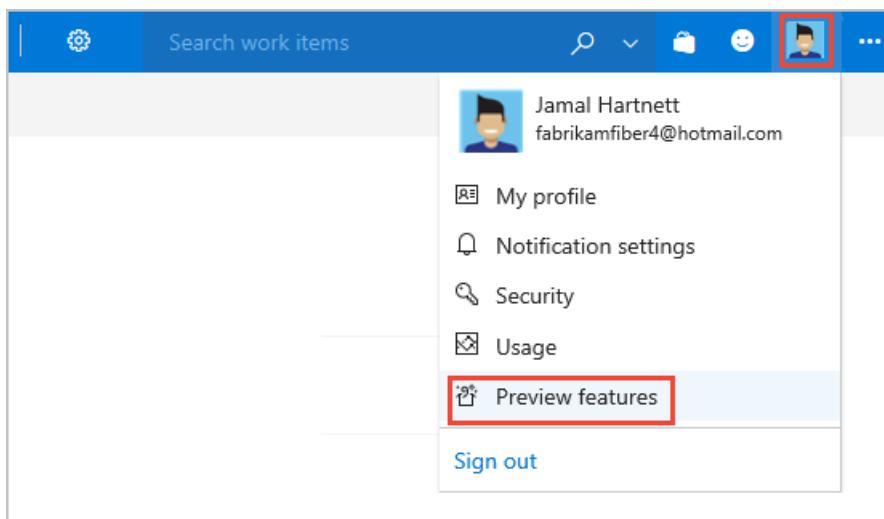
#### PREVIEW FEATURES PER ACCOUNT

- Build with multiple queues
- Build YAML Definitions
- Git Forks
- New Dashboards Experience
- New release progress views

## Enable features for your use

From time to time, a new feature is introduced in Preview mode, which allows you to turn it on or off.

1. To access the Preview features options, open your user account menu, and select **Preview features**.



2. To enable or disable a feature, click the slider.

×

## Preview features

The following preview features are available for your evaluation. Help us make them better!

▼

**Approval gates in releases**  On

Include continuous monitoring in the releases. Add gates to environments in release definitions and automatically collect samples from monitoring and ITSM solutions during releases. [Learn more](#)

**New Dashboards Experience**  Off

Improved dashboard management and favoriting experience, plus dashboard directories.

**New Queries Experience**  On

New landing pages for your favorite, team favorite, and shared queries. [Learn more](#)

**New release progress views**  Off

Turn on the new release views to visualize the progress of your deployment pipelines. [Learn more](#)

## Enable features at the account level (for all users)

When you enable a feature at the account level, you essentially turn it on for all users of your account. Each user can then disable the feature if they so choose.

### TIP

If you don't see the user/account menu option, then you aren't an account administrator. To get added as one, see [Add administrators, set permissions at the team project or collection level](#).

## Preview features

The following preview features are available for your evaluation. Help us make them better!

for this account [fabrikam] ▾

### Approval gates in releases

 On

Include continuous monitoring in the releases. Add gates to environments in release definitions and automatically collect samples from monitoring and ITSM solutions during releases. [Learn more](#)

### Build with multiple queues

 On

Allows selection of specific queues in build phases. There are some known limitations with this feature. [Learn more](#)

### Build YAML definitions

 On

Enables YAML build definitions. [Learn more](#)

### Git Forks

 On

Enable git repositories to be forked. [Learn more](#)

### New Dashboards Experience

 Off

Improved dashboard management and favoriting experience, plus dashboard directories.

### New release progress views

 Off

Turn on the new release views to visualize the progress of your deployment pipelines. [Learn more](#)

## Features now enabled for all accounts

- [Combine email recipients](#)
- [New Account Landing page](#)
- [New experience in Code, Work Item, & Wiki search](#)
- [New Release Definition Editor](#)
- [New Work Items Hub](#)
- [NuGet.org upstream sources](#)
- [Out of the box notifications.](#)
- [Pull Request Status Policy](#)
- [Symbol server](#)
- [Streamlined User Management](#)
- [Task tool installers](#)
- [Team expansion for notifications](#)
- [Updated package experience](#)
- [Wiki](#)

# Use @mentions

5/31/2018 • 1 min to read • [Edit Online](#)

VSTS | TFS 2018 | TFS 2017 | TFS 2015.2

## NOTE

The **@mention** control is available from TFS 2015.2 and later versions.

The **@mention** control allows you to quickly pull someone into a work item or pull request.

In order for team members to receive notifications, [you must configure an SMTP sever](#).

When leaving a code comment in a pull request, you can type @ to trigger the **@mention** identity picker. From the identity selector, you'll see a list of those people that you have you've recently mentioned. You can choose one of those names or type in the name of the person you are looking for to perform a directory search.

To filter the list, enter the user name or alias until you've found a match.

The screenshot shows a 'Pull Requests' page with a specific pull request selected. The pull request details are as follows:

- Title:** Pull Request 41369: Fixed missing table tag
- Description:** Content.ALM : Merging features/alm-whats-new To master
- Status:** Edit
- Discussion:** Files (1) Commits (1)
- Comment:** - Fixed missing table tag by Christie Church - 7/17/2015
- Merge Status:** Pull request can be automatically merged. Changes merge without conflicts - 7 days ago. No merge conflicts.
- Participants:** A list of users mentioned in the pull request, including '@Jam' (highlighted with a red circle), 'Jamal Hartnett' (fabrikamfiber4@hotmail.com), and another user whose profile picture is partially visible.

You can also use group mentions. Simply start type the name of a team or a security group, click the search icon and then select from the options listed.

To **@mention** a user you've never selected previously, just continue typing to perform your search against the full directory.

Names of those that you mention appear in **blue text**. Click the **@mention link name** to open the user's contact card, which can provide you additional context for why they were pulled into the conversation.

## Pull Requests

Pull Request 41369: Fixed missing table tag

Content.ALM : Merging [features/alm-whats-new](#) To [master](#)

Edit

**Discussion** Files (1) Commits (1)



- Fixed missing table tag

Christie Church - 7/17/2015



Pull request can be automatically merged

Changes merge without conflicts - 7 days ago

No merge conflicts



@Jamal Hartnett can you check this out

Christie Church - 7 minutes ago - edited



Christie Church - save - cancel - workitems (#) - people (@)

Upon completion of your selection and text entry, your **@mention** user will receive an email alerting them about the mention.

Fri 7/24/2015 3:47 PM

Visual Studio Online

Christie Church mentioned you in a pull request

To Jamal Hartnett

Who's Who Get more apps

**Christie Church mentioned you in a pull request**

Comment

@Jamal Hartnett can you check this out

When viewing their own mentioned names in conversations, users will notice that their own name is are highlighted in orange text.

## Pull Requests

Pull Request 41369: Fixed missing table tag

Content.ALM : Merging [features/alm-whats-new](#) To [master](#)

Edit

**Discussion** Files (1) Commits (1)



- Fixed missing table tag

Christie Church - 7/17/2015



Pull request can be automatically merged

Changes merge without conflicts - 7 days ago

No merge conflicts



@Jamal Hartnett can you check this out

Christie Church - 7 minutes ago - edited



Christie Church - save - cancel - workitems (#) - people (@)

You can use the **@mention** control in pull request discussions, commit comments, changeset comments, and shelveset comments. You can also use the **@mention** control in any text field on the work item form.

## Related articles

- [Work item form controls](#)
- [Pull requests](#)

# Use #ID to link to work items

5/1/2018 • 1 min to read • [Edit Online](#)

VSTS | TFS 2018 | TFS 2017 | TFS 2015.1

Use the **#ID** control to quickly link objects to work items.

## NOTE

The **#ID** special control feature is available from TFS 2015.1 and later versions.

## Link a pull request to a work item

When leaving a code comment in a pull request, you can type **#** to trigger the **#ID** work item picker. The picker displays a list of 50 work items that you have recently modified or that are assigned to you.

You can narrow the list of suggested work items by entering keywords that match the work item type, ID, or title, or you can enter the exact work item ID.

The screenshot shows a pull request details page. At the top, it says "Pull Request 35115: Merge features/agile-S84 to re...". Below that is a "Discussion" section with "Files (16)" and "Commits (2)". A comment from "Jamal Hartnett" is shown, timestamped "less than a minute ago". To the right of the comment is a "Reviewers" section with a "Name of reviewer to add" input field and a list of users. In the center, there is a modal window for linking work items. The modal has a header "Active" with icons for "Merge in progress" and "No response from reviewers". It contains two buttons: "Complete pull request" and "Abandon". Below these buttons is a "Reviewers" section with a dropdown menu showing "Jamal Hartnett" and "No response". The main body of the modal is a list of 50 suggestions, each with a small user icon and a link. The first suggestion is circled with an orange highlighter around its user icon and the "#" prefix. The list includes items like "User Story 323211: [EntSoc] Team dashboard (...)", "User Story 308689: [EntSoc] Charts (migrate)", and "User Story 308744: [EntSoc] Productivity tips (...)".

To further filter the list, continue entering keywords until you've found a match. You can enter up to five keywords.

## Link to work items in pull requests, comments, and commits

You can also use the **#ID** control in pull request discussions, commit comments, changeset comments, and shelveset comments.

## NOTE

Requires TFS 2015.2 or a later version.

# Link to work items from a Wiki page

You can use the **#ID** control to link to a work item from within a Wiki page.

To learn more about the built-in wiki, see [Add & edit wiki pages](#).

## Related articles

- [Link work items](#)
- [Save work with commits](#)
- [Pull requests](#)
- [Check in your work to the team code base](#)

# Work effectively from your account hub

4/13/2018 • 5 min to read • [Edit Online](#)

VSTS | TFS 2018 | TFS 2017.1

## NOTE

**Feature availability:** The features described in this topic are available from Visual Studio Team Services (VSTS) and TFS 2017.1 and later versions. To upgrade to TFS 2017.1, go to the [Visual Studio downloads page](#).

From your account, you gain access to a number of page views that are particularly helpful if you work in several team projects. These pages provide quick access and filter functions to support your work within a single team project or work you're doing across several projects.

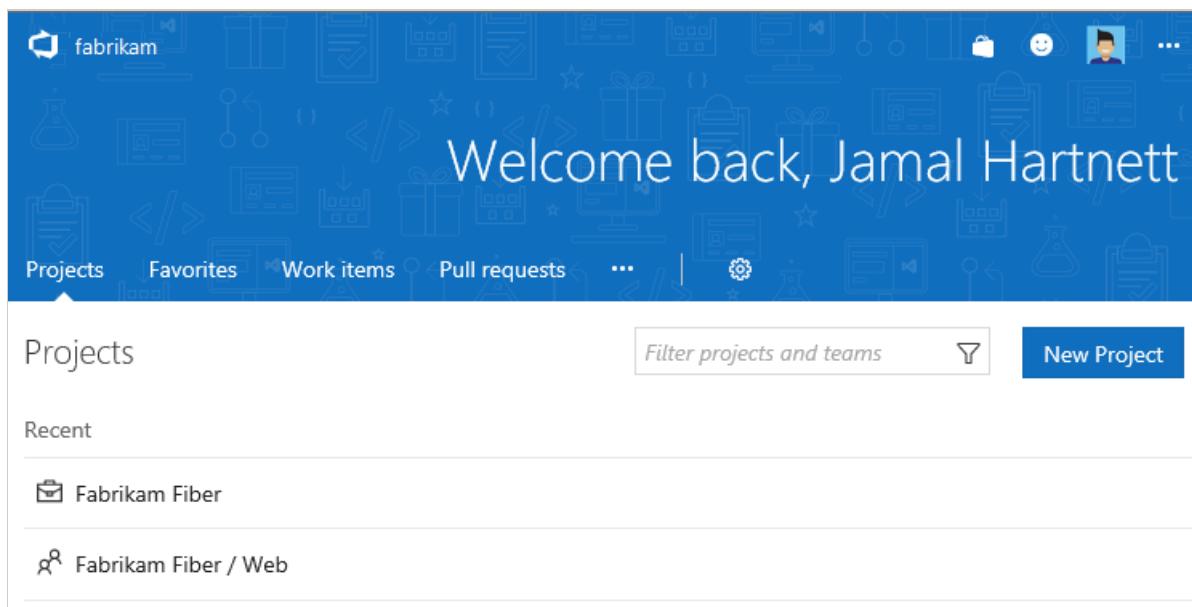
For example, you can quickly access and navigate to work of interest from the following Account hubs:

- **Projects:** Team projects and teams within the projects that you work in
- **Favorites:** Items—such as build definitions, repositories, shared queries, and more—that you've favorited
- **Work items:** Work items assigned to you, that you're following, or that you've recently viewed or updated
- **Pull requests:** Pull requests you've initiated or that are relevant to you across all team projects you work in
- **Rooms:** Team rooms you use to collaborate with other team members.

To access these pages, open your web browser and click the

**[https://AccountName.visualstudio.com/\\_projects](https://AccountName.visualstudio.com/_projects)**

You'll see something similar to the following welcome page.



## Projects: Navigate to a team project

From the **Projects** page you can quickly navigate to a team project or a team that you've accessed or worked in previously. Projects are listed in the order you've last accessed, with the most recent five projects accessed appearing first. All projects you've accessed are listed within the **All** section.

The screenshot shows the Microsoft Teams interface for the 'Projects' tab. At the top, there are navigation links: 'Projects', 'Favorites', 'Work items', 'Pull requests', '...', and a gear icon. Below these are two sections: 'Recent' and 'All'. In the 'Recent' section, there are entries for 'Fabrikam Fiber' (with a mail icon) and 'Fabrikam Fiber / Web' (with a search icon). In the 'All' section, there is a collapsed entry for 'Contoso' (with a briefcase icon) followed by the expanded 'Fabrikam Fiber' entry. A 'New Project' button is located in the top right corner.

As you hover over the project, you can click one of the links to go to the Home (dashboards), Code, Work, Build & Release, or Test hub of the team project. Click the star icon to mark the team project as a favorite.

The screenshot shows the 'Fabrikam Fiber' project hub. At the top, there is a navigation bar with links: 'Home', 'Code', 'Work', 'Build & Release', and 'Test'. The 'Home' link is highlighted. To the right of the navigation bar is a star icon. Below the navigation bar, the word 'Recent' is displayed, followed by a list item 'Fabrikam Fiber' with a mail icon.

### Filter projects and teams

If a project isn't listed, you can find it by searching for it using the *Filter projects and teams* search box. Simply type a keyword contained within the name of a team project or team. Here we type **Design** to find the Contoso project Design team.

The screenshot shows the Microsoft Teams interface for the 'Projects' tab. A search box at the top contains the word 'Design'. Below the search box, the word 'Results' is displayed, followed by a single result entry 'Contoso / Design' with a search icon.

### Add a team project

If you're an account administrator or are a member of the Project Collection Administrators group, the New Project button is shown. Click New Project to [add a team project](#).

The screenshot shows the Microsoft Teams interface for the 'Projects' tab. At the top, there are navigation links: 'Projects', 'Favorites', 'Work items', 'Pull requests', '...', and a gear icon. Below these are two sections: 'Projects' and 'Favorites'. The 'Projects' section contains a 'Filter projects and teams' search box and a 'New Project' button. The 'Favorites' section is currently empty.

## Favorites: Open items you've marked as Favorites

Open the **Favorites** page to quickly access any object or item that you've marked as a favorite.

Screenshot of the Favorites page in the Azure DevOps interface. The top navigation bar includes 'Projects', 'Favorites', 'Work items', 'Pull requests', and a '...' button. A gear icon is also present. The main area is titled 'Favorites' and contains a 'Filter favorites' search bar. Below this, a section titled 'Queries' lists several favorite items:

| Query             | Team Project   | Description                          | Favorite Status |
|-------------------|----------------|--------------------------------------|-----------------|
| Bug Triage        | Fabrikam Fiber | .../Shared Queries/Current Iteration | ★               |
| My Bugs           | Contoso        | Shared Queries                       | ★               |
| Open User Stories | Contoso        | .../Shared Queries/Current Iteration | ★               |
| Product Planning  | Fabrikam Fiber | Shared Queries                       | ★               |
| Product Planning  | Contoso        | Shared Queries                       | ★               |

Favorite objects include:

- Team projects
- Repositories
- Work item queries
- Plans (requires installation of the [Delivery Plans extension](#))
- Build definitions
- Test plans

#### Mark an object as a favorite

- To mark a team project or team as a favorite, go to the **Projects** page and click the star icon next to the team or team project.
- To mark a query as a favorite, open the **Work>Queries** page and drag the query into the My Favorites area.
- To mark a plan as a favorite, open the **Work>Plans** page and click the star icon next to a plan.
- To mark a build definition as a favorite, open the **Build&Release>All Definitions** page and click the star icon next to the build definition.
- To mark a test plan as a favorite, open the **Test>Test Plans** page and click the star icon next to a test plan from the menu that shows All test plans.

#### Remove an item from your favorites list

To remove an item from your favorites list, click the favorited icon.

Screenshot showing the removal of a favorite item. The 'Open User Stories' entry in the list has its star icon highlighted with a yellow border, indicating it is no longer a favorite.

#### Filter the list of favorites

To filter the list, type a keyword in the *Filter favorites* box. The list will filter based on keyword matches to the title or team project name associated with the favorited item.

## Work: View and open work items

Open the **Work items** hub to access the set of work items assigned to you or followed by you. The lists available from each page span all team projects that you work in.

## NOTE

**Feature availability:** For VSTS, you can access the Work items hub [from a mobile device](#).

### View your assigned work items

The **Assigned to me** page lists all work items assigned to you in the order they were last updated. To open or update a work item, click its title.

The screenshot shows the 'Work items' tab selected in the navigation bar. Below it, the 'Assigned to me' tab is highlighted with an orange border. A search bar labeled 'Filter your work items...' is present. The main area displays a list of work items under the heading 'Doing':

| Work Item ID | Description                                          | Status      |
|--------------|------------------------------------------------------|-------------|
| 397          | Updates to the Web layout                            | Resolved    |
| 200          | Implement a factory which abstracts the email client | In Progress |
| 202          | Integrate client app with IM clients                 | In Progress |
| 214          | For/Not rules                                        | Proposed    |
| 198          | Refactor compression code                            | Proposed    |
| 288          | Installer updates                                    | Proposed    |

### Work you're following

Click **Following** to open the page that lists all the work items [you've marked to follow](#).

The screenshot shows the 'Work items' tab selected in the navigation bar. Below it, the 'Following' tab is highlighted with an orange border. A search bar labeled 'Filter your work items...' is present. The main area displays a list of work items:

| Work Item ID | Description                                         | Status      | Action |
|--------------|-----------------------------------------------------|-------------|--------|
| 140          | Convert legacy OData service interfaces to Rest API | In Progress |        |
| 104          | Create model report                                 | In Progress |        |
| 580          | Migrate legacy code to portable frameworks          | In Progress |        |
| 621          | Interim save on long form                           | Completed   |        |
| 665          | Check issues with permissions                       | Resolved    |        |

To stop following an item and remove it from your list, click the following icon.

### My activity

Click **My activity** to open the page that lists all work items that you have recently viewed or updated.

Projects Favorites Work items Pull requests ...

My work items

Assigned to me Following My activity

Filter your work items

|                                              |         |                |                     |
|----------------------------------------------|---------|----------------|---------------------|
| 359 Phase 1 - Customer access and engagement | ● New   | Fabrikam Fiber | You viewed Thursday |
| 358 Research architecture changes            | ● New   | Fabrikam Fiber | You viewed Thursday |
| 387 Design form                              | ● To Do | Fabrikam Fiber | You viewed Thursday |
| 492 Build Settings Experience                | ● New   | Fabrikam Fiber | You viewed Thursday |

#### Filter the list of work items

Similar to the Favorites page, you can filter the work pages by typing a keyword in the *Filter your work items...* box. The list will filter based on keyword matches to the work item ID, title, state, or team project name.

## Pull requests: View and open pull requests

Open the **Pull requests** page to access any pull request that's relevant to you across all team projects you work in. Click **Active** or **Completed** to pivot between the active or completed set of pull requests. To initiate a pull request, click New pull request.

My pull requests

Active Completed

Created by me

|                   |                                                                    |                     |   |
|-------------------|--------------------------------------------------------------------|---------------------|---|
| Updated README.md | Francis Totten requested #4 into  master in  Demo 2 minutes ago    | Updated 3 hours ago | 1 |
| Updated README.md | Raisa Pokrovskaya requested #2 into  test in  ginara 6 minutes ago | Updated 6/17/2016   | 1 |

Assigned to me

From each page, you're one click away from navigating to the branch or repository for a pull request. This mirrors capabilities on the team-project level **Code>Pull Requests** page.

#### Filter the list of pull requests

Similar to the Favorites page, you can filter the list by typing a keyword in the *Filter pull requests* box.

## Rooms: Navigate to a team room

#### NOTE

**Feature availability:** Team Rooms have been deprecated for VSTS and TFS 2018 and later versions as described in this blog post, [Deprecation of the Team Rooms in VSTS and TFS](#). Several good solutions are available that integrate well with TFS that support notifications and chat, such as [Microsoft Teams](#) and [Slack](#). As a result, the Team Room feature will be deprecated from both Visual Studio Team Services (VSTS) and Team Foundation Server (TFS).

To open a team room, click **Rooms**. You'll see all the team rooms defined for the account. Click the name of a

team room which you have access. You only have access to those team rooms of which you are a team member.

The screenshot shows the VSTS web interface for a 'Fabrikam Fiber Team Room'. The left sidebar lists several team rooms: Contoso Team Room, Design Room, Engineering Room, Fabrikam Fiber Team Room (which is selected and highlighted in blue), and Research Room. The main area displays a conversation between two users: '...Pokrovskaya' and 'Jamal Hartnett'. The messages are as follows:

- ...Pokrovskaya: Bug #462 Avatar does not load in home page.  
#462?
- Jamal Hartnett: @Jamal Hartnett is this the bug you were talking about?  
yes, that's the one - can you take a look at it?
- ...Pokrovskaya: Sure, I'll do that now.
- Jamal Hartnett: Thanks.

Below the messages, there are two notifications:

- Changeset 185023 Sprint 47 Update Johnnie McLeod
- AL.Gated 1302.144 failed Build Summary

A 'Post a message' button is located at the bottom of the conversation area.

To learn more about team rooms, see [Collaborate in a team room](#).

## Related notes

- [Enable preview features](#)
- [Work in the web portal](#)
- [Connect to team projects](#)

## Feedback and support

We welcome your feedback.

For product related inquiries, review our [User Voice page](#) or report a problem at [Developer Community](#). Also, you can get advice on [Stack Overflow](#), or get support via our [Support](#) page.

Follow us on [Twitter](#) **@vsts**.

# View and update work items via the mobile browser

4/13/2018 • 3 min to read • [Edit Online](#)

## VSTS | TFS 2018

With the mobile browser and work item form, you gain on-the-go features to stay on top of the latest updates made to work tracking. When you click any work item link on your mobile device, it will open a mobile-friendly version of the work item. From there, you can update the work item or access all work items assigned to you or that you're following.

The screenshot shows a mobile browser displaying a work item in VSTS. The title bar says "Work items". A message at the top indicates "Mobile form is in PREVIEW." Below the title, the work item type is "USER STORY 1". The main content area displays the following information:

- This is the new mobile experience!**
- Updated Wednesday by Jamal Hartnett
- 3 UI service mobile
- A comment from **Jamal Hartnett** 2 days ago: "@Chuck Reinhart - Note the differences between the previous and the latest version." with a "View 1 comment" link.
- Navigation links: Details, History, Links, Attachments.
- Assigned To**: Christie Church
- State**: New
- Reason**: New
- Area**: Fabrikam Fiber
- Iteration**: Fabrikam Fiber
- Description**: (This section has a collapse/expand arrow)

### NOTE

The mobile browser is available to support work tracking in VSTS. To sign up for VSTS, go to [VSTS](#). The mobile browser is not an app, but a mobile view into select features. There is nothing to download. You access the mobile browser by clicking a link from a work item you receive in your mobile email application.

#### NOTE

The mobile browser is available for TFS 2018 and later versions. To download TFS 2018, see the [TFS 2018 Release Notes](#). The mobile browser is not an app, but a mobile view into select features. There is nothing to download. You access the mobile browser by clicking a link from a work item you receive in your mobile email application.

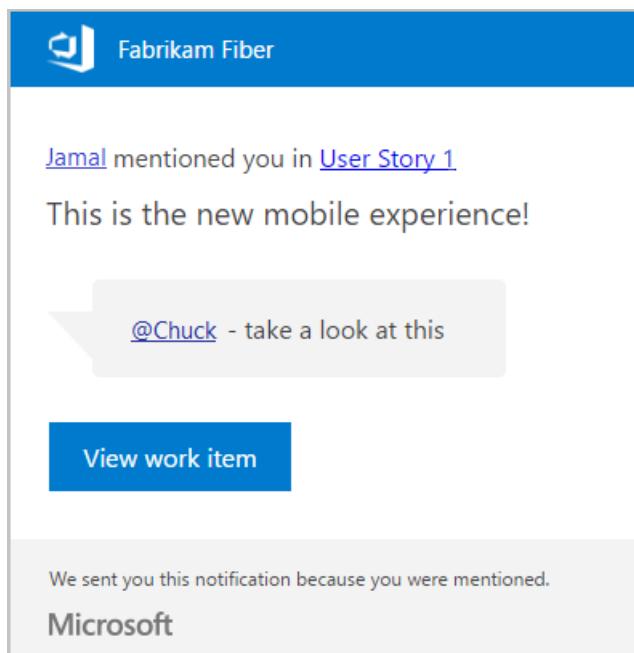
#### NOTE

The mobile browser is available for TFS 2018 and later versions. To download TFS 2018, see the [TFS 2018 Release Notes](#). The mobile browser is not an app, but a mobile view into select features. There is nothing to download. You access the mobile browser by clicking a link from a work item you receive in your mobile email application.

## Open the mobile work item form

The mobile work item form will open when you click **View work item** from an email you receive from your mobile device. You'll receive this type of email under these circumstances:

- Changes were made to a work item you're following
- You were **@mentioned** in a discussion
- A notification is sent based on the work item alerts you've set using [Manage personal notifications](#).



## Update a work item

Within the mobile form, you can do almost everything you can do from the [web portal form](#). Here are the actions you can take in the order they appear in the mobile form:

- Add and remove tags
- View and add to the discussion, click on the comment to add to the discussion
- View and update any field within the form (Assign to, State, Area, Iteration, Description, and more)
- View and open a link within the Development section
- View History
- View and open a link from the Links tab
- Open and add an attachment from the Attachments tab

Actions not available to you:

- You can't initiate a development operation
- You can't add a link

## Interact with mobile form controls

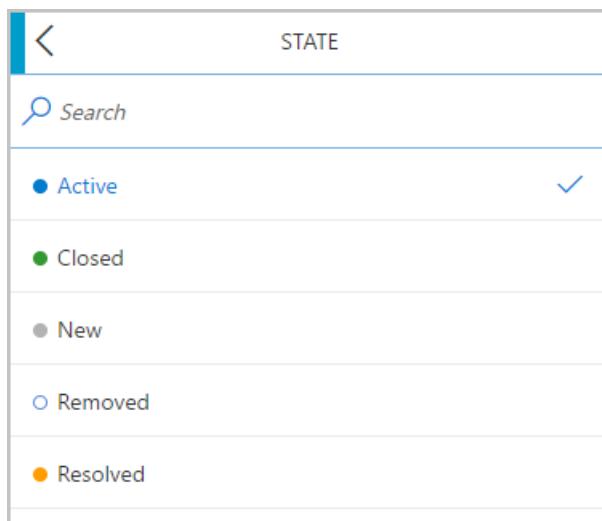
Mobile form controls operate as follows:

- Click any field to edit it and the form changes to a full-screen experience. For example, some of the most common actions such as changing the state of an item, moving to a different area path, adding an attachment, and creating/removing tags are all supported.

- When done, click the  return option.
- Remember to click the  save icon to save your changes!

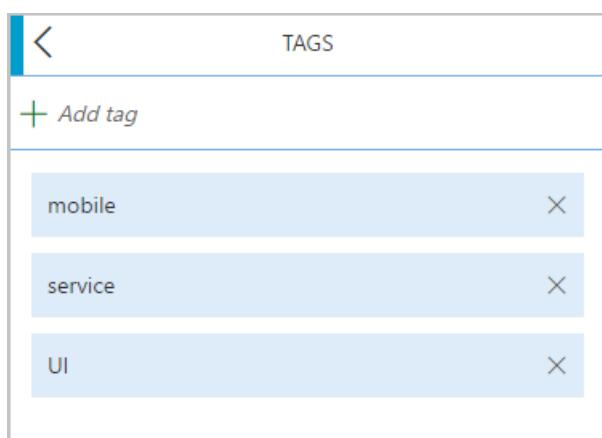
### Update status (change State)

To update the state, click the state you want.



### Add or remove tags

To add a tag, type the text you want.



### View history

Click the History tab to view history.

This screenshot shows the mobile history page. At the top, there's a header with the text "This is the new mobile experience!" and a "Details" button. Below that is a navigation bar with four tabs: "History" (which is highlighted with an orange border), "Links (2)", and "Attachments".

The main content area is divided into sections by time period: "Today", "Last seven days", and "Last thirty days". Each section lists activity items with icons, names, and timestamps.

- Today:**
  - Jamal Hartnett made field changes at 2:20 PM
  - Jamal Hartnett added link at 2:10 PM
  - Jamal Hartnett added link at 2:10 PM
- Last seven days:**
  - Christie Church changed Value Area to Architectu... on Wed 5/17
  - Jamal Hartnett added comment @Chuck Reinhart - Note the differences betwe... on Wed 5/17
- Last thirty days:**
  - Raisa-Pokrovskay changed Stack Rank to 10000... on 5/4/2017
  - Raisa-Pokrovskay created the User Story on 5/4/2017

## View and open work items in your activity lists

From within the mobile work item form, you can access your account Work items hub. The mobile hub allows you to view and open work items which fall into these categories:

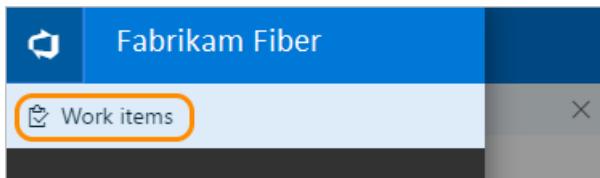
- Assigned to me:** lists all work items assigned to you
- Following:** lists all work items that you have elected to follow
- My activity:** lists all work items that you have recently viewed or updated.

The lists available from each page span all team projects that you work in.

To access a list, first click the list control from the work item form you've opened.



Then, click **Work items**.



The hub opens to the Assigned to me page. From there, you can click Following or My activity to access the other pages. To learn more about the account hub, see [Work effectively from your account hub](#).

## Work items

Assigned to me Following My activity

### Doing

- 🐞 13 Secure sign-in
- 💡 5 Make feedback mechanism mobile friendly
- 💡 12 Change initial view
- 💡 14 Interim save on long form
- 💡 15 Welcome back page
- 💡 16 Cancel order form
- 💡 17 Resume
- 💡 18 GPS locator interface
- ⚠ 19 Review all security threats
- 🐞 11 Slow response on information form
- 💡 1 This is the new mobile experience!

## Related articles

Additional experiences are in the works to improve and expand on the mobile experience. For more information, see the blog post: [The mobile work item form \(preview\)](#).

- [Set personal notifications](#)
- [Set team notifications](#)
- [Follow a work item](#)

### Provide feedback for the mobile experience

Help us improve the mobile experience.

To provide feedback, click the list control from the work item form and then click **Send Feedback**. To complete the feedback, select either the smile or frown and optionally enter a comment.



Fabrikam Fiber

Work items

X



Jamal Hartnett  
fabrikamfiber4@hotmail.com

Sign out

Send Feedback

View full site

# Manage your notifications

5/31/2018 • 3 min to read • [Edit Online](#)

VSTS | TFS 2018 | TFS 2017.1 | [Previous versions](#)

## NOTE

**Feature availability:** This topic applies to VSTS and to TFS 2017.1 and later versions. If you work from an on-premises TFS 2017 or earlier versions, see [Set alerts, get notified when changes occur](#). For on-premises TFS, [you must configure an SMTP sever](#) in order for team members to see the Notifications option from their account menu and to receive notifications.

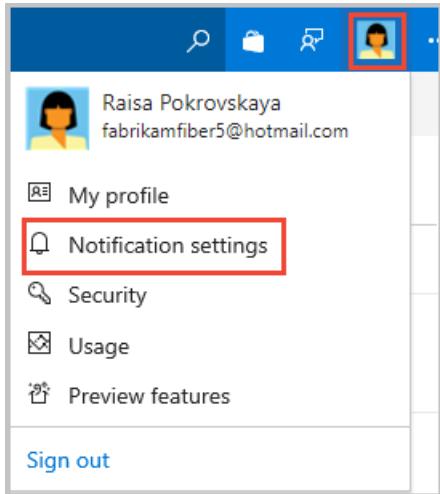
As changes occur to your code base, builds, work items, and other operations, you can receive email notifications. For example, you can set an alert to be notified whenever a bug that you opened is resolved or a work item is assigned to you.

Use this topic to learn how to:

- View your notifications
- Add a custom subscription
- Unsubscribe or opt out of a team or project subscription

## View your personal notifications

From the web portal, click the icon with your initials or picture icon, and select **Notification settings** from the drop-down menu.



This view shows all subscriptions that you have created or that have been created by an administrator. Subscriptions let you control what you are notified about. Those notifications you're subscribed to are indicated with the State as **On**.

| Description                                                                                                           | Type                                  | Notifies | State |
|-----------------------------------------------------------------------------------------------------------------------|---------------------------------------|----------|-------|
| <b>Build</b>                                                                                                          |                                       |          |       |
| Build completes<br>Notifies you when a build you queued or that was queued for you compl...                           | Build completed<br>(any project)      | You      | On    |
| <b>Code (Git)</b>                                                                                                     |                                       |          |       |
| Pull request reviewers added or removed<br>Notifies you when you are added to a pull request or when a user is add... | Pull request<br>(any project)         | You      | On    |
| Pull request completion failures<br>Notifies you when a pull request you created fails to complete                    | Pull request<br>(any project)         | You      | On    |
| Pull request changes<br>Notifies you when changes are made to a pull request you created or are...                    | Pull request<br>(any project)         | You      | On    |
| A comment is left on a pull request<br>Notifies you about comments made to a pull request you created or a di...      | Pull request comment<br>(any project) | You      | On    |

A subscription can be just for you, or if you are a team admin, can be shared by everyone in the team.

## Add a custom subscription

With custom personal subscriptions, you can define precise criteria for the events you want to receive notifications for. In contrast to a default subscription which will only notify the users or groups directly associated with an event, a custom subscription can notify you about any event.

1. From your Notifications page, click **New subscription**.

| Description                                                                                  | Type                             |
|----------------------------------------------------------------------------------------------|----------------------------------|
| <b>Build</b>                                                                                 |                                  |
| Build completes<br>Notifies you when a build you queued or that was queued for you completes | Build completed<br>(any project) |

2. Choose the category and template you want to use. For a list of supported templates, see [Default and supported notifications](#).

Here we choose to get notified when a pull request is created within a specific team project, Fabrikam Fiber.

## New subscription

| Category             | Template                             |
|----------------------|--------------------------------------|
| Build                | A commit authored by me is pushed    |
| Code (Git)           | A commit is pushed by me             |
| Code (TFVC)          | A commit is pushed                   |
| Work                 | A pull request is created or updated |
| Extension management |                                      |
| Release              |                                      |

[Next](#) [Cancel](#)

3. Modify the description to help you identify the subscription later. Also choose an email address for notifications to be delivered to. By default, your preferred email address is used. Optionally, include one or more fields to further specify the event criteria.

## New subscription

Description: A pull request is created or updated from Fabrikam Fiber

Subscriber: Raisa Pokrovskaya

Deliver to: Preferred email: fabrikamfiber5@hotmail.com

Filter: A specific team project: Fabrikam Fiber

Filter criteria:

| And/Or           | Field     | Operator   | Value                |
|------------------|-----------|------------|----------------------|
| + X              | Status    | Changes to | Abandoned            |
| + X              | Reviewers | Contains   | [Fabrikam Fiber]\Web |
| + Add new clause |           |            |                      |

[Previous](#) [Finish](#) [Cancel](#)

### NOTE

The fields available for filtering event criteria differ depending on the category and template you select.

4. Click **Finish** when done. The subscription now appears in the list under the category you selected.

A pull request is created or updated from Fabrikam Fiber  
Modified 3 minutes ago by you

Pull request  
(project Fabrikam Fiber)

You  On

## Unsubscribe or opt out of a team or OOB subscription

You can choose to not receive notifications for certain team subscriptions by opting out of the subscription.

To unsubscribe from any notification, even one that you've defined, slide the State **On/Off** indicator to the Off position.

For example, here we turn off the Build completes subscription.

Notifications > Mine | + New subscription ? Help

| Description                                                                       | Type | Notifies | State                        |
|-----------------------------------------------------------------------------------|------|----------|------------------------------|
| Build                                                                             |      |          |                              |
| <b>Build completes</b><br>Notifies you when a build you queued or that was que... | ...  | You      | <input type="checkbox"/> Off |

### NOTE

Whether you are an administrator or not, toggling a shared team subscription from your notification settings only impacts you and not other team members.

## Related notes

- [Default and supported notifications](#)
- [Follow a specific work item](#)
- [Manage notifications for a team](#)
- [Change your preferred email address](#)

### Limitations

- The user interface no longer supports creating plain text email subscriptions.

# Set your account preferences

4/17/2018 • 1 min to read • [Edit Online](#)

## VSTS | TFS 2015

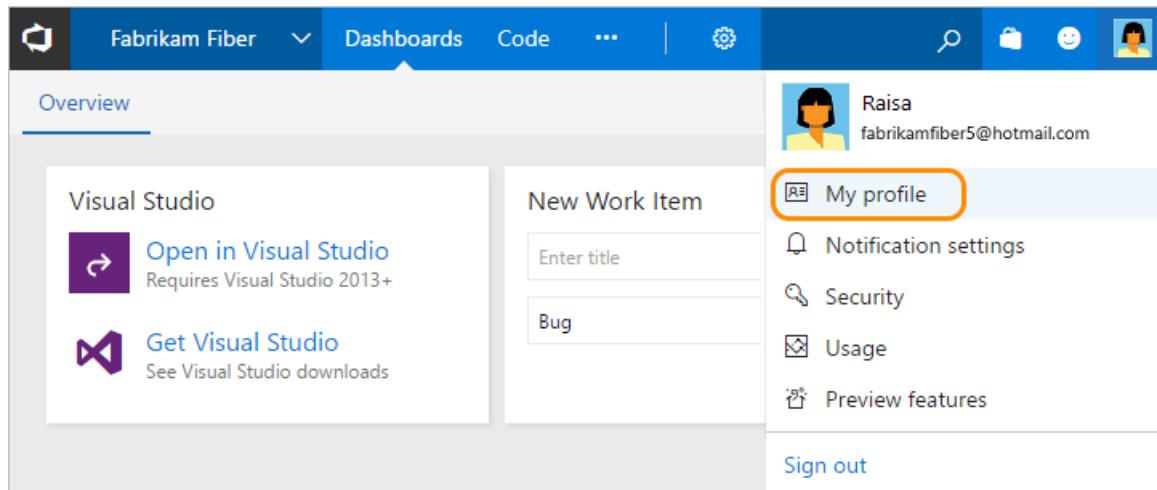
From your profile page, you can change your picture or other account preferences. Specifically, you can set the following:

| PROFILE                                                                                                                                             | SECURITY                                                                                                                                                                         | OTHER                                                                                                             |
|-----------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------|
| <ul style="list-style-type: none"><li>- Your picture</li><li>- Your display name</li><li>- Your preferred email</li><li>- Locale settings</li></ul> | <ul style="list-style-type: none"><li>- Personal access tokens</li><li>- Alternate authentication credentials</li><li>- OAuth authorizations</li><li>- SSH public keys</li></ul> | <ul style="list-style-type: none"><li>- Manage personal notifications</li><li>- Enable preview features</li></ul> |

Locale settings include language, date and time pattern, time zone, and user interface theme.

## Change profile settings (VSTS)

To change your your account information, open your account menu.



The screenshot shows the VSTS account menu. At the top, there's a navigation bar with 'Fabrikam Fiber' and various links like 'Dashboards', 'Code', and '...'. On the right side of the menu, there's a user profile section with a photo, the name 'Raisa', and the email 'fabrikamfiber5@hotmail.com'. Below this, a list of options is shown: 'New Work Item', 'My profile' (which is highlighted with an orange oval), 'Notification settings', 'Security', 'Usage', 'Preview features', and 'Sign out'. The 'My profile' option is the focal point of the image.

From the Profile/Information page, choose **Edit profile** to change the picture, display name, or preferred email. Open the Preferences page to change a locale preference.



Raisa Pokrovskaya [Edit profile](#)

fabrikamfiber5@hotmail.com

Microsoft account [Edit](#)

United States fabrikamfiber5@hotmail.com

---

**Visual Studio Dev Essentials**

Get everything you need to build and deploy your app on any platform.

[Use your benefits](#)

[Manage authorizations](#)

## Visual Studio Team Services accounts

[Create new account](#)

fabrikamprime.visualstudio.com (Member)

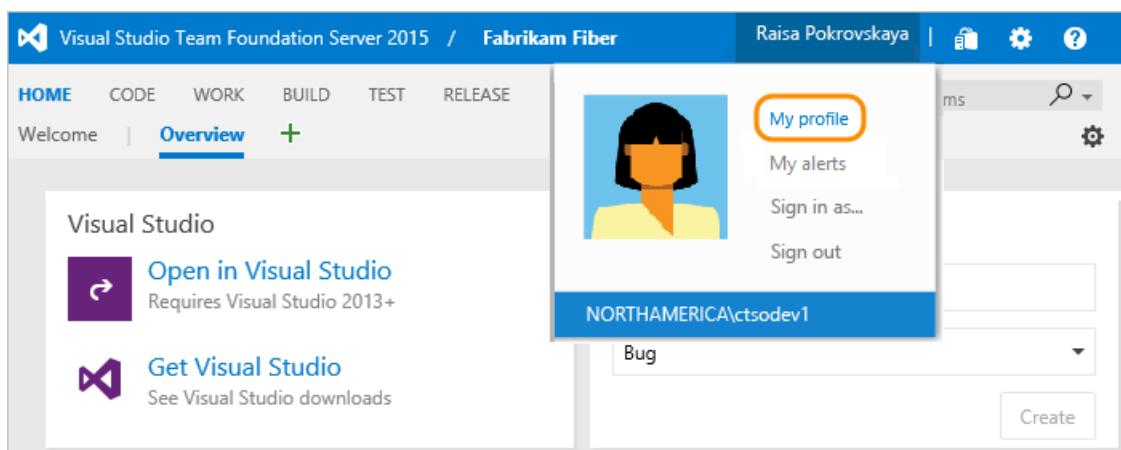
| Team Projects | Actions                                                                                                       |
|---------------|---------------------------------------------------------------------------------------------------------------|
| FabrikamFiber | <a href="#">Open in Visual Studio</a><br><a href="#">Manage security</a><br><a href="#">Browse extensions</a> |

FabrikamFiber.visualstudio.com (Member)

fabrikaminthecloud.visualstudio.com (Member)

fabrikamprime.visualstudio.com (Member)

## Change profile settings (TFS)



The screenshot shows the Visual Studio Team Foundation Server 2015 interface. At the top, it says "Visual Studio Team Foundation Server 2015 / Fabrikam Fiber". The top navigation bar includes links for HOME, CODE, WORK, BUILD, TEST, and RELEASE. Below that is a "Welcome" section with a "Overview" link and a "+" button. On the left, there's a "Visual Studio" section with "Open in Visual Studio" (Requires Visual Studio 2013+) and "Get Visual Studio" (See Visual Studio downloads). On the right, there's a user profile dropdown menu for "Raisa Pokrovskaya". The menu items are: "My profile" (which is highlighted with an orange circle), "My alerts", "Sign in as...", and "Sign out". Below the menu, the text "NORTHAMERICA\ctsodev1" is displayed. At the bottom of the page, there are "Bug" and "Create" buttons.

Choose **edit** to change a setting. Choose the Locale tab to change a locale preference.

USER PROFILE x



**Raisa Pokrovskaya**  
NORTHAMERICA\ctsodev1

**GENERAL** LOCALE

[Change picture](#)

**USER INFORMATION**

Display Name **Raisa Pokrovskaya** [Edit](#)

Preferred email **raisa@fabrikamfiber.com** [Edit](#)

**UI SETTINGS**

Theme

[Save changes](#) [Cancel](#) //

## Try this next

Work effectively from your account hub or [Set favorites](#)

# Connect to team projects

5/31/2018 • 10 min to read • [Edit Online](#)

## VSTS | TFS 2018 | TFS 2017 | TFS 2015 | TFS 2013

To share code, build apps, track work, and collaborate with team members, you connect to a team project from one of the following clients:

- [Web portal](#)
- [Visual Studio or Team Explorer](#)
- [Eclipse/Team Explorer Everywhere](#)
- [Android Studio with the VSTS Plugin for Android Studio](#)
- [IntelliJ with the VSTS Plugin for IntelliJ](#)
- [Visual Studio Code](#)

### NOTE

A team project defines a process and data storage in which you manage your software projects from planning to deployment. You or a team member create a team project either on VSTS or an on-premises TFS. When you connect to a team project, you connect to an account or team project collection. Within that collection, one or more team projects may be defined. At a minimum, at least one team project must be created in order to use the system.

If you don't have a team project yet, create one in [VSTS](#) or set one up in an [on-premises TFS](#). If you need to add a team, see [Multiple teams](#). If you don't have access to the team project, [get invited to the team](#).

From each of these clients, you can quickly switch context to a different team project and connect under a different account name. If you work remotely, you can configure your client to [connect to a TFS Proxy server](#).

To get started with a code base, [set up Git](#) or [set up TFVC](#).

## Connect from the web portal

1. If you're not a member of a VSTS or TFS security group, ask your account or project admin to add you.
2. Open a browser window and type a URL that uses the following form:

### VSTS:

```
https://AccountName.visualstudio.com/ProjectName
```

### TFS (on-premises):

```
http://ServerName:8080/tfs/DefaultCollection/ProjectName
```

For example, to connect to the server named **FabrikamPrime**, type: <http://FabrikamPrime:8080/tfs/>.

The default Port is 8080. Specify the port number and directory for your server if defaults aren't used.

3. When you access the server for the first time, a Windows Identity dialog box will appear. Fill in your credentials and choose the **OK** button.

**TIP**

If you select the **Remember me** check box you won't have to enter your credentials the next time you connect.

4. Choose your team project or team from the set of available links, or choose **Browse** to access all team projects and teams.

The screenshot shows the 'Overview' tab of the Visual Studio Team Foundation Server 2015 web interface. At the top, there are four purple cards: 'Features' (What does Team Foundation Server have to offer?), 'Learn' (Access online help for Team Foundation Server), 'Get Visual Studio' (View all the download options), and 'Administer' (Manage projects, users, groups and permissions). Below these are sections for 'Recent projects & teams' and 'Recent team rooms'. The 'Recent projects & teams' section lists four items: 'Fabrikam Fiber / Web Service' (2 minutes ago), 'Fabrikam Fiber' (21 hours ago), 'Fabrikam Fiber / Migrate' (5/27/2016), and 'Fabrikam Fiber / Fiber Suite' (2/3/2016). The 'Recent team rooms' section shows one room: 'Fabrikam Fiber Team Room' (0 users in room).

To learn more about each hub and the tasks you can perform, see [Work in the web portal](#).

### Log on with different credentials

1. Open Windows Security from the context menu associated with your name.

The screenshot shows the 'Overview' tab of the Visual Studio Team Foundation Server 2015 web interface. A context menu is open over the user profile picture for 'Raisa Pokrovskaya'. The menu items are: 'My profile', 'My alerts', 'Sign in as...', and 'Sign out'. The 'Sign in as...' option is highlighted with a red oval. The user's name 'NORTHAMERICA\ctsodev1' is also visible at the bottom of the profile card.

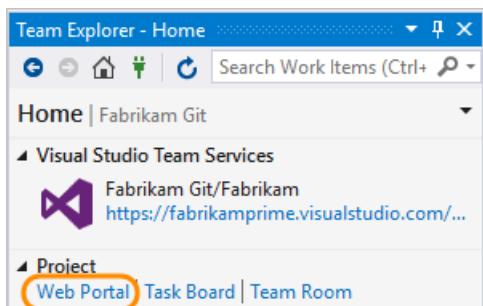
2. Enter your credentials.

## Sign In As...



## Open the web portal from Team Explorer

- Open the web portal from the home page.

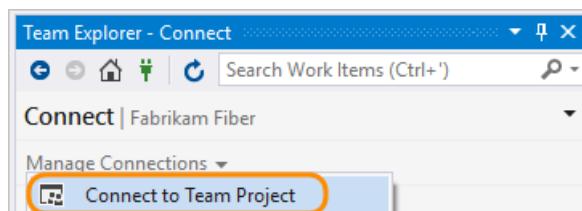


## Connect from Visual Studio or Team Explorer

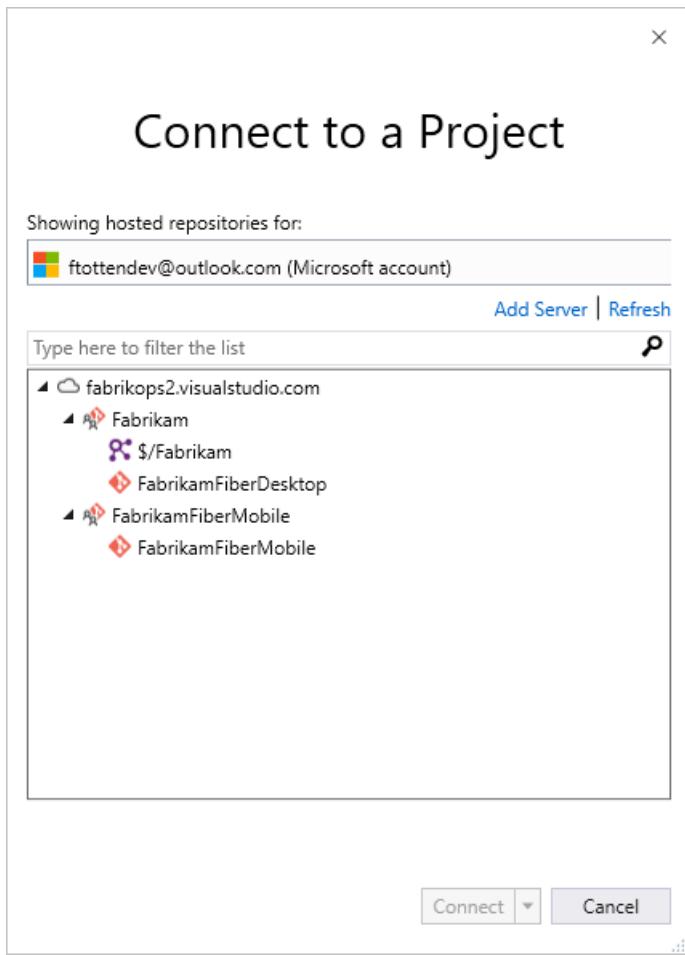
1. If you haven't already, [download and install a version of Visual Studio](#).
2. If you're not a member of a TFS security group, [get added as one](#).
3. Check with a team member to determine the names of the server, team project collection, and team project that you will connect to.

### Visual Studio 2017

Select the connect icon in Team Explorer to open up the **Connect** page. Choose the **Connect to Team Project** link to select a team project to connect to.



The **Connect to a Project** dialog will appear and show the team projects you can connect to, along with the repos in those projects.



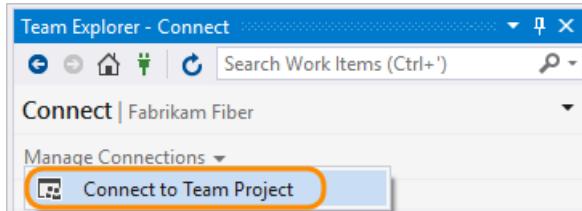
Select the **Add Server** link to connect to a team project in Team Foundation Server. Enter the URL to your TFS server and select **Add**.



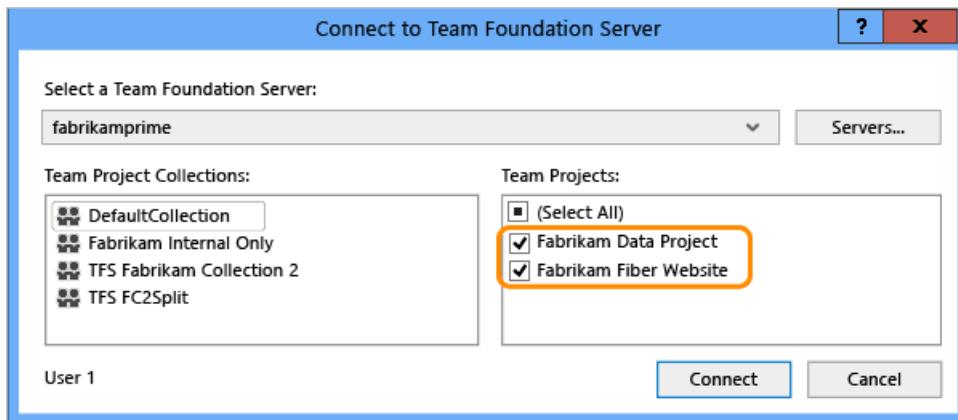
Select a team project from the list and select **Connect**.

### Visual Studio 2015

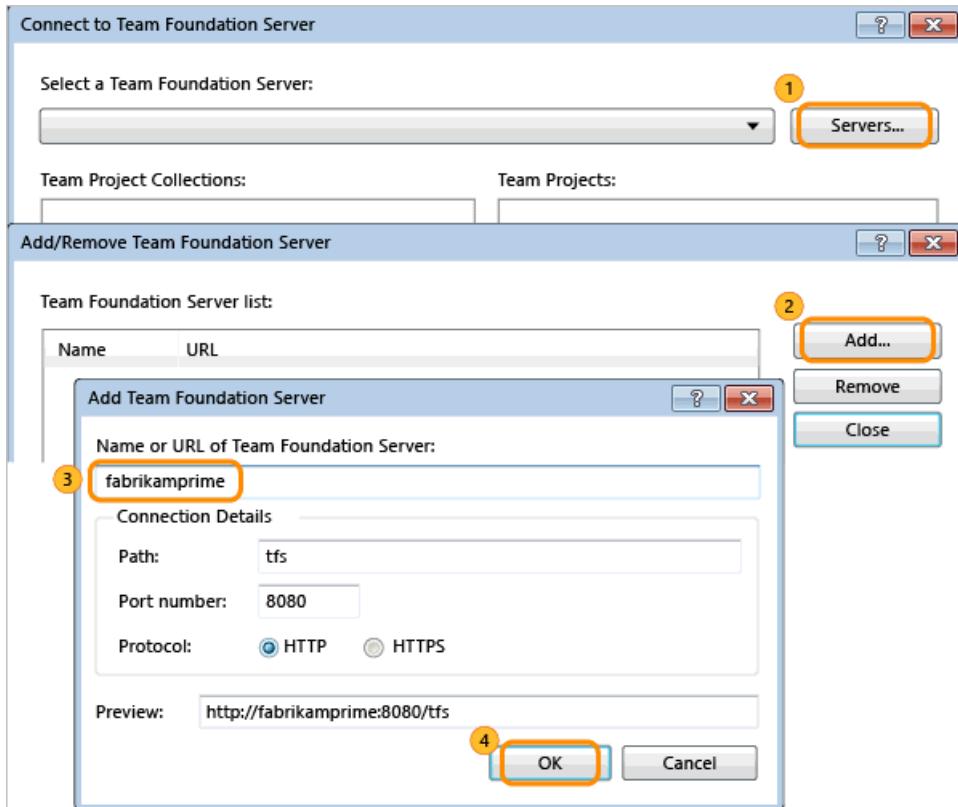
From the Connect page, choose the **Connect to Team Project** link to select a different account, TFS, or team project to connect to.



Select the team projects that you will work on.



If it's your first time connecting, add TFS to the list of recognized servers.



If you selected just one team project, you'll see the Home page for that project. The pages that appear differ based on the resources enabled and the source control system selected for your team project.

Team Explorer will display the Home page for that project. The pages that appear differ based on the resources enabled and the source control system selected for your team project.

## HOME PAGE WITH GIT

The screenshot shows the Team Explorer - Home page for a Git repository named 'Fabrikam Fiber'. The top navigation bar includes links for Home, Connect, Search Work Items, and a refresh icon. Below the navigation, the 'Team Foundation Server' section lists 'Fabrikam Fiber/Fabrikam Git' with the URL 'http://vs-2015-test:8080/tfs/defaultco...'. The 'Project' section contains links for Web Portal, Task Board, and Team Room. A sidebar on the left lists various Git-related tasks: Changes, Branches, Pull Requests, Sync, Work Items, Builds, Team Members, and Settings. The 'Solutions' section at the bottom shows 'New...' and 'Open...' options, with a note stating 'There were no solutions found.'

## HOME PAGE WITH TFVC

The screenshot shows the Team Explorer - Home page for a TFVC repository named 'Fabrikam Fiber'. The top navigation bar includes links for Home, Connect, Search Work Items, and a refresh icon. Below the navigation, the 'Team Foundation Server' section lists 'Fabrikam Fiber' with the URL 'http://vs-2015-test:8080/tfs/defaultco...'. The 'Project' section contains links for Web Portal, Task Board, and Team Room. A sidebar on the left lists various TFVC-related tasks: My Work, Pending Changes, Source Control Explorer, Work Items, Builds, Team Members, and Settings. The 'Solutions' section at the bottom shows 'New...' and 'Open...' options, with a note stating 'There were no solutions found.'

To learn more about each page and the tasks you can perform, see [Work in Team Explorer](#).

Your client remembers the set of connections you've configured. You can quickly switch from one team project to another from the Connect page.

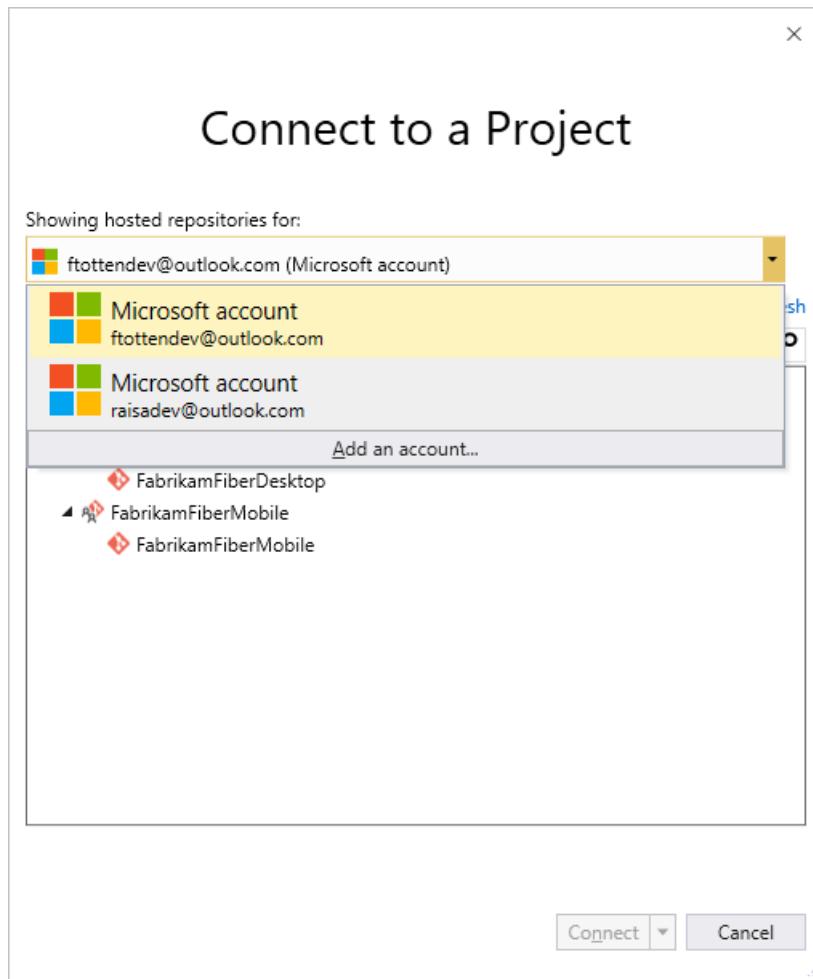
### Change accounts when connecting to VSTS

#### Visual Studio 2017

- From the Connect page, choose the **Connect to Team Project** link to log on with different credentials.

The screenshot shows the Team Explorer - Connect page. The top navigation bar includes links for Home, Connect, Search Work Items, and a refresh icon. Below the navigation, the 'Connect' section lists 'Fabrikam Fiber'. A dropdown menu labeled 'Manage Connections' is open, showing the option 'Connect to Team Project' which is highlighted with a red oval.

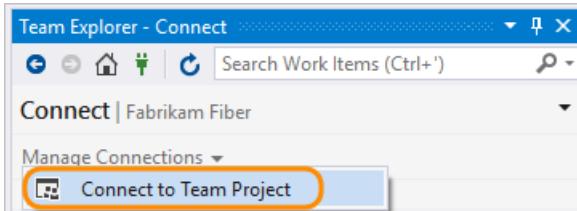
Select a different user from the drop-down or select **Add an account...** to access a team project using a different account.



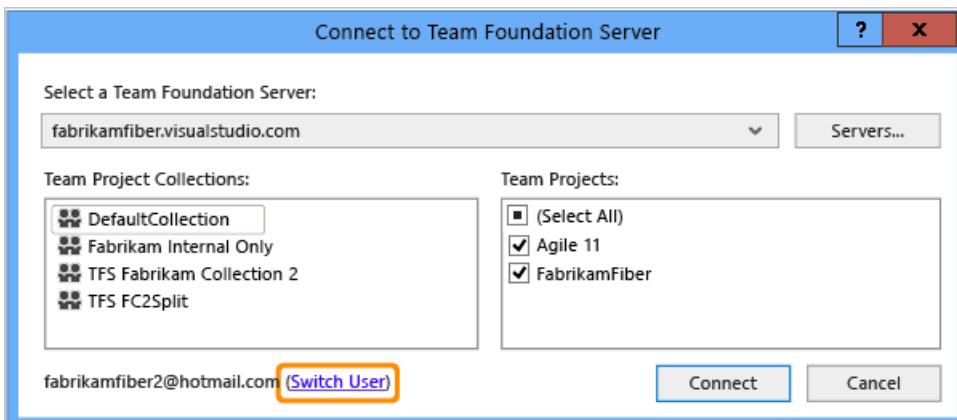
2. Sign on using a valid Microsoft account—an account that is associated with a VSTS team project.

## Visual Studio 2015

1. From the Connect page, choose the **Connect to Team Project** link to log on with different credentials.



The **Switch User** link appears only when you are actively connected to a team project hosted on VSTS.

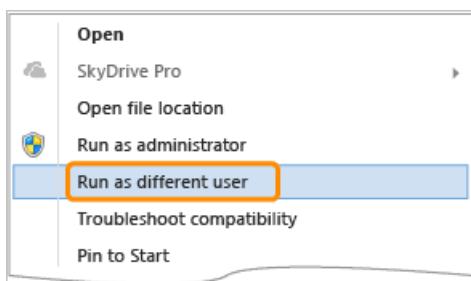


2. Sign on using a valid Microsoft account—an account that is associated with a VSTS team project.

## Change accounts

To run Visual Studio under an account that is different from your logged on Windows account, open the context

menu for **devenv.exe** to access your run as options.



You can locate the executable in the following folder: *Drive:\Program Files (x86)\Microsoft Visual Studio 12.0\Common7\IDE*.

## Connect from Microsoft Excel or Project

To add or modify work items by using Excel or Project, you connect your worksheet or project plan to a team project. Establishing this connection binds the document to the hosted account or selected TFS, team project collection, and team project to exchange information.

### NOTE

You can't use Office Project 365 to connect to VSTS or TFS.

### Connect from a worksheet or project plan

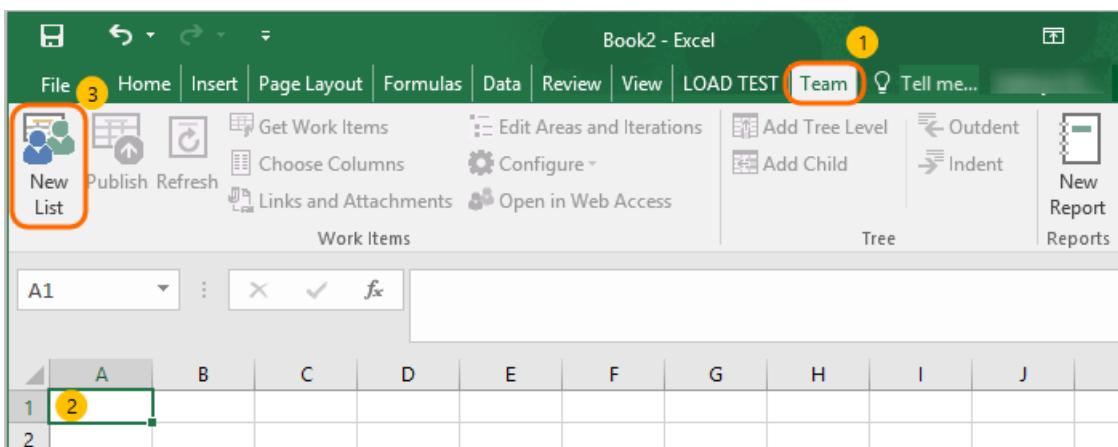
To follow these procedures, you must be a member of the **Readers** group or have your **View work items in this node** permission set to **Allow**. See [Permission reference](#) for details.

1. If you don't have Office Excel 2007 or a more recent version, [install it](#). For VSTS or TFS 2017, you'll need Project 2010 or a more recent version. For client compatibility, see [Requirements](#)
2. If you haven't installed a version of [Visual Studio \(2010 or later\)](#) or [Team Foundation Server Standalone Office Integration 2015 \(free\)](#), you'll need to install one of these versions to connect to a team project hosted on VSTS or an on-premises TFS.

### NOTE

**Feature availability:** The only way to get the Team Foundation add-in to Excel is by installing one of the latest editions of Visual Studio or TFS Standalone Office Integration.

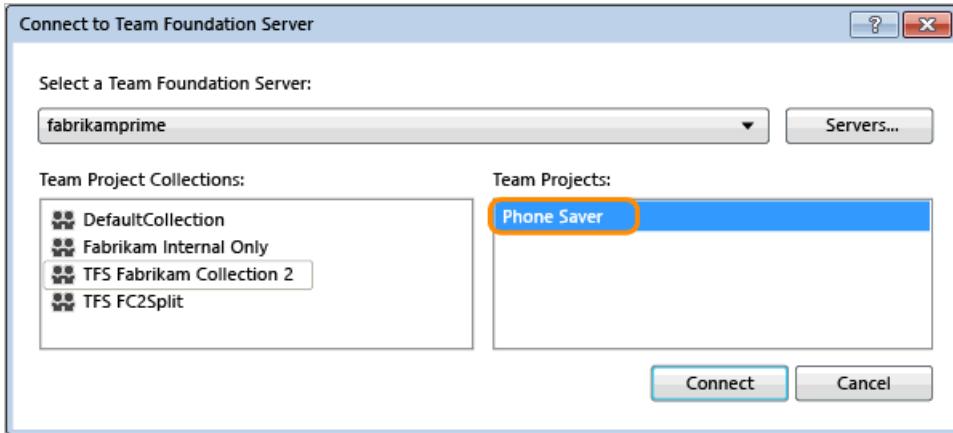
3. Start with a blank worksheet or project plan. If you don't see the **Team** ribbon (or the **Team** menu if you use Excel 2007 or Project 2007), see step 2.



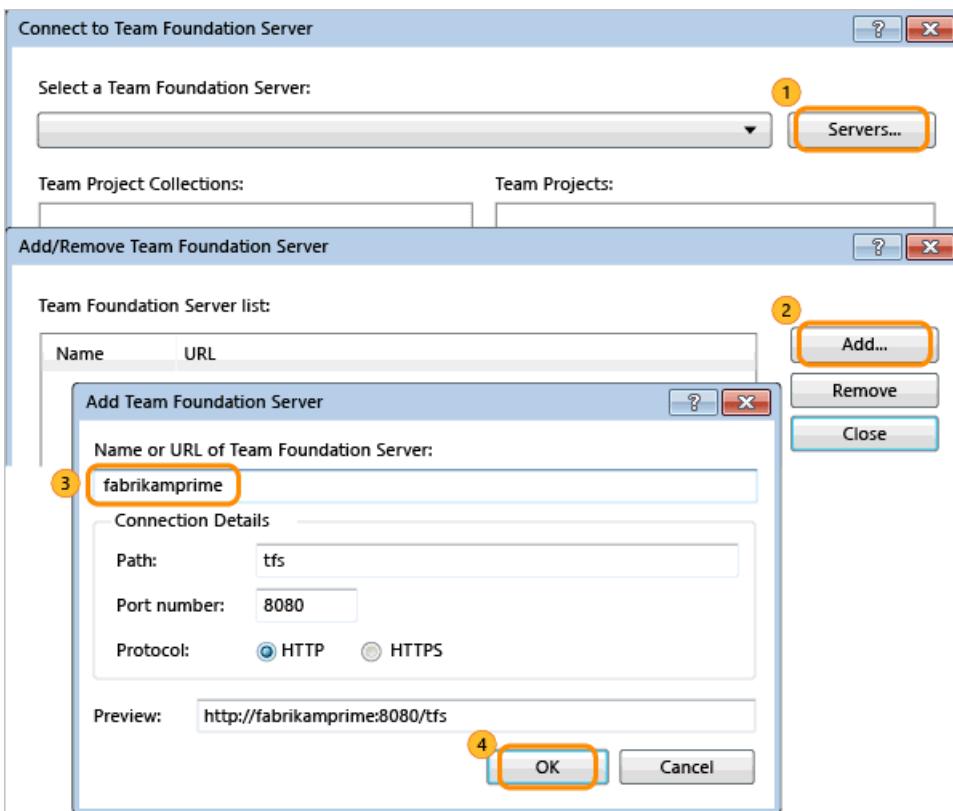
**TIP**

If the **Team** ribbon no longer appears, you might need to [re-enable it](#).

4. Connect to VSTS account or a TFS instance and the team project. If you can't connect, [get added as a team member](#).



If it is your first time connecting from Excel or Project, you might have to add the VSTS account or TFS server to the list of recognized servers.



5. Your worksheet or project plan is now bound to your team project. What this means is that you can add work items to the team project from the Office document or add work items to the Office document from the team project.

To learn more, see [Bulk add work items with Excel](#) or [Create your backlog and tasks using Project](#).

#### **NOTE**

If the team project is moved to a different team project collection in the same instance of TFS, your documents will automatically be reconnected. However, if the team project is moved to a different instance of TFS, you must manually reconnect your documents to the new server.

## **Work offline**

An advantage to using Excel or Project is that you can work offline to add or modify work items. Complete the following procedures to disconnect an Excel worksheet or Project plan and later reconnect to synchronize your updates with the work item database.

### **Disconnect the document from a team project**

1. Open the document that you want to change while you are offline.

2. Follow one of the following steps:

- If you are using Excel, on the **Team** ribbon, in the **Work Items** group, choose **Refresh**.
- If you are using Project, on the **Team** menu, choose **Refresh**.

This step refreshes the work item list to retrieve the latest information from the work item database.

3. If you are using Excel, add to the work item list the columns for all fields that you want to modify.

You cannot add columns when the work item list is not connected to TFS.

4. Save your Excel or Project file. You can now modify the information even if you are offline, disconnected from the team project or network.

5. Change the work item list as needed.

#### **NOTE**

You cannot create most types of links between work items when the work item document is not connected to the team project. The exceptions are parent-child links in an Excel tree list and both parent-child and predecessor-successor links in a Project plan.

### **Reconnect the document to the team project**

1. Make sure your computer is online.

2. If you changed the document while you were offline, follow one of these steps:

- If you are using Excel, on the **Team** ribbon, in the **Work Items** group, choose **Publish**.
- If you are using Project, on the **Team** menu, choose **Publish Changes**.

3. If you did not change the document while you were offline, follow one of these steps:

- If you are using Excel, on the **Team** ribbon, in the **Work Items** group, choose **Refresh**.
- If you are using Project, on the **Team** menu, choose **Refresh**.

4. Resolve any data validation errors or conflicts that occur.

## **Related notes**

Additional resources you may find of interest:

- [Work in web portal](#)

- [Work in Team Explorer](#)
- [Troubleshoot connection](#)

If all you need is a code repository and bug tracking solution, then start with the [Git get started guide](#) and [Manage bugs](#).

To start planning and tracking work, see [Get started with Agile tools to plan and track work](#).

### User accounts and licensing

To connect to a team project, you need your user account added to the team project. This is typically done by the [account owner \(VSTS\)](#) or a [project administrator](#).

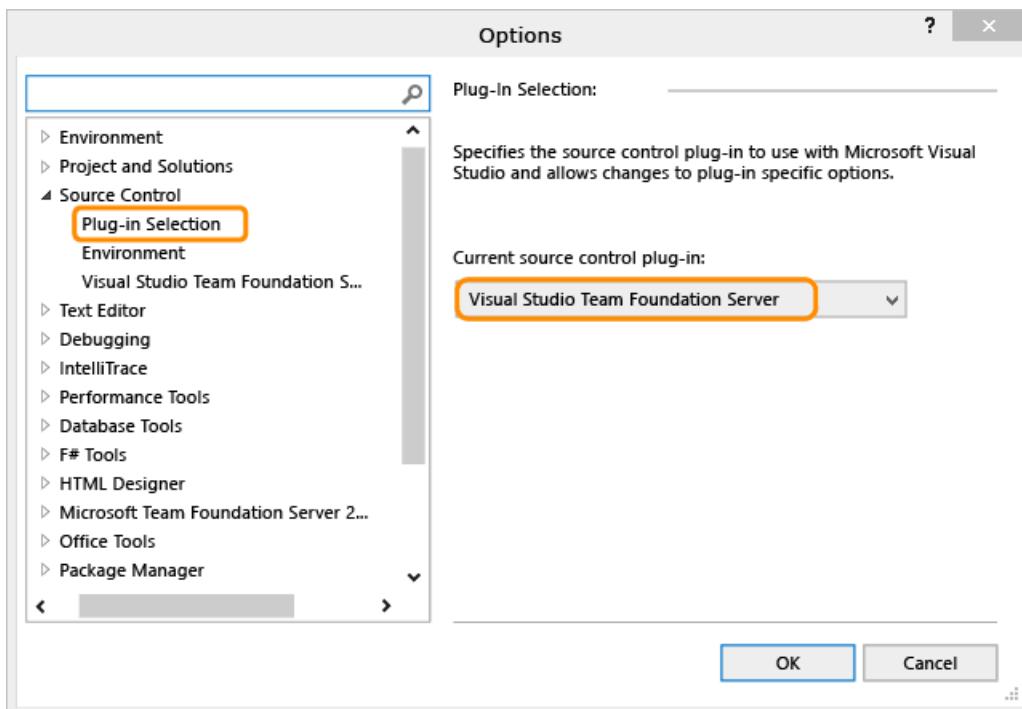
VSTS provides access to the first 5 account users free. After that, you need to [pay for more users \(VSTS\)](#). For on-premises TFS, each user account must have a TFS client access license (CAL). All Visual Studio subscriptions and paid VSTS users include a TFS CAL. Find out more about licensing from the [Team Foundation Server pricing page](#).

In addition, you can provide access to stakeholders in your organization who will have limited access to select features as described in [Work as a Stakeholder](#).

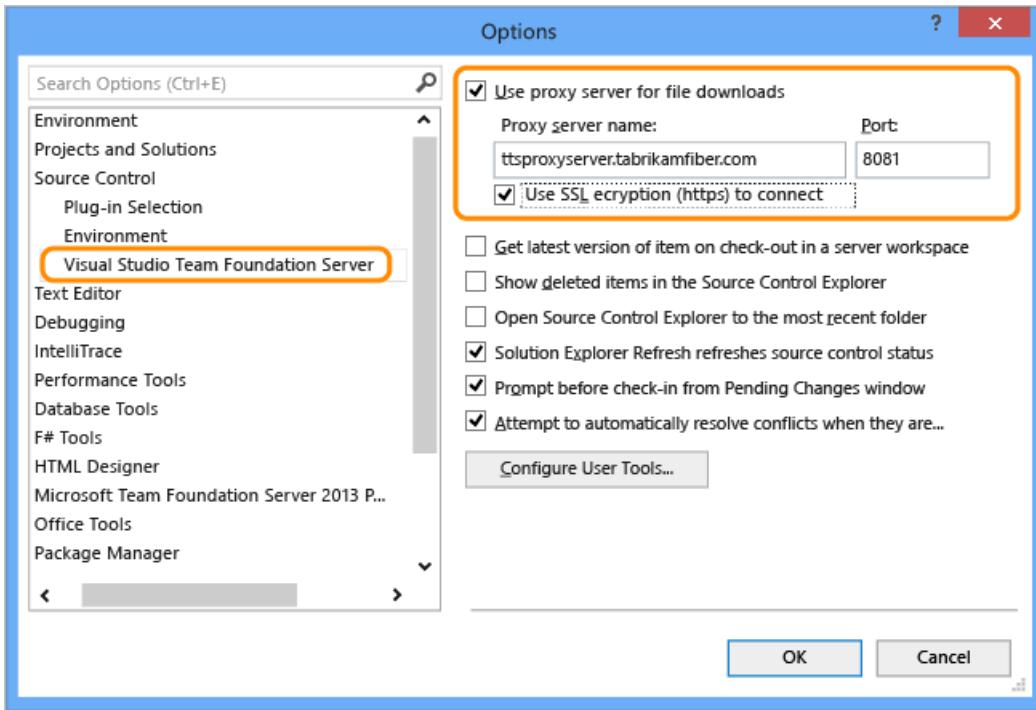
## Configure Visual Studio to connect to TFS Proxy

If your remote team uses a [TFS Proxy server](#) to cache files, you can configure Visual Studio to connect through that proxy server and download files under Team Foundation version control.

1. First, make sure that you have connected to TFS as described [in the previous section](#).
2. From the Visual Studio **Tools** menu, open the Options dialog and expand the Source Control folder. On the Plug-in Selection page, confirm that Visual Studio Team Foundation Server is selected.



3. On the Visual Studio Team Foundation Server page, enter the name and port number for the TFS Proxy server. Select the **Use SSL encryption (https) to connect** checkbox.



Make sure you specify the port number that your administrator assigned to TFS Proxy.

To **Configure User Tools** to associate a file type with a compare or merge tool, see [Associate a file type with a file-comparison tool](#) or [Associate a file type with a merge tool](#).

### What other clients support connection to TFS?

In addition to connecting through a web browser, Visual Studio, Eclipse, Excel, and Project you can connect to a team project from these clients:

- [Visual Studio Code](#)
- [Visual Studio Community](#)
- [Eclipse: Team Explorer Everywhere](#)
- [PowerPoint Storyboarding](#)
- [Microsoft Test Manager](#)
- [Microsoft Feedback Client](#)

### Requirements and client compatibility

Some tasks or features aren't available when you connect to a later version of TFS than which your client supports. For more information, see [Requirements and compatibility](#).

### Determine your platform or TFS version

See [Feedback and support](#)

# Troubleshoot connecting to a team project in VSTS or TFS

5/31/2018 • 5 min to read • [Edit Online](#)

[VSTS](#) | [TFS 2018](#) | [TFS 2017](#) | [TFS 2015](#) | [TFS 2013](#)

## Troubleshoot VSTS connectivity

As a first step in resolving connectivity issues with VSTS, do the following:

1. Sign out of your browser. You can do this by clicking this [Visual Studio Sign out link](#).
2. Delete your browser cookies. For most browsers, you can do this by entering CTRL+SHIFT+DEL.
3. Open Internet Explorer (IE) and delete cookies. Visual Studio IDE uses IE cookies.
4. Close all browsers and the Visual Studio IDE.
5. Use a private browser session to retry the connection to VSTS. If the issue is with VS IDE, remove the connection to VSTS after doing above and then re-add it.

## Troubleshoot signing in to VSTS

There are two types of identities that can sign in to VSTS - Microsoft accounts (MSA) and Azure Active Directory (Azure AD) accounts. Depending on your account, you may experience one of the following errors.

401 - Not Authorized

# 401

### NOT AUTHORIZED

Sorry, but Jamal Hartnett <fabrikamfiber4@hotmail.com> (Microsoft account) is not authorized to access this page

[Sign out and connect with another login](#)

[Service Status and Support](#) @VSTS

The most common error page encountered is the "401 Not Authorized" error. This occurs when your identity does not have permission to enter a VSTS account. Common reasons for this include:

- Your identity is not a member of the target VSTS account
- Your identity has an invalid or missing license assignment

If you believe you are a member of the account but are blocked by this error page, feel free to [contact customer support](#).

**Scenario 1:** Your work or school Azure AD account does not have access, but your personal MSA account does.

401 - Work or school, or Personal account

# 401

## NOT AUTHORIZED

[jamal@fabrikam.com](mailto:jamal@fabrikam.com) has multiple accounts associated with it.

Your work or school account does not have access to [fabrikam.visualstudio.com](http://fabrikam.visualstudio.com), but **your personal account does have access**.

[Sign in with your work or school account](#)

[Sign out and connect with another login](#)

Service Status and Support [@VSTS](#)

This is a highly specific 401 error case, where there exists both a personal Microsoft account (MSA) and a work or school account (Azure AD) with the same sign in address. You have signed in with your work or school account, but your personal account is the identity that has access to the VSTS account.

### Mitigation

In some cases, you may be unaware that you have two identities with the same sign in address. The work or school AAD account may have been made by an administrator upon onboarding to Office365 or Azure AD. You must choose the "sign in with your personal MSA account" link to sign you out of your current work or school AAD account and begin a sign in prompt as the personal MSA. After authentication, you should have access to the VSTS account.

[!Tip] To never see this prompt again, you can rename your Microsoft account. This will make it so that only one identity (your work or school account or Azure AD account) for your sign in address.

**Scenario 2:** Your personal MSA does not have access, but your Azure AD account does. This is the opposite version of the above 401 error page. In this case the personal account (Microsoft account identity) did not have access to the VSTS account and the work or school account (Azure AD identity) does. The same guidance above applies, only in reverse.

401 - Work or school, or Personal account

# 401

## NOT AUTHORIZED

[jamal@fabrikam.com](mailto:jamal@fabrikam.com) has multiple accounts associated with it.

Your personal account does not have access to [fabrikam.visualstudio.com](http://fabrikam.visualstudio.com), but **your work or school account does have access**.

[Sign in with your work or school account](#)

[Sign out and connect with another login](#)

Service Status and Support [@VSTS](#)

Still unable to access your account? In cases where you enter your credentials correctly, but instead of redirecting to your VSTS account you are redirected back to the original sign in page, we recommend clearing all cookies and re-attempting to sign in. If that does not fix the issue, please contact customer support.

## Troubleshoot TFS connectivity

Here's a list of the most frequently encountered connection problems and what to do about them. Start at the top and follow it in the order indicated.

## 1. Verify that you have required permissions.

If the errors that you receive indicate read-only or blocked actions, you might not have permission to act on the data.

## 2. Verify that your computer is connected to the network and can access network resources.

## 3. Verify that TFS hasn't been taken offline. Talk with your TFS administrator.

## 4. Verify whether your team project has been moved to another team project collection in TFS. If it has been moved, you must create a connection to the new server name.

For additional troubleshooting tips, see [TF31002: Unable to connect to this Team Foundation Server](#).

## Switch between different organizational accounts in VSTS

When you use two or more VSTS accounts that are linked to directory tenants, such as accounts that are created from the Microsoft Azure Portal, the sign-out function may not work as expected. For example, you can't switch between different organizational accounts to connect to multiple accounts that are linked to directory tenants.

When this problem occurs, a blank screen flashes several times followed by one of the error messages below after you connect to or add a new connection in "Connect to Team Foundation Server" dialog box:

TF31003: Either you have not entered the necessary credentials, or your user account does not have permission to connect to the Team Foundation Server

TF31002: Unable to connect to this Team foundation Server

To resolve this problem, apply Visual Studio 2013.2 or install a later version. Go to the [Visual Studio download website](#).

For a workaround in which you delete your browser cookies, see the following support article, [You can't switch between different organizational accounts in Visual Studio Online](#).

## Connect to a TFS with Secure Sockets Layer (SSL) configured

If you connect to a TFS instance that has SSL configured, then you'll need to install a certificate and clear the client cache. For details, see [Set up HTTPS with Secure Sockets Layer \(SSL\) for TFS, Configuring Client Computers](#).

## Clear the cache on client computers

When the on-premises TFS configuration changes, such as when moving or splitting a project collection, you might have to clear the cache.

1. Log on to your client computer for Team Foundation by using the credentials of the user whose cache you want to clear.
2. Close any open instances of Visual Studio.
3. Open a browser, and browse to one of the following folders, depending on the operating system that is running on the client computer:
  - **Windows 10** *Drive:\Users<i>UserName\AppData\Local\Microsoft\Team Foundation\6.0\Cache*
  - **Windows 8** *Drive:\Users<i>UserName\AppData\Local\Microsoft\Team Foundation\4.0\Cache*
  - **Windows Vista or Windows 7** *Drive:\Users<i>UserName\AppData\Local\Microsoft\Team Foundation\2.0\Cache*

4. Delete the contents of the Cache directory, including all subfolders.

# TF31002: Unable to connect to this Team Foundation Server {0}. Team Foundation Server URL: {1}

5/31/2018 • 5 min to read • [Edit Online](#)

[VSTS](#) | [TFS 2018](#) | [TFS 2017](#) | [TFS 2015](#) | [TFS 2013](#)

You might receive this error when you try to connect to VSTS or an on-premises Team Foundation Server from Visual Studio.

## You receive this error when you try to connect to VSTS

| PROBLEM                                                                 | RESOLUTION                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
|-------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| You don't have an active account or license.                            | Check with your account administrator that you're a member of the account and have an active, valid license. See <a href="#">Assign licenses to users</a> for details.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| Your VSTS account is connected to the Azure Active Directory.           | When your VSTS account is connected to a directory that is associated with an Office 365 or Microsoft Azure subscription, only members in the directory can access the account.<br><br>Check with your directory administrator to have them <a href="#">create an organizational account for you or add your account to the directory as external member</a> .                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| You can't switch between different organizational accounts.             | If you work with several VSTS accounts that connect to different directories, such as accounts that are created from the Microsoft Azure Preview Portal, the sign-out function might not work as expected. For example, you can't switch between different organizational accounts to connect to multiple accounts that are linked to directory tenants.<br><br>When this problem occurs, you see a flashing blank sign in dialog box several times. Then, you receive either TF31002 or TF31003 error after you connect to or add a new connection in "Connect to Team Foundation Server" dialog box.<br><br>To resolve this problem, apply the most recent <a href="#">Visual Studio update</a> .<br><br>To learn more, see <a href="#">KB Article ID 2958966, You can't switch between different organizational accounts in Visual Studio Online</a> . |
| You want to log into VSTS from Visual Studio using a different account. | See <a href="#">Connect to team projects, Change accounts when you connect to VSTS</a> .                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |

## You receive this error when you try to connect to an on-premises TFS from your client computer

If you determine that you're receiving this error from one computer but not others, or others aren't receiving this error, then check the problem resolutions outlined below.

| PROBLEM                                                                                                           | RESOLUTION                                                                                                                                                                                                                         |
|-------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Your password has expired.                                                                                        | Verify that you typed your user account and password correctly, and that your password hasn't expired.                                                                                                                             |
| You've entered an incorrect server URL.                                                                           | Verify that you have typed the server URL correctly including the server name, port number, and protocol (http/https). See <a href="#">Connect to team projects</a> to learn more.                                                 |
| The TFS configuration has changed.                                                                                | If the configuration for the on-premises TFS has changed, you must create a new connection. You might also need to <a href="#">clear the client cache</a> .                                                                        |
| You work remotely and need to connect to a TFS Proxy server to check in files to Team Foundation version control. | You need to <a href="#">configure Visual Studio to connect to TFS Proxy</a> .                                                                                                                                                      |
| You're connecting to a later version of TFS than your Visual Studio client version.                               | Your version of Visual Studio or Team Explorer might be incompatible with Team Foundation Server. You might need to install one or more GDR packs. See <a href="#">Requirements and compatibility</a> for details.                 |
| Your firewall is blocking TFS services.                                                                           | See <a href="#">Allow a program to communicate through Windows Firewall</a> .                                                                                                                                                      |
| Visual Studio stops responding when you run a query in Visual Studio.                                             | Your computer might be configured to bypass the proxy server. You should verify the configuration of the BypassProxyOnLocal setting on your computer. For more information, see <a href="#">BypassProxyOnLocal Configuration</a> . |

### Several users receive this error when they try to connect to an on-premises TFS

If the problem occurs on more than one computer, you should contact your TFS administrator to confirm whether the server is operational and available on the network.

As an administrator, you should check the event logs for the application-tier server to try to pinpoint the problem. Also, you can use the following table to determine whether the server is misconfigured. In the table, problems that are more likely to occur appear first. Therefore, you should try the resolutions in the order in which they appear so that you increase the chance that you can solve the problem quickly.

| PROBLEM                                                             | RESOLUTION                                                                                                                                                                                                                                                               |
|---------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| The <i>TFSService</i> account password has expired or is incorrect. | Many services for Team Foundation Server will stop running when the service account for Team Foundation has expired. For more information, see <a href="#">Change the service account or password for Team Foundation Server</a> .                                       |
| The application-tier server for Team Foundation is unavailable.     | You should verify whether each required service is running. If a required service is not running, you must restart it. If necessary, set it to start automatically. For more information, see <a href="#">Stop and start services, application pools, and websites</a> . |
| The network is unavailable.                                         | You should verify whether your network is operational.                                                                                                                                                                                                                   |
| A website identity for Team Foundation is configured incorrectly.   | You should verify or correct the server binding assignments that are made to websites for Team Foundation.                                                                                                                                                               |

| PROBLEM                                                                                                                                                      | RESOLUTION                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Access to a website for Team Foundation has been restricted.                                                                                                 | You should verify or correct restrictions that are made to those websites that are based on IP addresses and domain names.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| The firewall or ports are configured incorrectly.                                                                                                            | You should verify or correct port binding assignments for websites and port assignments for the firewall. First, you should open the administration console for Team Foundation, display the Application Tier page, and review the URL assignments. If necessary, you can click <b>Change URL</b> to modify the URL of a website. Next, you should verify the port assignments for Internet Information Services (IIS) and the ports that are allowed through the firewall. For more information, see <a href="#">Review Server Status and Settings</a> and <a href="#">Verify or Correct Port Assignments</a> . |
| Trust relationships between domains are not configured correctly.                                                                                            | If a group of users cannot access Team Foundation Server, you might have trust issues between domains.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| When users connect to different versions of TFS from Visual Studio, for example, they connect to TFS 2012 and then TFS 2008, they can get the TF31002 error. | <p>This can occur because the GUIDs for the TFS 2012 collection are the same as that for TFS 2008. This confuses the local client cache because it tries to maintain the same GUID based local cache for both the 2008 server and the new Project Collection in 2012.</p> <p>To fix this, you need to run the <b>TFSCconfig ChangeServerID</b> command. See <a href="#">TFSCconfig ChangeServerID command</a>.</p>                                                                                                                                                                                               |

If the previous resolutions do not solve the problem, go to the [MSDN Forums - Visual Studio Team System — Team Foundation Server - Administration](#).

# Troubleshoot network connections and whitelist addresses

4/27/2018 • 1 min to read • [Edit Online](#)

## VSTS

If you are having network connection issues to VSTS, using NuGet, or connecting from Visual Studio 2015 and later versions, it may be because your security appliances are blocking connections now that Visual Studio uses TLS 1.2.

To fix this issue, update the security appliances in order to support TLS 1.2 for the following connections:

List of URLs for sign-in and licensing connections:

- `https://management.core.windows.net`
- `https://login.microsoftonline.com`
- `https://login.live.com`
- `https://go.microsoft.com`
- `https://graph.windows.net`
- `https://app.vsspsext.visualstudio.com`

A more general list of URLs for signing in to VSTS and Azure:

- `*.windows.net`
- `*.microsoftonline.com`
- `*.visualstudio.com`
- `*.microsoft.com`
- `*.live.com`
- `cdn.vsassets.io` -- hosts our CDN content
- `*.gallerycdn.vsassets.io` -- hosts VSTS extensions
- `static2.sharepointonline.com` -- hosts some resources that we use in "office fabric" UI kit (fonts, etc).

NuGet connections:

- `*.azurewebsites.net`
- `*.nuget.org`

### NOTE

Privately owned NuGet server URLs may not be included in the list above. You can check the NuGet servers you are using by opening up `%APPData%\Nuget\NuGet.Config`.

# Get VSTS and TFS product support and provide feedback

4/17/2018 • 3 min to read • [Edit Online](#)

[VSTS](#) | [TFS 2018](#) | [TFS 2017](#) | [TFS 2015](#) | [TFS 2013](#)

We're always working to improve VSTS, and we want you to be part of the process! Share your feedback and ideas with us, or join our communities.

Do you need to:

- **Get advice?** Visit StackOverflow for [VSTS](#) or [TFS](#).
- **Report a bug?** Submit it through our Developer Community for [VSTS](#) or [TFS](#).
- **Suggest a feature or a fix?** Submit your idea or issue through [UserVoice for VSTS](#).
- **Find out what's new in VSTS?** Check out the [current VSTS Release Notes](#). These notes are updated every three weeks.

## VSTS and TFS Product Support

The primary support hubs for VSTS and TFS are:

- [VSTS Support](#)
- [TFS Support](#)

For technical support:

- [Basic support](#)
- [Premium support](#)

For billing support:

- [VSTS](#) (from the Azure Support Portal)

## Documentation feedback

All docs on [docs.microsoft.com](#) have a ratings tool in the lower right-hand corner of the page. It asks "Is this content helpful?" Answer **Yes** or **No** depending on your experience.

You can add more detailed feedback by clicking the "Tell us more" link after selecting **Yes** or **No**. Check an appropriate box and add what we can do to improve the content for you! Although we cannot reply back, we collect and review these regularly, and use your sentiments in our content planning.

## Tips for effective feedback

If you just want to vent about the product or the docs, that's okay. It helps us a lot to know when you're happy or unhappy with an experience. For the most impact, though, provide details so we can better understand what we're doing right or wrong.

- Provide a little context. What problem were you trying to solve? At what point did it go wrong?
- What's your role? We don't need personal or professional details. Are you a dev? A manager? A business

owner? When we understand our audience, we can come up with better solutions for you and other customers doing similar work.

- What version of the product were you using? What other products were you using with it?

The best feedback we get is clear and precise. For example:

- Product feedback: "I'm a project manager for a small start-up. I am using VSTS. I am trying to create work item templates through the UI, but my changes don't seem to persist. It's not clear what I'm doing wrong."
- Doc feedback: "I'm a dev in a big organization that works on Java apps. I tried to use Maven with your build system in TFS 2017 Update 1 (15.112.26307.0), but I couldn't get the configuration shown in the docs to work."

The more details, the better!

## What platform/version am I using?

You can tell what platform you use from the URL you use to connect to VSTS or TFS.

### VSTS

A VSTS URL consists of an account name and visual studio.com, for example:

`https://{youraccount}.visualstudio.com`.

To learn the version number, enter the following address in a web browser:

`https://AccountName.visualstudio.com/_home/About`

A page similar to the one shown will open showing the version number.

The screenshot shows a web browser window with a blue header bar containing the Microsoft logo and the text 'Team Services'. Below the header, the page title is 'About Microsoft Visual Studio Team Foundation Server'. The main content area features a large bold heading 'Microsoft Visual Studio Team Foundation Server'. Underneath this, the text 'Version 15.102.25512.0' is displayed in blue. At the bottom of the page, there is a copyright notice: '© Microsoft Corporation. All rights reserved.'

### TFS

A TFS URL consists of a server name and collection, for example: `https://ServerName:8080/tfs/CollectionName`.

To learn the version number, enter the following address in a web browser:

`https://ServerName:8080/tfs/_home/About`

A page similar to the one shown will open showing the version number.

The screenshot shows a web browser window with a blue header bar containing the Microsoft logo and the text 'Visual Studio Team Foundation Server 2015'. Below the header, the page title is 'About Microsoft Visual Studio Team Foundation Server'. The main content area features a large bold heading 'Microsoft Visual Studio Team Foundation Server'. Underneath this, the text 'Version 14.102.25423.0' is displayed in blue. At the bottom of the page, there is a copyright notice: '© Microsoft Corporation. All rights reserved.'

| TFS RELEASE     | UPDATE        | VERSION NUMBER |
|-----------------|---------------|----------------|
| <b>TFS 2018</b> | RTW           | 16.122.27102.1 |
|                 | RC2           | 16.122.26918.3 |
|                 | RC1           | 16.121.26818.0 |
| <b>TFS 2017</b> | Update 3      | 15.117.27024.0 |
|                 | Update 3 RC   | 15.117.26912.0 |
|                 | Update 2      | 15.117.26714.0 |
|                 | Update 1      | 15.112.26307.0 |
|                 | RTW           | 15.105.25910.0 |
| <b>TFS 2015</b> | RC1           | 15.103.25603.0 |
|                 | Update 3      | 14.102.25423.0 |
|                 | Update 2.1    | 14.95.25229.0  |
|                 | Update 2      | 14.95.25122.0  |
|                 | Update 2 RC 2 | 14.95.25029.0  |
|                 | Update 2 RC 1 | 14.95.25005.0  |
|                 | Update 1      | 14.0.24712.0   |
| <b>TFS 2013</b> | Update 1 RC 2 | 14.0.24626.0   |
|                 | Update 1 RC 1 | 14.0.24606.0   |
|                 | RTM           | 14.0.23128.0   |
|                 | RC2           | 14.0.23102.0   |
|                 | RC            | 14.0.22824.0   |
|                 | CTP           | 14.0.22604.0   |
|                 | Update 5      | 12.0.40629.0   |
|                 | Update 4      | 12.0.31101.0   |
|                 | Update 4 RC   | 12.0.31010.0   |
|                 | Update 3      | 12.0.30723.0   |

| TFS RELEASE     | UPDATE      | VERSION NUMBER |
|-----------------|-------------|----------------|
|                 | Update 3 RC | 12.0.30626.0   |
|                 | Update 2    | 12.0.30324.0   |
|                 | RTM         | 12.0.21005.1   |
|                 | RC          | 12.0.20827.3   |
| <b>TFS 2012</b> | Update 4    | 11.0.61030.0   |
|                 | Update 3    | 11.0.60610.1   |
|                 | Update 2    | 11.0.60315.1   |
|                 | CU 1        | 11.0.60123.100 |
|                 | Update 1    | 11.0.51106.1   |
|                 | RTM         | 11.0.50727.1   |
| <b>TFS 2010</b> | CU 2        | 10.0.40219.371 |
|                 | SP1         | 10.0.40219.1   |
|                 | RTM         | 10.0.30319.1   |
| <b>TFS 2008</b> | SP1         | 9.0.30729.1    |
|                 | RTM         | 9.0.21022.8    |
| <b>TFS 2005</b> | SP1         | 8.0.50727.762  |
|                 | RTM         | 8.0.50727.147  |

## Related articles

- [Report a problem with Visual Studio](#)

# Features

6/1/2018 • 55 min to read • [Edit Online](#)

## VSTS | TFS 2018 | TFS 2017 | TFS 2015 | TFS 2013

Use this end-to-end feature index to learn about all the features available to help you plan and track your projects and code, build, test, and release your software applications.

If you're new to VSTS or TFS, see the [Key concepts](#) and other overview topics designed to give beginners an understanding of the server-client structure and tools supported. For a description of the core services supported through the web portal, see [Essential services](#).

### NOTE

**Feature availability:** Some features are platform dependent and are noted as follows:

- **VSTS** - Available from VSTS (cloud service)
- **TFS** - Available from Team Foundation Server (on-premises)

## Access and supported clients

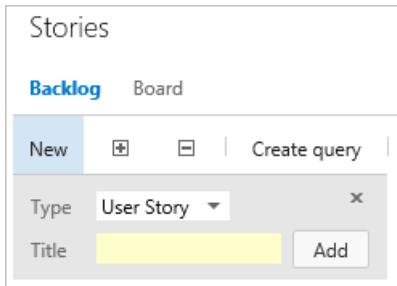
| Browsers                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | Manage users and groups                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | Access levels                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p><b>Browsers</b></p> <p>Connect to the <a href="#">web portal</a> from the latest versions of these supported browsers:</p> <ul style="list-style-type: none"><li>- Chrome</li><li>- Edge</li><li>- Firefox</li><li>- Internet Explorer</li><li>- Safari (Mac)</li></ul>                                                                                                                                                                                                                                            | <p><b>Manage users and groups</b></p> <p>Add members to your team project adds them to the Contributor group. When managing a large group of users, use <a href="#">built-in groups to manage users and their permissions</a>.</p> <p><b>Add team members</b></p> <p>To share and contribute to your project, add user accounts to <a href="#">VSTS</a> or your <a href="#">TFS</a>.</p>  <p><b>Azure Active Directory (AAD) (VSTS)</b></p> <p>Control who can access your team's critical resources and key business assets by <a href="#">managing access with Azure Active Directory groups</a>.</p> | <p>All users that you add to your VSTS account or to your TFS team project have access to Basic features by default, except <a href="#">Stakeholders</a> who have access to a limited set of features, or those added to the Advanced access level in TFS.</p> <ul style="list-style-type: none"><li>- <a href="#">Manage users (VSTS)</a></li><li>- <a href="#">Change access levels (TFS)</a></li></ul> <p><b>Permissions</b></p> <p>Control access to specific features by setting permissions for a user or group.</p> <ul style="list-style-type: none"><li>- <a href="#">Area and iteration paths</a></li><li>- <a href="#">Build &amp; Release</a></li><li>- <a href="#">Git</a></li><li>- <a href="#">TFVC</a></li><li>- <a href="#">Dashboards</a></li><li>- <a href="#">Queries</a></li><li>- <a href="#">Team admin role</a></li><li>- <a href="#">Test</a></li><li>- <a href="#">Work item tags</a></li></ul> |
| <p><b>Integrated Development Environments (IDE)</b></p> <p>Track work and integrate with your code, build, and test environments from the following clients:</p> <ul style="list-style-type: none"><li>- <a href="#">Eclipse (Team Explorer Everywhere)</a></li><li>- <a href="#">Visual Studio</a></li><li>- <a href="#">Android Studio</a></li><li>- <a href="#">IntelliJ</a></li><li>- <a href="#">Visual Studio Code</a></li></ul> <p>To learn how to connect, see <a href="#">Connect to a team project</a>.</p> |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| <p><b>Office integration clients</b></p> <p>Use features supported by these familiar clients to manage your project and illustrate your requirements.</p> <ul style="list-style-type: none"><li>- <a href="#">Excel</a></li><li>- <a href="#">Project</a></li><li>- <a href="#">PowerPoint - Storyboarding</a></li></ul>                                                                                                                                                                                              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |

# Agile tools to plan and track work

## Backlogs

### Create your backlog

Plan your project by [adding a work item for each user story or requirement](#) you plan to develop.



### Organize your backlog

Group items into a [hierarchical list](#) using [portfolio backlogs](#) and quickly reorder and re-parent items to effectively manage your deliverables.

### Forecast

Use the [forecast](#) tool to estimate work to be completed in future sprints.

### Storyboard

Visualize your ideas and user stories and support greater understanding of them by [storyboarding them with PowerPoint](#), also link your storyboards to your backlog work items.

### Move work item to a different team project (VSTS)

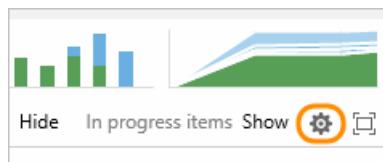
Choose the Change team project menu option Actions menu in a work item form to [move the work item to a different team project](#).

### Full screen mode

Click or to enter or exit full screen mode.

### Backlog and board settings

Click to configure team backlogs and boards, including [show bugs on backlogs and boards](#) and [set team backlog levels](#).



### View portfolio backlog hierarchy

Use [Parents Show/Hide](#) to drill down into the backlog hierarchy.

### Multi-team backlog ownership

Easily view and track items [owned by other teams](#) and quickly reorder and re-parent items to effectively manage your backlog.

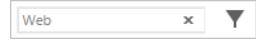
### Change work item type (VSTS)

If you've added a task instead of a bug and want to change the work item type to bug, you can. Choose the Change type option from the Actions menu in a work item form to [change the work item type](#).

### Filter your backlog

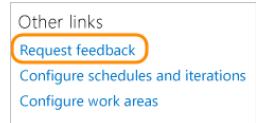
Use [Show/Hide in progress](#) to only show or hide items which have moved from the new or proposed state to active or in progress state.

Additionally, you can list a subset of items based on keywords [keywords](#) or [tags](#).



### Request feedback

[Request feedback on working software](#) and easily track responses that capture interaction with video, verbal, or type-written comments.



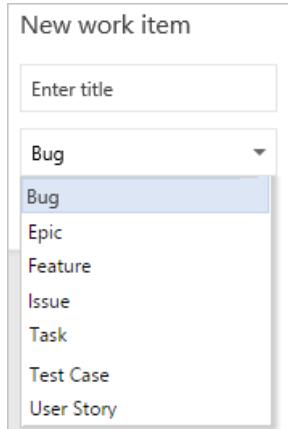
### Feedback client

Provide the free [Microsoft feedback client](#) to capture their responses to your feedback requests.

## Bug, task, and issue tracking

## Track issues and other types of work

Different types of work items track different types of work - such as bugs, test cases, risks, issues, and more.

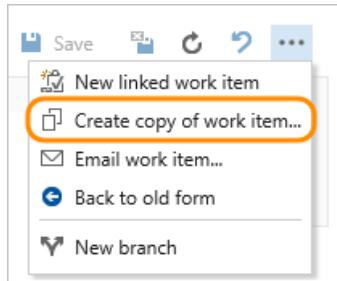


## Bulk modify

Quickly change one or more fields in several work items using bulk modify in the web portal or bulk modify using Excel.

## Copy or clone a work item

Copy an existing work item or bulk copy several using Excel.



## Follow a work item

Click the Follow / Following Follow/Following icons to quickly start or stop tracking changes made to a work item.



## Rich text comments

Describe and comment on work to perform using formatted text, hyperlinks, and inline images. Click or to expand or contract the viewing area.

## Clear HTML formatting

Use the icon or CTRL+Spacebar to remove formatting from highlighted text.

## Estimates and time tracking

Track estimated, completed, and remaining work for tasks and other work items. Several reports and dashboards provide charts that display data based on team capacity and remaining work.

## New work item experience

The new work item experience provides access to a more modern form, additional features, and the ability to add fields and apply other customizations to the work item type.

## Manage bugs

Capture and triage bugs using a variety of tools.

## Choose how you want to track bugs

Each team can choose to manage bugs on their backlog or along with tasks.

## Share plans and information

Share information using work items and generate summary lists with links to backlogs or queries.

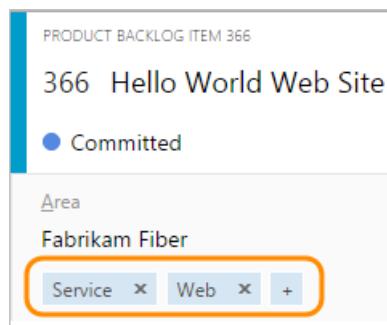
## Remove or delete a work item

Remove work items from the backlog by changing their State to Removed. Or, move them to the recycle bin or permanently delete them.



## Tags

Add tags to work items to filter backlogs and queries. Also, you can bulk update work items or use work item templates to add or remove tags.



## Work item templates

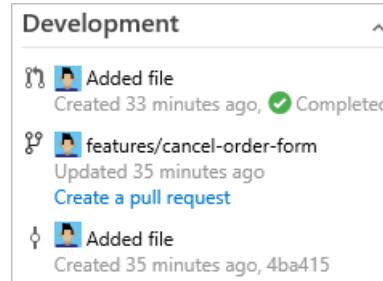
Quickly add new work items based on templates with pre-populate

## Discussion

Add or review comments added to a work item. Start by clicking the discussion icon.

## Integrate Git development with work tracking

Drive Git development and stay in sync as a team to complete backlog items and tasks using the Git Development section. Add branches, create pull requests, and view all development performed to support the specific work item.

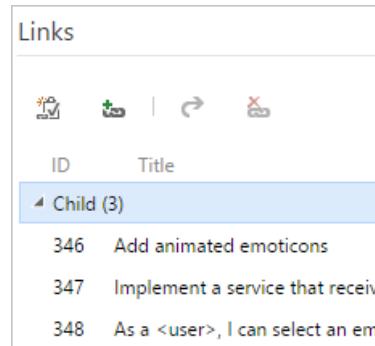


## Verify a bug, re-run test case

Choose the Verify option from the bug work item form context menu to launch the relevant test case in the web runner. For more information, see Run tests for web apps.

## Link work items

Track related work, dependencies, and changes made over time by linking work items.



## Add or modify a field

Add a custom field (VSTS | TFS) to support tracking additional data requirements or modify an existing field to apply optional rules.

## Restrict access

Limit who can create or modify work items or a work item field based on area path, work item type, or based on your specific conditions.

## Attachments

To support collaboration of work in progress, [add emails, documents, images, log files, or other file types](#) to work items.

[values for your team's commonly used fields.](#)

## History & auditing

Review and query [work item change history](#) to learn of past decisions and support future ones.

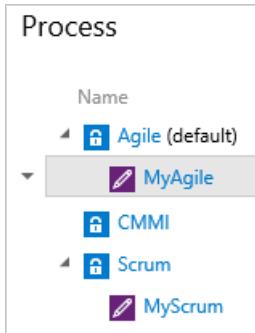
## Field index

Find descriptions and usage information for each field from the [work item field index](#).

## Customize (VSTS)

## Create an inherited process

The first step in customizing a team project is to [create an inherited process](#). You can only customize inherited processes.



## New work item experience

The [new work item experience](#) provides access to a more modern form, additional features, and the ability to add fields and apply other customizations to the work item type.

## Customize a process

Customizations you make to an inherited process automatically update all team projects that reference that process. You can customize your team project as follows:

- [Add and modify fields](#)
- [Modify the web form layout](#)
- [Modify the workflow states](#)
- [Add a custom work item type](#)
- [Add a custom control](#)

## Change the process used by a team project

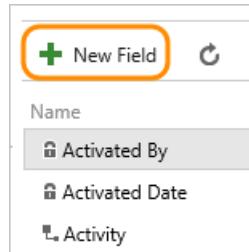
To apply customizations to one or more team projects, you [change the process they reference to a customized inherited process](#).

## Enable/disable a process

To make sure no one creates a team project from a process that you don't want used, [you can disable it](#).

## Add or modify a field

Add a custom field to support tracking additional data requirements or modify an existing field to apply optional rules.

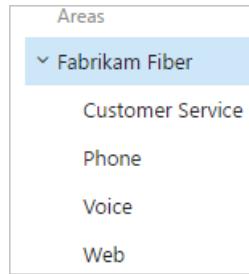


## Remove a field from a form

You can [remove a custom field](#) and [select inherited fields](#) from a work item form. You can also [relabel the fields](#) that appear on the form.

## Area path pick lists

Change the [pick list of area paths](#) to support grouping work items by team, product, or feature area.



## Sprint/iteration pick lists

Change the [pick list of iteration paths](#) to support grouping work into sprints, milestones, or other event-specific or time-related period. Activate sprints for each team.



## Review fields

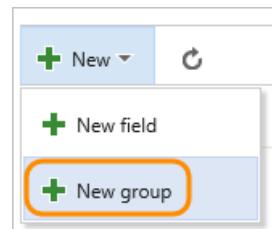
You can [review the list of fields](#) defined for a process, their data type, and the WITs which reference them. For descriptions and usage of each field, see [Work item field index](#).

## Delete a field from the collection

You can [delete a custom field](#) if you find it's no longer required.

## Customize the web form

For each work item type, you can [add custom pages to group](#) [additional custom fields](#) and you can organize your forms by placing logically related groups and HTML fields on separate pages within a form.



## Add a custom work item type

You can [add and modify a custom work item type](#).

## Customize the workflow

For each work item type, you can [add custom workflow states to support your business tracking needs](#).

## Delete a process

Delete those inherited processes that you no longer want used. Simply choose the Delete option from its context menu.

## Set process permissions

To customize a process, add custom fields, or change the layout of a work item form, you must be a member of the Project Collection Administrators group or be [granted explicit permissions to edit a specific process](#).

## Customize (TFS)

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p><b>Add or modify a field</b></p> <p><a href="#">Add or modify a field</a> to support work tracking and reporting by editing the WIT definition.</p> <p><b>Add rules to a field</b></p> <p>Apply <a href="#">various rules to custom fields</a> to qualify the value it can have, to copy a value, to specify a default, to restrict who can modify it, to enforce pattern matching, or to enforce conditional values.</p> <p><b>Remove a field</b></p> <p><a href="#">Stop tracking a field by removing the field</a> from the work item form of select work item types.</p> | <p><b>Area path pick lists</b></p> <p>Change the <a href="#">pick list of area paths</a> to support grouping work items by team, product, or feature area.</p> <p><b>Sprint/iteration pick lists</b></p> <p>Change the <a href="#">pick list of iteration paths</a> to support grouping work into sprints, milestones, or other event-specific or time-related period.</p> <p><b>Custom pick lists</b></p> <p><a href="#">Define or modify pick list values</a> by editing the work item type definition.</p> | <p><b>Modify the workflow</b></p> <p><a href="#">Design your custom workflow</a> by adding states, transitions, reasons, and optional actions.</p> <p><b>Change the work item form</b></p> <p><a href="#">Change the layout of your work item form</a> by adding fields, custom controls, or tabs.</p> <p><b>Add a custom work item type</b></p> <p><a href="#">Add a custom work item type</a> to track different data requirements.</p> |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

## Kanban

## Kanban basics

Use your Kanban board to [visualize and track the flow of work](#) from idea to completion as well as quickly update work item fields

## Drag-n-drop

[Drag and drop items](#) on the Kanban board to update status and to reorder and reparent items.

## Add task checklists

Add and mark tasks as done with [lightweight tasks checklists](#).

## Filter

Use key words to filter and find items on the Kanban board.

## Set WIP limits

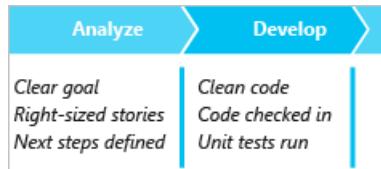
Set constraints on the amount of work your team undertakes at each [work stage](#) to gain access to sprint backlog and task boards.

## Split columns

Turn on split columns to [track the lag between when items are done in one state and work actually starts in a new state](#).

## Map your workflow

Customize columns to support your team's [workflow](#) and track work from start to finish.



## Expedite work with swimlanes

Use [swimlanes](#) to track work at different service-level classes.

## Definition of done

Support your team to be in sync by specifying [requirements to fulfill](#) prior to handoff of items to a downstream work stage.

## Filter by field values or parent work items

Click the field filter icon to [filter the board based on assignment, iteration, work item type, or tags](#).

## Cumulative Flow Diagram

With the CFD, you can [monitor the count of work items as they progressively move through various states which you define](#).

## Customize cards

Add [fields to cards](#) that you can edit directly on your Kanban and task boards.

## Live updates

Enable [live updates](#) to automatically refresh your Kanban board when changes are made by others or to the board settings.



## Add inline tests

Add, run, and update tests with inline test on your Kanban board.

## Add checklists to features and epics

Add and mark user stories and other work items as done from your [Kanban features or epics boards](#).

## Set team's card reorder preference

You can preserve the backlog priority when you move a card to a new column by setting your team's [Kanban board card reordering setting](#).

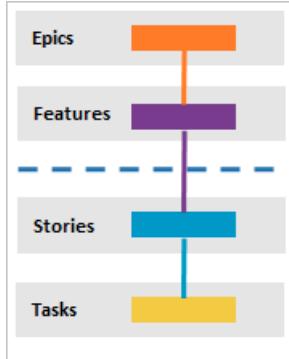
## Enable/disable card annotations

Turn on or off [task checklists or inline tests](#) for your Kanban board.

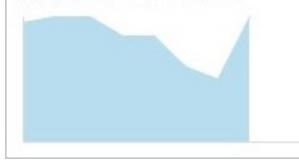
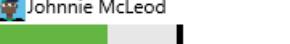
## Configure inline tests

Configure how new inline tests are added to the Kanban board: [create a new test plan/test suite or choose an existing test plan](#).

## Scale

| <h3>Add another team</h3> <p>Add and structure teams and organize work to support team autonomy and organizational alignment. Teams can manage their work independently of one another while the organization gains visibility across all teams.</p> <div style="border: 1px solid #ccc; padding: 10px;"> <p><b>Teams</b></p> <p>New team </p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th>Team Name</th> </tr> </thead> <tbody> <tr> <td> Email</td> </tr> <tr> <td> Fabrikam Fiber Team</td> </tr> <tr> <td> Voice</td> </tr> </tbody> </table> </div> <p><b>Set team defaults</b></p> <p>Several Agile tools reference the team's default area path, iteration path, and activated sprints to automatically filter the set of work items they display. Understand how defaults are used and how to <a href="#">set the defaults for your team</a>.</p> | Team Name |  Email |  Fabrikam Fiber Team |  Voice | <h3>Set up a team hierarchy</h3> <p>By <a href="#">configuring your teams and backlogs into an hierarchical structure</a>, program owners can more easily track progress across teams, manage portfolios, and generate rollup data.</p> <p><b>Autonomy and alignment</b></p> <p>As your organization grows, your tools can grow to support a <a href="#">culture of team autonomy and organizational alignment</a>.</p> <p><b>Scale your tools and practices</b></p> <p>Incrementally adopt <a href="#">practices that scale</a> to create greater rhythm and flow within your organization, engage customers, improve project visibility, and develop a productive workforce.</p> | <h3>Portfolio management</h3> <p>Manage a <a href="#">portfolio of backlogs</a> and gain insight into each team's progress as well as the progress of all programs.</p> <div style="border: 1px solid #ccc; padding: 10px; text-align: center;">  <pre> graph TD     Epics[Epics] --&gt; Features[Features]     Features --&gt; Stories[Stories]     Stories --&gt; Tasks[Tasks]   </pre> </div> <p><b>Scaled Agile Framework</b></p> <p>Structure team projects to support <a href="#">epics, release trains, and multiple backlogs</a> to support the Scaled Agile Framework.</p> |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------|-----------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Team Name                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |           |                                                                                         |                                                                                                       |                                                                                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
|  Email                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |           |                                                                                         |                                                                                                       |                                                                                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
|  Fabrikam Fiber Team                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |           |                                                                                         |                                                                                                       |                                                                                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
|  Voice                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |           |                                                                                         |                                                                                                       |                                                                                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |

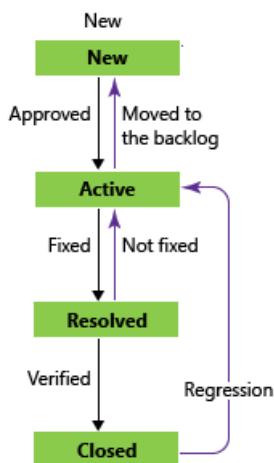
## Scrum

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p><b>Define sprints</b></p> <p>Schedule and activate your team's <a href="#">sprints</a> to gain access to sprint backlogs and task boards.</p> <p><b>Select team sprints, set team defaults</b></p> <p>Several tools reference the team's default and active iteration paths or sprints. For the Agile tools to work best, each team needs to <a href="#">set their team area path(s) and iteration paths</a> to support their work tracking activities.</p> <p><b>Plan sprints</b></p> <p>Build your sprint backlog, add tasks, and load balance work across your team as you <a href="#">plan your sprint</a>.</p> <p><b>Track work on your task board</b></p> <p>Use your <a href="#">task board</a> during your daily Scrum meetings to view and update progress.</p> | <p><b>Velocity &amp; forecasting</b></p> <p>Use <a href="#">velocity charts</a> and <a href="#">forecast</a> tools to estimate work that can be completed in future sprints.</p> <div style="border: 1px solid #ccc; padding: 10px; text-align: center;">  </div> <p><b>Sprint burndown charts</b></p> <p>Monitor progress and review team patterns from <a href="#">sprint burndown charts</a>.</p> <div style="border: 1px solid #ccc; padding: 10px; text-align: center;"> <p>Sprint 91<br/>October 19 - November 6</p>  </div> | <p><b>Manage resources</b></p> <p>Use <a href="#">capacity planning tools</a> to track individual, team, and activity over and under capacity for a sprint.</p> <div style="border: 1px solid #ccc; padding: 10px;"> <p><b>Work</b></p> <p>Team  (51 of 61 h)</p> <p><b>Work By: Activity</b></p> <p>Christie Church  (15 of 6 h)</p> <p>Jamal Hartnett  (11 of 24 h)</p> <p>Johnnie McLeod  (10 of 16 h)</p> <p>Raisa Pokrovskaya  (15 of 15 h)</p> </div> |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

## Workflow

## What is workflow?

You use workflow to track the progress of work as it moves from new, active, to complete or closed. Each workflow consists of a set of states, the valid transitions between the states, and the reasons for transitioning the work item to the selected state.

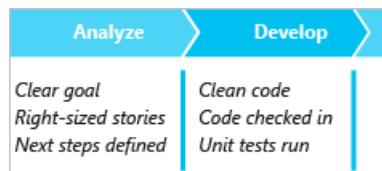


## Default workflows

Each process [defines the workflow](#) for each work item type to track progress from newly defined, to in progress, to completed or closed.

## Kanban workflow

You can fully customize your Kanban board to map the workflow your team uses by [adding and renaming columns](#)



## Customize the workflow

For VSTS: [add custom workflow states to support your business tracking needs](#). For TFS: [Design your custom workflow](#) by adding states, transitions, reasons, and optional actions.

### States

States allow you to [track the status of work](#). For example, a bug moves from **Active**, **Resolved**, and **Closed** to correspond to when it's defined, fixed, and verified as fixed.

### Transitions

Transitions specify the [valid progressions and regressions from state to state](#) for a work item type.

### Reasons

Each transition [specifies a default reason as well as optional reasons](#) for tracking the change in state.

## Update fields during workflow changes (TFS)

You can [define rules that change a field value](#) whenever you change the state, perform a transition, or select a reason.

## Apply workflow conditional field rules (TFS)

You can define rules that [change a field value based on the contents of other fields](#) during workflow changes.

## Restrict who can make changes during workflow transitions (TFS)

Set a condition field rule that applies to a group to [restrict who can make changes to a workflow or a field](#).

## Event-generated workflow changes or field assignments (TFS)

Add an [action](#) to a custom workflow definition to automatically transition work items or specify a field value based on an internal TFS event or external event.

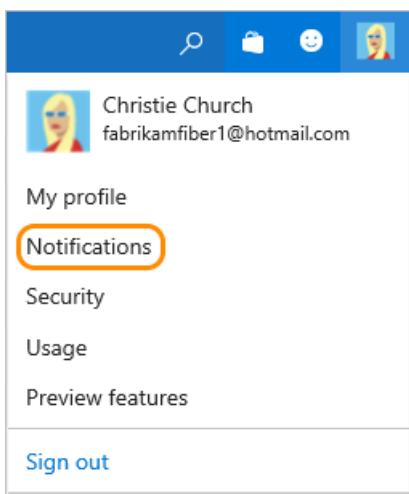
## Visual workflow design tool (TFS)

You can change the workflow or view the workflow state diagram by using the [Process Editor](#), a power tool for Visual Studio.

# Alerts and notifications

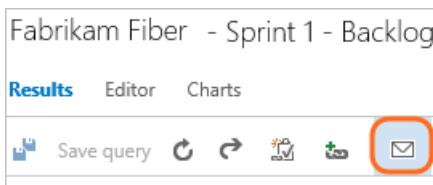
## Personal and team notifications or alerts

Get notified as changes occur to work items, code reviews, source control files, and builds by setting [personal notifications](#) or [team notifications](#).



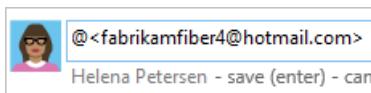
## Share queries and sprint plans

Email a query or [sprint plan](#).



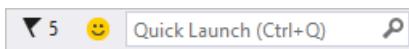
## Quick alerts to team members

Use the **@mention** control to send email to team members to bring them into a discussion around work changes, pull requests, or other items.



## Client feature flag updates

Alert flag within the IDE automatically notifies you of the latest client changes.



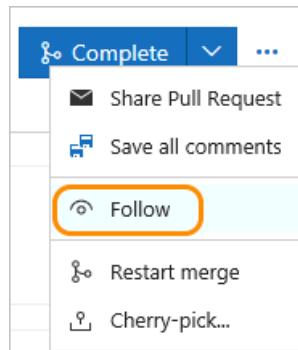
## Follow a work item

Click the [Follow](#) / [Following](#) icons to quickly [start or stop tracking changes made to a work item](#).



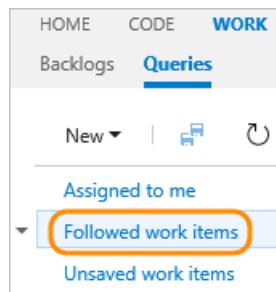
## Follow a pull request

To [track the progress of a single pull request](#), click the [Follow](#) option from the context menu.



## Manage work items you follow

From the **Work > Queries** page you can view the list of work items that you're following.



## Frequent on-line feature updates

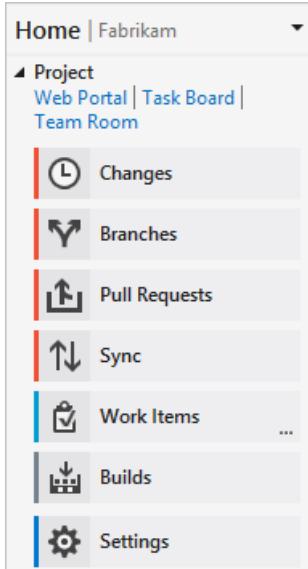
Check the [News](#) for product updates, or read about them by accessing the News link in your web portal.

Code

**Code: Git**

## Get started with Git in Visual Studio

To get started working with Git, [clone a repository](#), [add code](#), and [create topic branches](#) in VSTS or Visual Studio. Learn how to commit, publish, and conduct a pull request of your changes.

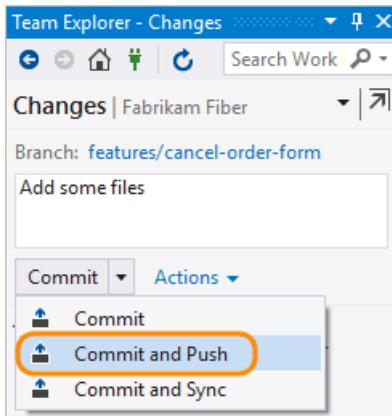


### Clone repositories

To work locally, you [clone a repository](#).

### Commit changes

Enter commit messages and [quickly push](#) your local changes to the shared repo.



### Pull requests

Use [pull requests](#) to review and merge branch code to a master branch.

### Sync

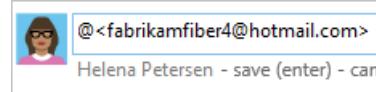
Quickly [sync](#) your local branch with a shared repo.

## Get started using Eclipse

[Work with Git repositories](#) using the Team Explorer Everywhere IDE for Eclipse.

### Add reviewers to get feedback

Use the [@mention control](#) to add [reviewers](#) to your pull request to get their feedback about your changes.



### Resolve Git merge conflicts

Merge conflicts occur when commits have changes to the same files as other newer commits in the branch history. Learn how to [prevent and resolve merge conflicts](#).

### Code search

Maximize cross-team collaboration and code sharing by finding code across all the projects to which you have access. Narrow down your results and focus in on code by using [filters](#), [preview code](#), [view history](#), [compare versions](#), and more



### Get notified about pull requests

Subscribe to email alerts to get notified about [new pull requests](#), [changes](#), [approvals](#), and [rejections](#).

### Set branch policies

To improve code quality, [set branch policies](#) to require code reviews or automatically add reviewers.

### Automatically build pull requests

Set a branch policy to [automatically generate a build](#) for a pull request to selected branches.

### Create Git repositories

When you create a team project with Git as your version control system, you automatically create a Git repo. You can [Create additional Git repos](#) from the admin context.

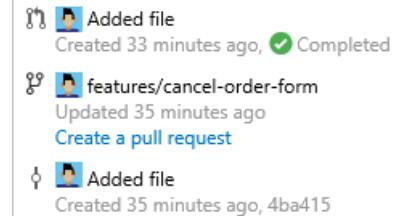
### Rename a Git repository

[Rename Git repos](#) from the admin context.

## Integrate Git development with work tracking

Drive Git development and stay in sync as a team to complete backlog items and tasks using the [Git Development section](#). Add branches, create pull requests, and view all development performed to support the specific work item.

### Development



### Quickly link work items to pull requests

Use the [#ID control](#) to [link work items](#) to your pull request to support tracking work.

### Get started using Xcode

[Work with Git repositories](#) using the Xcode IDE.

### Git commands

Use [Git command line tools](#) when you need to perform select manual tasks or to automate work using a script.

### Bypass a branch policy

Grant an [Exempt from policy enforcement](#) permission to a user or group.

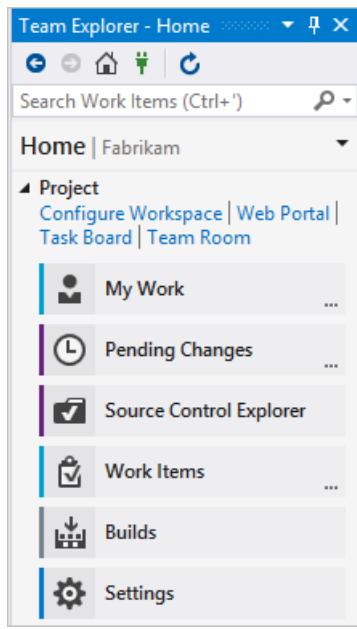
### Rebase a branch

Before merging a topic branch into master, you may choose to first [rebase your topic branch onto the latest commit in master](#).

### Git permissions

Set permissions on a [Git project](#), [repository](#), or [branch](#) from the context menu or from the web portal administration page.

## Code: TFVC

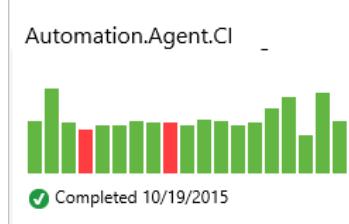
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p><b>Get started with TFVC in Visual Studio</b></p> <p>Develop and share your code. Learn how to configure your workspace, check-in your code, compare file changes, and view file history.</p>  <p><b>Set up local or server workspaces</b></p> <p>Create a local workspace that maps to the code base of interest.</p> <p><b>Resolve conflicts</b></p> <p>Support for Resolve conflicts that arise when several people work concurrently on a file.</p> <p><b>Compare files and folders</b></p> <p>Compare server folders and local folders to each other, and view the differences between the contents of each folder.</p> | <p><b>Track changesets</b></p> <p>Find information about which branches have received a particular set of changes and when those changes were merged.</p> <p><b>Request code review</b></p> <p>Increase overall code quality and reduce the risk of creating bugs by requesting a code review when you check-in code.</p> <p><b>Review history of a file</b></p> <p>Get detailed information about what changes have been made to your files.</p> <p><b>Suspend work</b></p> <p>Use shelvesets when you need to set aside some or all of your work in progress.</p> <p><b>Manage branches, isolate risk</b></p> <p>Use branches and locks to isolate risk introduced by work done by different teams.</p> <p><b>Merge branches</b></p> <p>Integrate work completed in different branches during certain phases of your project.</p> <p><b>Set check-in and check-out policies</b></p> <p>Enforce practices that lead to better code and more efficient group development by setting check-in/check-out rules.</p> | <p><b>Code search</b></p> <p>Find code across all the projects to which you have access. Narrow down your results and focus in on code by using filters, preview code, view history, compare versions, and more</p> <div><input type="text" value="Search code"/> </div> <p><b>Subscribe to alerts when check-ins occur</b></p> <p>Get notified when someone checks in code to your TFVC team project by subscribing to receive email alerts.</p> <p><b>Version control locks</b></p> <p>Lock files or folders when you need to prevent them from being checked out or modified.</p> <p><b>Download files from the server</b></p> <p>Get the latest files from the server on a regular basis so that the code you develop is compatible with the code developed by others on your team.</p> <p><b>TFVC permissions</b></p> <p>Set permissions on select code management tasks from the context menu for TFVC files or folders or the admin context for the team project.</p> |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

## Package management (VSTS)

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                                                                                                                                                                                                                                                                                                                                                            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p><b>What is package management?</b></p> <p>Package management helps you <a href="#">manage code sharing by</a> automating common tasks for discovering, consuming, and sharing components.</p> <p><b>Create feeds</b></p> <p><a href="#">Create feeds</a> to share code through packages.</p> <p><b>Move existing file shares to the cloud</b></p> <p>Eliminate dependencies on on-premises file shares and hosted instances of NuGet.Server by <a href="#">moving your packages to VSTS</a>.</p> | <p><b>Discover and consume packages</b></p> <p><a href="#">Consume packages</a> by connecting to a feed.</p> <p><b>Publish packages to feeds</b></p> <p><a href="#">Publish packages</a> to share code with your team and your organization.</p> <p><b>Add identities to your feeds</b></p> <p><a href="#">Give teams and service identities</a> access to your feeds.</p> | <p><b>Bootstrap the developer environment</b></p> <p>Increase your team's velocity and decrease the amount of code duplication across your organization. Access a set of tools and conventions for integrating VSTS NuGet into your workflow by <a href="#">getting the NuGet VSS.PackageManagement.Bootstrap package</a>.</p> <p><b>Remove a NuGet package from a feed</b></p> <p><a href="#">Unlist or remove a package</a> you no longer want users to discover.</p> <p><b>Secure feeds</b></p> <p>Control who can <a href="#">contribute to or consume from a feed</a>.</p> |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

## Continuous delivery

### Build

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <h2>Define builds</h2> <p>Start from a build template and customize your build from there. Build for Windows, iOS, Android, Java (Ant, Maven, or Gradle), or Linux using the same domain-specific languages you use every day on your dev machine. <a href="#">Build Xamarin apps</a> for both iOS and Android and run tests on the Xamarin Test Cloud as part of the build.</p> <h2>Customize build process using scripts</h2> <p>Use a <a href="#">script</a> to add your team's business logic to your build process.</p> <h2>Build agents and agent pools</h2> <p>At least one <a href="#">agent</a> is required to build your code. As you scale your system with more code, people, and builds, you'll need more build agents organized within <a href="#">agent pools</a>. You can use both on-premises or Microsoft-hosted agent pools.</p> <h2>Gated check-in (TFVC, VSTS)</h2> <p>Use <a href="#">gated check-in</a> to protect against breaking changes when checking code into TFVC.</p> <h2>Branch policies (Git)</h2> <p>Improve code quality by <a href="#">setting branch policies</a> to ensure build are never broken or getting the right people to review changes.</p> | <h2>Specify your build steps</h2> <p>Add steps to specify what you <a href="#">want to build</a>, the <a href="#">tests to run</a>, and <a href="#">all the other steps</a> needed to complete the process.</p> <p><code>pipelines\tasks\build_img</code></p> <ul style="list-style-type: none"> <li> <a href="#">Build an Android app using Gradle</a></li> <li> <a href="#">Sign and align Android APK files</a></li> <li> <a href="#">Build with Apache Ant</a></li> <li> <a href="#">Build using a Gradle wrapper script</a></li> <li> <a href="#">Grunt: The JavaScript Task Runner</a></li> <li> <a href="#">Gulp: Node.js task-based build system</a></li> <li> <a href="#">Index source code and publish symbols</a></li> <li> <a href="#">Build with Apache Maven</a></li> <li> <a href="#">Build with MSBuild</a></li> <li> <a href="#">SonarQube for MSBuild</a></li> <li> <a href="#">Visual Studio and MSbuild</a></li> <li> <a href="#">Build an Android app with Xamarin</a></li> <li> <a href="#">Build an iOS app with Xamarin on macOS</a></li> </ul> <h2>Build variables</h2> <p>Use <a href="#">predefined variables</a> or add your custom variables when configuring your build definition or your build scripts.</p> | <h2>Continuous integration builds</h2> <p>Define a CI build that compiles and tests your solutions whenever your team checks in code.</p> <h2>Build summary charts</h2> <p>View real-time build status and <a href="#">add build summary charts to your dashboards</a>.</p> <div>  </div> <h2>Code coverage charts</h2> <p>From the Code Coverage tab on a Build summary page, you can view percentage of code coverage as well as upload code coverage data in Jacoco or Cobertura formats.</p> <h2>Audit changes</h2> <p>Determine who <a href="#">changed what in the build definition and when they did it</a>.</p> <h2>Build retention policies</h2> <p>Define policies to automatically <a href="#">delete old completed builds</a> to minimize clutter.</p> <h2>Build permissions</h2> <p>Determine who can <a href="#">define, delete, and manage builds</a>.</p> |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

## Release

|                                                                                                                                                                                                                                                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <h2>Automate deployments</h2> <p>Reduce time-to-market and respond to customer feedback with greater agility by <a href="#">automating your release process</a>. Deploy applications across platforms to all environments of the pipeline with just one click.</p> | <h2>Works for any app</h2> <p>Deploy <a href="#">any type of application across multiple platforms</a> including Windows and Linux, whether on-premises or in the cloud.</p> <h2>Approval workflows</h2> <p>Streamline your application release workflow by <a href="#">routing pre- and post-deployment approvals</a> to multiple approvers or teams.</p> <h2>Release notifications</h2> <p>Receive email messages as releases occur. Approvers receive</p> | <h2>Release names</h2> <p>Specify the <a href="#">naming and numbering scheme</a> you want used when <a href="#">adding releases</a>.</p> <h2>Global configuration properties</h2> <p>Simplify management of custom values that you use to configure multiple releases by <a href="#">specifying custom values for any of the tasks in any of the environments of a release definition</a>.</p> <h2>View test results</h2> <p>Open the <b>Tests</b> tab to view a</p> |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

The screenshot shows the 'Releases' overview in VSTS. At the top, there's a toolbar with 'Overview', 'Cancel', 'Restart', and 'Delete' buttons. Below the toolbar, a table lists four releases under a 'Release Definition' column. Each row includes a status icon (blue play button for Release-7, green checkmark for others), the title, the environment name 'Fabrikam', and a small downward arrow indicating more details.

## When to use Release Management?

Evaluate how Release Management can help you in [your development and deployment efforts](#).

### Release definitions

Add a release definition by [choosing the build version, target release environments, and tasks](#).

### Release environments

[Define and clone release environments](#), logical entities that represent where you want to deploy a release, such as a collection of servers, a cloud, multiple clouds, or an app store.

### Artifacts

A release is fundamentally defined by [versioned artifacts that make up the release](#). As you deploy the release to various environments, you deploy and validate the same artifacts on all environments.

### Tasks

Automate release deployment by [defining the events that will trigger a release](#).

### Agents and agent pools

Agent pools are the execution containers that specify the security context and runtime environment for the [agents that run when you deploy a release](#).

notifications automatically when a release is waiting for approval.

## Full traceability

Monitor the status of your release pipelines and track every deployment in each of the environments. Retain full audit history of all activities performed on a release with detailed release logs and approval tracking.

### Release logs

View or download log files as zip files. Log files contain the status for each step or task of a release, for each of the environments in the release definition. Each completed release--succeeded, failed, or abandoned--[includes a live log file, details, and history for each step or task](#).

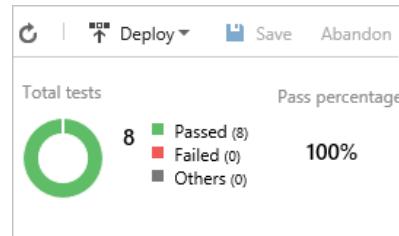
### Triggers

Automate release deployment by [defining the events that will trigger a release](#).

### Variables

Lookup the description for all [release system, global, and agent variables](#).

summary of the test results, including pass/fail percentages and run duration. Sort the test results into groups or filter the results to show just passed, failed, or other results.

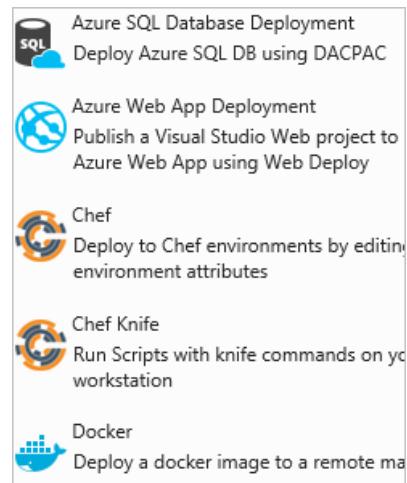


## Add release summary to dashboard (VSTS)

[Add a release summary chart](#) to a team dashboard.

## Extend and customize

[Create workflows tailored to your process](#) by customizing our tasks, or extend with your own custom tasks.



## Manage permissions

Grant or deny permissions to [manage release definitions, environments approvers, or release permissions](#). Set permissions for users, groups, or per release definition.

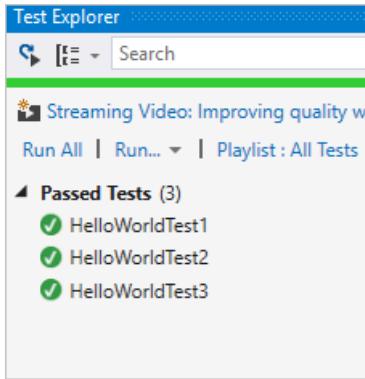
## Test

## Comprehensive testing

Perform exploratory, manual, system, user acceptance, and performance tests for any app, in any language. Using Visual Studio or 3rd-party test frameworks, you can include automated tests with builds and releases for continuous integration and deployment.

### Unit testing with Git

Create unit tests and run them frequently to make sure your code is working properly.



### Manual test plans and test cases

Get started by creating test plans and test cases to track manual testing for sprints or milestones.

### Shared steps and shared parameters

Create shared steps to include often repeated sequence of steps in your manual test cases, such as logging in. Repeat manual tests with different data using shared parameters.

### Performance and load testing

Understand and fix performance issues before they impact your business by running performance tests on your apps.

### Cloud-based load tests

Find performance problems in your app before customers do with cloud-based load tests.

## Coded UI testing

Use Visual Studio to create coded UI tests to test your application's user interface.

### Run test with your builds for continuous integration

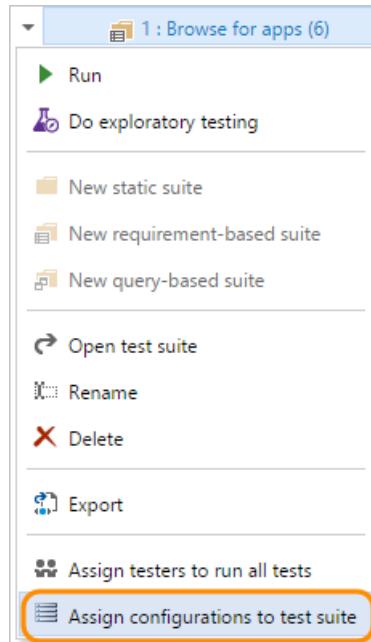
Use continuous integration builds to run tests automatically.

### Review automated test results after a build

Review your test results to analyze any problems that were found.

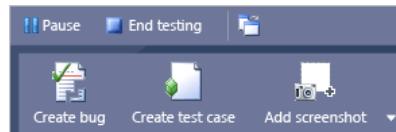
### Quickly assign configurations to test plan, test suite, or test case

From the context menu of a test plan, test suite, or test case, you can assign a configuration.



## Exploratory testing

Explore user stories without test cases or test steps using Test Manager and exploratory testing.



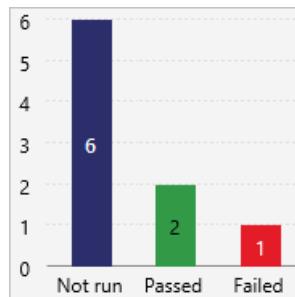
Or, download and install the Test & Feedback extension. Capture screenshots, annotate them, and submit bugs while you explore your web app - all directly from your Chrome browser.

### Record and play back manual tests

With Microsoft Test Manager, you can record your keystrokes and gestures while you test an application. The next time you run the test, you can play back your actions quickly and accurately.

### Track test status and test results

Quickly view the status of your testing using lightweight charts.



### Test environments

Specify a combination of hardware and software that represents a user or machine environment in which your app will run.

### Test permissions

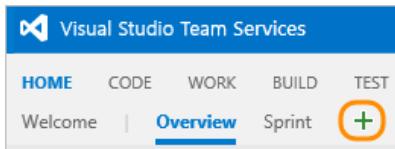
Set permissions on who can manage test configurations, test environments, and publish and delete test results.

# Dashboards and reports

## Charts and dashboards

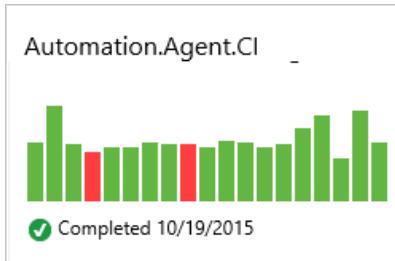
## Multiple team dashboards

Each team can create several [team dashboards](#) to help keep both the team and stakeholders in sync. Each dashboard tile provides quick access to the progress of builds, status of work items, or latest code changes.



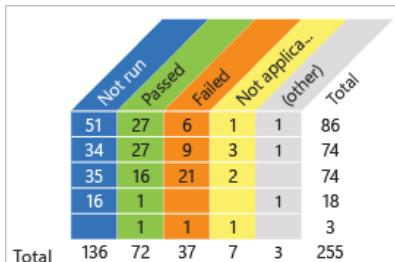
## Build history charts

Add [build history charts](#) to your dashboards.



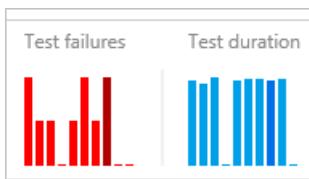
## Test charts

Track the status of your [test progress](#) and [test runs](#). Optionally add these charts to a dashboard.



## Test quality trend charts

Add [failure](#) and [duration](#) charts for tests run as part of your build to your team dashboard.



## Restrict or allow team members to manage dashboards (VSTS)

Set permissions to [restrict](#) or [allow](#) team members to manage dashboards.

## Capacity planning and tracking

Easily track how much work your team has completed and has left to do in a sprint by adding the [sprint capacity chart widget](#) to your dashboard.



## Share dashboards with stakeholders

Grant non-licensed users access as Stakeholders ([VSTS](#) | [TFS](#)) so they can view progress, run queries, and contribute ideas.

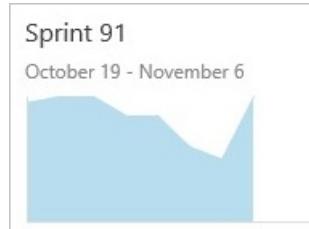
## Velocity charts

[Team velocity](#) tracks the total estimated effort (story points or size) of backlog items (user stories or requirements) completed or still in progress within each sprint.



## Sprint burndown charts

Monitor progress and review team patterns from [sprint burndown charts](#)



## Add release summary to dashboard (VSTS)

Add a [release summary chart](#) to a team dashboard.

## Edit dashboard mode

Add, remove, move, and configure widgets by [clicking the Edit dashboard icon](#). Click the checkmark icon to exit.



## Auto-refresh dashboards

You can [enable auto-refresh](#) for any [team dashboard](#), and it will automatically update every five minutes. This is a useful feature for when your dashboard serves as a team wallboard.

## Widget catalog

Add [widgets](#) to your dashboard to provide information and monitor the data your team needs.



## Work item query charts

View the status of work in progress by [charting the results of a flat-list query](#). You can create several types of charts—such as pie, column, or trend—for the same query. Optionally add these charts to a dashboard.

## Drag-n-drop layout

Configure the layout to your specifications by [dragging tiles into the sequence you want](#).

## Cumulative flow diagrams

Track the progress of work on your backlog through the [CFD charts](#).

## Power BI dashboards (VSTS)

You can create dashboards, individual reports, or explore data collected for your Visual Studio Online account once you [connect to Power BI](#).

|                                                                                                                                                                                                                                                                                                                                                                                           |                                                                                                                                                                                                                                                            |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p><b>Basic Power BI concepts</b></p> <p>The 3 major building blocks of Power BI are <a href="#">dashboards</a>, <a href="#">reports</a>, and <a href="#">datasets</a>.</p> <p><b>Get started</b></p> <p>You can <a href="#">create dashboards</a>, <a href="#">individual reports</a>, or <a href="#">explore data</a> collected for your VSTS account once you connect to Power BI.</p> | <p><b>Connect to Power BI</b></p> <p>Steps required to authorize Power BI to access your VSTS account.</p> <p><b>Available data</b></p> <p>The <a href="#">Power BI Data Connector</a> supports building reports to track status and trend work items.</p> |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

## SQL Server Reports (TFS)

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p><b>Reporting Services reports</b></p> <p>You can <a href="#">analyze the progress and quality of your project</a> by using the <a href="#">out-of-the-box reports in SQL Server Reporting Services</a>. These reports aggregate metrics from work items, version control, test results, and builds. They are uploaded when you create a team project based on the process - <a href="#">Agile</a>, <a href="#">Scrum</a>, or <a href="#">CMMI</a> - that you choose.</p> <p><b>Add Reporting Services reports</b></p> <p>If you need to add reporting services to a team project or on-premises TFS after you've created your team projects, you can by <a href="#">adding a report server and uploading reports</a>.</p> <p><b>Manage the data warehouse</b></p> <p>The reporting warehouse is a traditional data warehouse that consists of a <a href="#">relational database</a> and <a href="#">an Analysis Services database</a>. You manage it through the following activities:</p> <ul style="list-style-type: none"> <li>- <a href="#">Manually process the data warehouse</a></li> <li>- <a href="#">Rebuild the data warehouse</a></li> <li>- <a href="#">Resolve schema conflicts</a></li> <li>- <a href="#">Change a process control setting</a></li> </ul> | <p><b>Build reports</b></p> <p>Build reports track the quality of software under development. By defining tests to run automatically as part of each build definition and instrumenting tests to gather code coverage data, you can gain insight about the quality of the builds, tests, and code.</p> <ul style="list-style-type: none"> <li>- <a href="#">Build Quality Indicators</a> (Agile &amp; CMMI)</li> <li>- <a href="#">Build Success Over Time</a></li> <li>- <a href="#">Build Summary</a></li> </ul> <p><b>Test and bug reports</b></p> <p>Test planning reports support monitoring the test progress and coverage of backlog items or user stories. Bug tracking reports illustrate the team's capacity to find and resolve bugs.</p> <ul style="list-style-type: none"> <li>- <a href="#">Test Case Readiness</a></li> <li>- <a href="#">Test Plan Progress</a></li> <li>- <a href="#">Bug Status</a> (Agile &amp; CMMI)</li> <li>- <a href="#">Bug Trends</a> (Agile &amp; CMMI)</li> <li>- <a href="#">Reactivations</a> (Agile &amp; CMMI)</li> </ul> <p><b>Required team activities to generate useful reports</b></p> <p>To gain useful, actionable information from your reports, <a href="#">team members must perform certain activites</a>.</p> | <p><b>Project management</b></p> <p>Project management reports provide insight into how much work the team is tackling within a sprint or release, and the rate of their progress. By linking work items and updating specific fields as work is performed, you can track the progress of individual stories and be able to more accurately estimate future activities.</p> <p><b>Scrum reports</b></p> <ul style="list-style-type: none"> <li>- <a href="#">Backlog Overview</a></li> <li>- <a href="#">Release Burndown</a></li> <li>- <a href="#">Sprint Burndown</a></li> <li>- <a href="#">Velocity</a></li> </ul> <p><b>Agile and CMMI</b></p> <ul style="list-style-type: none"> <li>- <a href="#">Burndown and Burn Rate</a></li> <li>- <a href="#">Remaining Work</a></li> <li>- <a href="#">Requirements Overview</a> (CMMI)</li> <li>- <a href="#">Requirements Progress</a> (CMMI)</li> <li>- <a href="#">Status of All Iterations</a> (similar to Velocity)</li> <li>- <a href="#">Stories Overview</a> (Agile)</li> <li>- <a href="#">Stories Progress</a> (Agile)</li> <li>- <a href="#">Unplanned Work</a></li> </ul> <p><b>Set permissions to view or create reports</b></p> <p>Enable members of your team to <a href="#">view or manage Reporting Services reports</a>. To create or modify reports, you need to grant them access to read databases.</p> |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

## Widgets

|                                                                                                                                                                                                                          |                                                                                                                                                                                                                                                |                                                                                                                                                                                                                     |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p><b>What is a widget?</b></p> <p>You build your dashboards by adding information tiles or widgets. The <a href="#">widget catalog</a> provides a number of predefined widgets.</p> <p><b>Drag-and-drop widgets</b></p> | <p><b>Plan and track work</b></p> <p><b>Assigned to me widget</b></p> <p>Provides quick access to <a href="#">work items assigned to the logged in user</a>.</p> <p><b>Chart for work items</b></p> <p>Adds a configurable tile to display</p> | <p><b>Plan and track work (continued)</b></p> <p><b>Sprint burndown</b></p> <p>Adds a <a href="#">burndown chart</a> for tracking a team's Scrum progress for the current sprint.</p> <p><b>Sprint capacity</b></p> |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

Drag widgets, tiles, or charts anywhere on a dashboard to [configure the layout you want](#).

#### **Informational content and other links**

##### **Markdown widget**

Adds a configurable tile to your dashboard to [display any type of information, guidance, or links](#) that you want using markdown syntax.

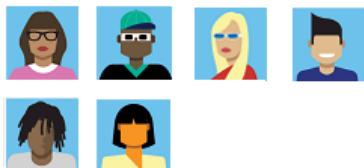
##### **Team Updates**

- New - User Story 2830 created
- New - Bug 9530 created
- Update - Today's design meeting has been *canceled*
- Update - Spec is ready for [User Story 4295](#)
- Reminder - Work on P0 bugs before features

##### **Team member**

Opens the team's quick dialog to [add or remove team members](#).

##### **Members**



##### **Team rooms**

Provides [status and access to a team room](#), an archived space to discuss work in progress, ask questions, share status, and clarify issues that arise.

##### **Visual Studio widget**

Provides [links to open or download Visual Studio](#). The Visual Studio IDE client comes with the Team Explorer plug-in which provides quick access to several features (some of which aren't available through the web portal).

##### **Welcome widget**

Provides quick access to [getting started info on how to track work, code, build, and test](#).



**Manage Work**  
[Add work to your board](#)



**Collaborate on code**  
[Add code to your repository](#)



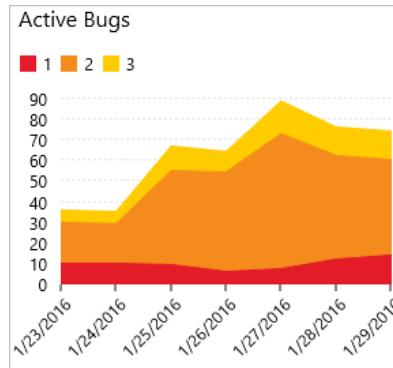
**Continuously integrate**  
[Automate your builds](#)



**Visualize progress**  
[Learn how to add charts](#)

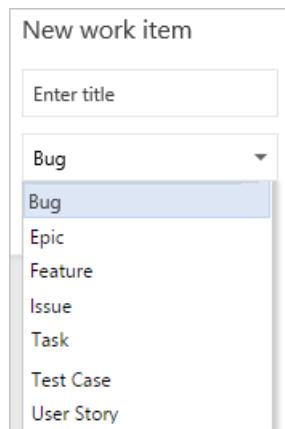
#### **Code widgets**

the [chart for a shared query](#).



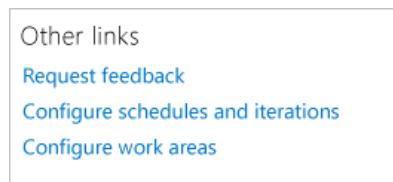
##### **New work item**

Add [work items](#) pre-scooped to your team's default area and iteration paths.



##### **Other links widget**

Provides quick access links from a team dashboard to [request feedback, define sprints, and modify your team's area paths](#).



##### **Query tile**

Configurable tile to display the results and link to a shared query.



##### **Query results**

Adds a configurable [query results list](#) to a team dashboard.

Adds a [chart for tracking remaining capacity](#) when tracking a team's Scrum progress for the current sprint.



##### **Sprint overview**

Displays a visual overview of the [current sprint progress](#) for tracking a team's Scrum progress for the current sprint, indicating the number of backlog items in progress, completed, or not started.

##### **Work links**

Provides quick access links from a team dashboard to open the [team backlog](#), Kanban board, task board, and queries.

##### **Build and test widgets**

##### **Chart for build history**

Configurable tile to display the [histogram for a specific build definition](#).

##### **Deployment status (VSTS)**

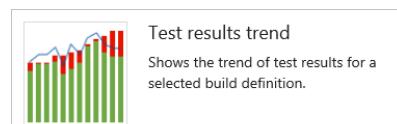
Configurable tile that shows you a consolidated view of the [deployment status and test pass rate across multiple environments](#) for a recent set of builds.

##### **Release definition overview**

Configurable tile to view and track the status of a release definition. The widget [shows the release as a series of environments, with the name of the release and the date or time it was started](#).

##### **Test trend results**

Provides [trend of test results](#), such as passed or failed tests, for a selected build definition.



##### **Extensibility**

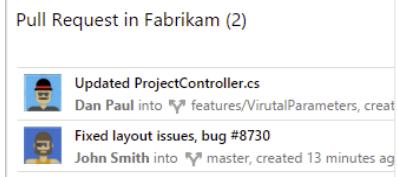
##### **Marketplace widgets**

You can find additional widgets by browsing the [Marketplace](#)

|                                                                                                                                     |                                                                                                                                    |                                                       |
|-------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------|
| <b>Code tile</b>                                                                                                                    | <b>Requirements quality</b>                                                                                                        | <b>Dashboard widget SDK</b>                           |
| Configurable tile to display <a href="#">status</a> and <a href="#">links to a Git or TFVC code repository, branch, or folder</a> . | Displays a configurable widget that you can use to <a href="#">track quality continuously from a build or release definition</a> . | Create a dashboard widget using the REST API service. |

### Pull request

Adds a configurable tile to display [active pull requests requested by the team, or assigned to or requested by the person logged in](#). You select the Git repository for the pull requests of interest.



## Extensibility

### Marketplace

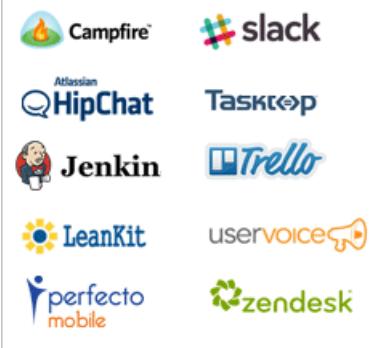
**Feature availability:** You can add Marketplace extensions from the web portal for VSTS or TFS 2015.2 or later version or for Visual Studio or Visual Studio Code.

|                                                                                                                                                                                                                                                                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>What is the Marketplace?</b>                                                                                                                                                                                                                                       | <b>Subscriptions</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| From the <a href="#">Marketplace</a> , you can extend the functionality available to you by installing free extensions or purchasing a subscription or paid extension. Extensions support adding new capabilities to Visual Studio, Visual Studio Code, VSTS, or TFS. | <p><a href="#">Visual Studio subscriptions</a> are a way for you to get the Visual Studio IDE, team collaboration benefits like VSTS and TFS, and subscriber benefits like dev/test use of Windows, Windows Server, and SQL Server.</p> <p><b>Extensions</b></p> <p>You can <a href="#">get and quickly install extensions</a> to add functionality to Visual Studio, Visual Studio Code, or VSTS.</p> <p><b>Try extensions for free</b></p> <p>You can <a href="#">start a trial extension for free</a>.</p> <p><b>Get extensions for...</b></p> <ul style="list-style-type: none"> <li>• <a href="#">VSTS</a></li> <li>• <a href="#">Visual Studio</a></li> <li>• <a href="#">Visual Studio Code</a></li> </ul> <p><b>Get cloud subscriptions</b></p> <p>Buy <a href="#">cloud subscriptions</a> in the Marketplace.</p> |

### REST APIs

|                                                                                                                                                                                                                                                                                                                                                                                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                                                                                                                                                                                                                                                                          |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p><b>Get started with REST APIs</b></p> <p>Learn the basic patterns for <a href="#">using the REST APIs</a> for VSTS and TFS.</p> <p><b>Authorization</b></p> <p>Get authorization from your customers to access VSTS resources using <a href="#">OAuth 2.0</a>.</p> <p><b>REST API reference</b></p> <p>Use the <a href="#">REST APIs</a> to work with VSTS and TFS resources.</p> | <p><b>.NET client libraries</b></p> <p>For .NET developers building Windows apps and services that integrate with Visual Studio Online, <a href="#">client libraries</a> are available for integrating with work item tracking, version control, build, and other services are now available. These packages replace the traditional TFS Client OM installer and make it easy to acquire and redistribute the libraries needed by your app or service.</p> | <p><b>REST API samples</b></p> <p>Here are a number of <a href="#">samples</a> that work with the REST APIs directly.</p> <p><b>C# client library samples</b></p> <p>Here are a few quick <a href="#">samples</a> to help you get started with the client libraries.</p> |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

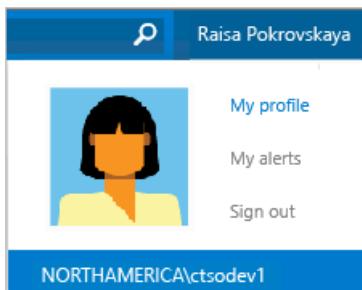
## Service hooks

|                                                                                                                                                                                                                                                                                                                                                                                            |                                                                                    |                                                                                                                                                                                                                                                                             |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p><b>Integrate with service hooks</b></p> <p><a href="#">Service hooks</a> enable you to perform tasks on other services when events happen in your Visual Studio Online projects</p> <p><b>Create integrations</b></p> <p>Integrate other services like <a href="#">HipChat</a>, <a href="#">Slack</a>, and <a href="#">UserVoice</a> with VSTS using <a href="#">service hooks</a>.</p> |  | <p><b>Authorize</b></p> <p><a href="#">Authorize</a> other services to access your VSTS account using the industry standard OAuth 2.0. OAuth 2.0 provides safe, secure access to your resources like work items, source code and build results by those other services.</p> |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

## Global

## Web portal preferences

Click your name to access [your profile settings](#) and set your web portal preferences which include language (currently only English is supported for VSTS), date and time pattern, and time zone.



## Language Interface Packs (LIPs)

By using a [Windows Language Interface Pack \(LIP\)](#), you can install a language version of Windows and then install various User Interface Language Packs. Language packs switch your English Visual Studio Professional user interface into any of these languages and will have a majority of the user interface localized.

## Localized content

Most content that supports VSTS and TFS is localized into the following 14 languages.

- English
- Brazilian Portuguese
- Chinese Simplified
- Chinese Traditional
- Czech
- German
- French
- Italian
- Japanese
- Korean
- Polish
- Russian
- Spanish
- Turkish

Currently, the visualstudio.com content is only available in English.

## Visual Studio language pack

Install the [language pack](#) to switch the UI display to different [languages](#). Visual Studio provides localized UI support for these 14 languages.

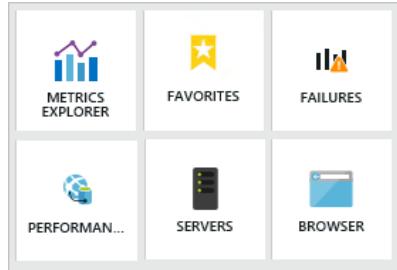
- English
- Brazilian Portuguese
- Chinese Simplified
- Chinese Traditional
- Czech
- German
- French
- Italian
- Japanese
- Korean
- Polish
- Russian
- Spanish
- Turkish

## Eclipse plug-in language support

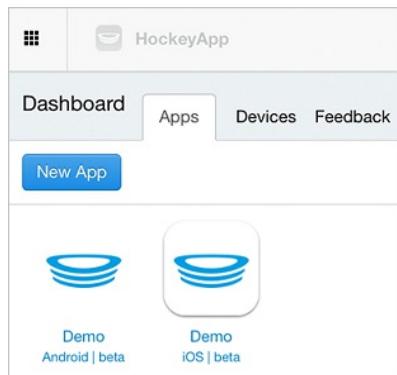
[Install Team Explorer Everywhere](#), which includes language support for English, French, German, Japanese, and Simplified Chinese.

# Monitor

## Application Insights (Preview)

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p><b>What is Application Insights</b></p> <p>Application Insights, an extensible analytics service that monitors your live web application, supports developers to continuously improve the performance and usability of apps. With it you can <a href="#">detect and diagnose performance issues</a>, and understand what users actually do with your app.</p> <p><b>Web site availability monitoring</b></p> <p>Know when your site or service goes down by <a href="#">setting up tests and performance thresholds</a> to monitor both uptime and responsiveness.</p> <p><b>Web site performance &amp; usage</b></p> <p>Open the Performance blade to see <a href="#">request, response time, dependency and other data</a>.</p> <p><b>Power BI integration</b></p> <p>Get even more flexible views of your <a href="#">telemetry</a>, and present your web app telemetry alongside data from devices and other business sources.</p> | <p><b>Dashboard</b></p> <p>Get the full picture with <a href="#">customizable dashboards</a> that track application health alongside usage metrics and app crashes. Within the dashboard, you can filter, search, and drill down to an event instance for more detail or to segment data.</p>  <p><b>Diagnose failures and exceptions</b></p> <p>Quickly diagnose causes and <a href="#">correlate failed requests with exceptions and other events</a> at both the client and server.</p> | <p><b>Usage analysis</b></p> <p>Gain a clear view of where your users are coming from and how they use your app. Add custom instrumentation to determine usage patterns and next version investment areas.</p> <p><b>Diagnose dependency issues</b></p> <p>See how long your application waits for dependencies and how often a dependency call fails. Dependencies are external components that your app calls such as an HTTP service, database, or file system.</p> <p><b>Custom data collectors</b></p> <p>Add custom data collectors to your app using the <a href="#">Application Insights API</a> to customize your telemetry data.</p> <p><b>Continuous data export</b></p> <p>Perform custom analysis on your telemetry through <a href="#">continuous export</a> of your data.</p> |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

## HockeyApp

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                                                                                                                                                                                                                                                                                                               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p><b>Get HockeyApp for mobile app development</b></p> <p>Distribute mobile apps for testing, collect user metrics and feedback, and respond to crashes more easily by <a href="#">adding HockeyApp to your Agile, continuous integration, and continuous delivery workflows</a>.</p> <p><b>Simplified distribution</b></p> <p>Manage distribution of <a href="#">development and production versions of your apps</a> and use independent bundle identifiers that can run in parallel on the same device.</p> <p><b>Integrate with VSTS and TFS</b></p> <p>Integrate HockeyApp directly in <a href="#">VSTS or TFS</a> to upload your Android, iOS, or Windows builds.</p> | <p><b>Comprehensive dashboard</b></p> <p>Manage all your apps, users, and devices from a single dashboard. Monitor crashes and feedback as well. As an admin, you'll have full control over which user can see and install which app.</p>  | <p><b>Invite or recruit testers</b></p> <p>Invite beta testers and distribute your beta versions through the dashboard.</p> <p><b>Usage</b></p> <p>Get advanced metrics to understand the testing performed on your app. See which devices were tested, which testers used the app for how long, and which language was tested.</p> <p><b>Crash reports</b></p> <p>Get the information you need to analyze and respond to crashes by getting <a href="#">symbolicated stack traces and environment details</a>.</p> <p><b>Webhooks</b></p> <p>Use webhooks to receive notifications about new versions, crash groups, and feedback.</p> |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

## Navigation

### Web portal

## Operational hubs

Each hub—[Home](#), [Code](#), [Work](#), [build](#), and [Test](#)—supports specialized functions to share information, view and create dashboards, collaborate on code, plan and track work, build and test your applications, plus much, much more.

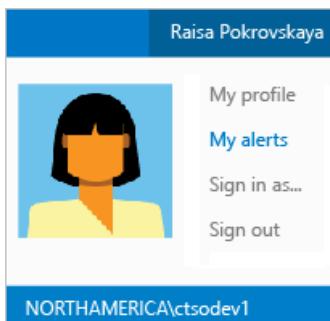


### Account hub

To view and quickly navigate to teams, team projects, branches, work items, pull requests and other objects that are relevant to you, use your [account hub](#).

### Your profile and preferences

Click your name to access [your profile settings](#), set preferences, [create personal access tokens](#) (VSTS), [set alerts](#), and log-in or out.



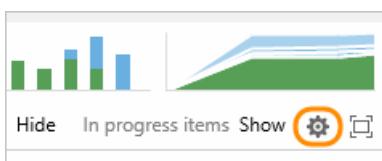
### Switch team context

Navigate to a different team or team project from the top row.



### Change team settings

Customize features to meet your team needs by [configuring your team assets](#).



## Home

Provide team guidance through [Welcome](#) (Markdown format) pages and add team [dashboards](#) to monitor progress and trends.

### Code

Manage source code using distributed [Git repositories](#) or [Team Foundation version control](#), to

### Work

Plan and track work by [creating a product backlog](#), and managing work using [Kanban](#) or [Scrum](#) processes. Find work items you want to review or update by [creating queries](#), or visualize progress by [creating query-based charts](#)

### Build

Define and monitor [builds](#) and set up continuous builds to improve the quality of your app.

### Test

Create and run [manual tests](#) and load tests for your app.

### Package (VSTS, Preview)

Share code as binary assets and control dependencies by [subscribing to and working with package management feeds](#).

### Release (VSTS, Preview)

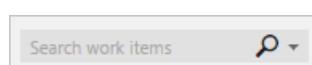
Manage the release of your app by [deploying it to a specific environment for each separate release step](#), and by controlling the process through approvals for each step.

### Code search

Search within your code branches (TFVC) and repositories (Git) to find files, commits, and more using powerful filters to obtain rich results.

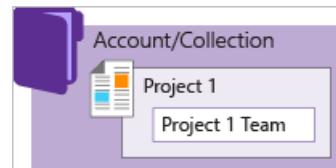
### Find work items

When in the Work hub, [enter IDs or keywords to start a query](#) to find work items that you want to review, triage, or update.



## Collection-project-team structure

The [collection-project-team structure](#) provides teams a high-level of autonomy to configure their tools in ways that work for them. It also supports administrative tasks to occur at the appropriate level.

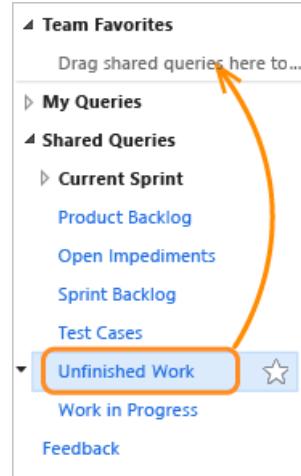


### My favorites

From any context, you can drag folders, queries, or builds to My favorites when working in the Code, Work, or Build hubs to provide quick access to those items.

### Team favorites

From your team context, drag shared queries, builds, and folders to Team favorites to provide quick access to those items.



### Team project admin context

Open the admin context to [add teams](#), [set team defaults](#), and [manage permissions](#). From any team project hub, click the gear icon to open the admin context.



### Project collection admin context

From the collection admin context, you can [manage collection-level permissions](#), and set build policies, and [manage extensions](#). Click the gear icon to open the admin context and then click

## Keyboard shortcuts

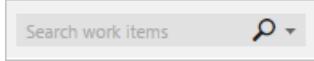
Increase your productivity by working with [hot keys](#) and [shortcuts](#).

DefaultCollection.

# Search, queries, and filters

## Quick work item search

Find work items based on [ID](#), [assignment](#), [changed date](#), or [keyword](#).



## Code search

Find code based on [keywords](#) and [semantic search filters](#) across your Git repositories.



## CodeLens search

Find references and changes to your code, linked bugs, work items, code reviews, and unit tests.

## Work item queries

Open shared queries or create your own query using the query editor to [list work items](#) or [show hierarchical or dependent items](#).

## > Manage risks and dependencies

Link work items to [track related work](#), [dependencies](#), and [changes made over time](#).

## History & auditing

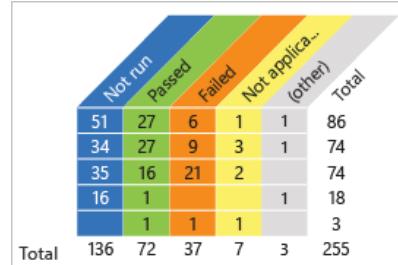
Review and query [work item change history](#) to learn of past decisions and support future ones.

## Bulk add or modify using Excel

Bulk add items to [track or modify multiple field values](#) using Excel.

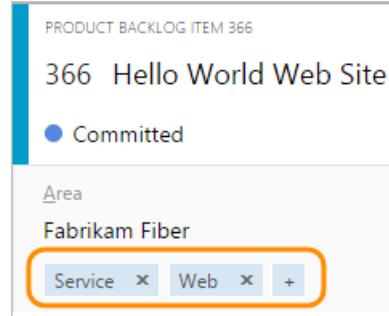
## Charts

Turn your queries into a [status](#) or [trend chart](#) and share them with your team, organization, and stakeholders.



## Tags

Add [tags](#) to [work items](#) to filter backlogs and queries. Bulk update work items to add or remove tags: [VSTS](#) | [TFS](#).



<p

## Bulk modify

Edit or update multiple work items from any backlog or query result. Supported tasks include:

- Modify field values
- Add or remove tags
- Reassign
- Move to an iteration
- Delete
- Link to a new or existing work item
- Change work item type
- Move to another team project
- Create a new Git branch

## Query by date or current iteration

List work items based on [when changes occurred](#) or if they belong to the team's current sprint.

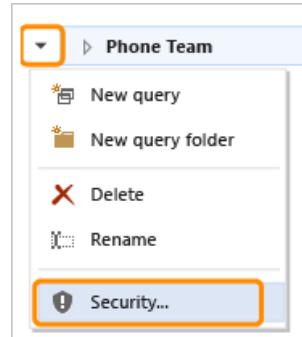
## Query by workflow

Find and list work items based on their [current state](#), such as new, in progress, resolved, done, or closed.

## Query by Kanban board change

Track status and trends of work items based on [changes made to the Kanban board](#).

# Security

| <p><b>Manage users and groups</b></p> <p>Add users to built-in groups to grant them access to your team project. Optionally, create groups to customize access based on your business requirements.</p> <p><b>Permission states</b></p> <p>Understand how <a href="#">Allow</a>, <a href="#">Deny</a>, <a href="#">Not set</a> and other permissions states control access to features and objects.</p> <table border="1"> <thead> <tr> <th>Permissions</th><th>Members</th><th>Member of</th></tr> </thead> <tbody> <tr> <td colspan="3">Members of this group can add, modify, and delete items within the team project.</td></tr> <tr> <td>Create tag definition</td><td>Inherited allow</td><td></td></tr> <tr> <td>Create test runs</td><td>Allow</td><td></td></tr> <tr> <td>Delete team project</td><td>Deny</td><td></td></tr> <tr> <td>Delete test runs</td><td>Allow</td><td></td></tr> <tr> <td>Edit project-level information</td><td>Not set</td><td></td></tr> <tr> <td>Manage test configurations</td><td>Allow</td><td></td></tr> </tbody> </table> <p><b>Manage work access (VSTS)</b></p> <p>Control user access with a directory to enforce policies about accessing company resources.</p> <p><b>Azure Active Directory (VSTS)</b></p> <p>Easily control access to your team's critical resources and key business assets with <a href="#">Azure Active Directory groups</a>.</p> <p><b>Set up groups (TFS)</b></p> <p>Create <a href="#">Windows or Active Directory groups</a> to manage access to your team projects and collections.</p> <p><b>Built-in groups</b></p> <p>Understand the <a href="#">permissions granted to built-in groups</a> and use them to manage access to your team projects and collections.</p> | Permissions     | Members   | Member of | Members of this group can add, modify, and delete items within the team project. |  |  | Create tag definition | Inherited allow |  | Create test runs | Allow |  | Delete team project | Deny |  | Delete test runs | Allow |  | Edit project-level information | Not set |  | Manage test configurations | Allow |  | <p><b>DevOps permissions</b></p> <p>Grant or restrict access to:</p> <ul style="list-style-type: none"> <li>• <a href="#">Git repositories</a></li> <li>• <a href="#">Git branches</a></li> <li>• <a href="#">TFVC source code and folders</a></li> <li>• <a href="#">Build</a></li> <li>• <a href="#">Test</a>)</li> <li>• <a href="#">Release</a></li> </ul> <p><b>Work item tracking permissions</b></p> <p>Control access to specific features by setting permissions for a user or group.</p> <ul style="list-style-type: none"> <li>• <a href="#">Area and iteration paths</a></li> <li>• <a href="#">Query permissions</a></li> <li>• <a href="#">Work item tags</a></li> <li>• <a href="#">Move work items to another team project</a></li> <li>• <a href="#">Permanently delete work items</a></li> <li>• <a href="#">Provide feedback through the Microsoft Feedback client</a></li> </ul> <p><b>Team admin role and permissions</b></p> <p>Add user accounts as team administrators to enable them to <a href="#">configure team settings and manage team assets</a>.</p> <p><b>Manage administrative permissions</b></p> <p>[Add users to one of the following built-in groups] to provide them permissions assigned to that group:</p> <ul style="list-style-type: none"> <li>• <a href="#">Project Administrators</a>, who manage shared features for a team project</li> <li>• <a href="#">Project Collection Administrators</a>, who manage collection-level features</li> <li>• <a href="#">Team Foundation Server Administrators</a>, who manage on-premises application servers</li> </ul> <p><b>Restrict access</b></p> <p>You can restrict access to several features and tasks by setting the permission state to Deny to individual accounts or a security group.</p> | <p><b>Stakeholder access</b></p> <p>Grant stakeholders, non-licensed users, limited access to contribute ideas and access team dashboards.</p> <p><b>Query permissions</b></p> <p>Grant permissions to <a href="#">create shared queries and query folders</a>.</p>  <p><b>Process permissions</b></p> <p>To customize a process, add custom fields, or change the layout of a work item form, you must be a member of the Project Collection Administrators group or be <a href="#">granted explicit permissions to edit a specific process</a>.</p> <p><b>Valid users</b></p> <p>Understand how <a href="#">valid user groups are populated and the permissions they're granted</a>.</p> <p><b>Permission reference</b></p> <p><a href="#">Provide or restrict access</a> for practically any feature, function, or object at the collection or team project level.</p> <p><b>SharePoint permissions (TFS)</b></p> <p>Grant permissions to <a href="#">view and contribute to SharePoint project portals</a>.</p> <p><b>SQL Server reporting permissions (TFS)</b></p> <p>Grant permissions to <a href="#">view and author Excel and SQL Server reports</a>.</p> |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------|-----------|-----------|----------------------------------------------------------------------------------|--|--|-----------------------|-----------------|--|------------------|-------|--|---------------------|------|--|------------------|-------|--|--------------------------------|---------|--|----------------------------|-------|--|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Permissions                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | Members         | Member of |           |                                                                                  |  |  |                       |                 |  |                  |       |  |                     |      |  |                  |       |  |                                |         |  |                            |       |  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| Members of this group can add, modify, and delete items within the team project.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                 |           |           |                                                                                  |  |  |                       |                 |  |                  |       |  |                     |      |  |                  |       |  |                                |         |  |                            |       |  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| Create tag definition                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | Inherited allow |           |           |                                                                                  |  |  |                       |                 |  |                  |       |  |                     |      |  |                  |       |  |                                |         |  |                            |       |  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| Create test runs                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | Allow           |           |           |                                                                                  |  |  |                       |                 |  |                  |       |  |                     |      |  |                  |       |  |                                |         |  |                            |       |  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| Delete team project                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | Deny            |           |           |                                                                                  |  |  |                       |                 |  |                  |       |  |                     |      |  |                  |       |  |                                |         |  |                            |       |  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| Delete test runs                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | Allow           |           |           |                                                                                  |  |  |                       |                 |  |                  |       |  |                     |      |  |                  |       |  |                                |         |  |                            |       |  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| Edit project-level information                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | Not set         |           |           |                                                                                  |  |  |                       |                 |  |                  |       |  |                     |      |  |                  |       |  |                                |         |  |                            |       |  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| Manage test configurations                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | Allow           |           |           |                                                                                  |  |  |                       |                 |  |                  |       |  |                     |      |  |                  |       |  |                                |         |  |                            |       |  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |

## Set up and installation

|                                                                                                                                                                                                                                                                                                                                                  |                                                                                                                                                                                                                                                                                                                                                                                                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p><b>Free developer offers</b></p> <p>To get started, <a href="#">download and install Visual Studio</a> an integrated development environment (IDE) that works with VSTS and TFS.</p> <p><b>Migrate from on-premises to hosted</b></p> <p>You can <a href="#">migrate source code and work items</a> from an on-premises TFS to the cloud.</p> | <p><b>Sign up for VSTS</b></p> <p><a href="#">Store your code, tests, and test results in the cloud with VSTS</a>, as well as plan your project and track progress.</p> <p><b>Install TFS</b></p> <p><a href="#">Download and install the latest version of Team Foundation Server</a>. TFS provides the collaboration hub to support your teams DevOps tasks. at the center of the Microsoft devops solution.</p> | <p><b>Email configuration (TFS)</b></p> <p>For feedback requests, alerts, and other special controls to work, you must <a href="#">configure an SMTP server</a> for your on-premises TFS.</p> <p><b>Automated, scheduled backups (TFS)</b></p> <p>Reduce the risk of lost data by <a href="#">scheduling automated backups of the data store</a>.</p> <p><b>Built-in SQL Server database (TFS)</b></p> <p>For small teams, you can install <a href="#">TFS using SQL Server Express which installs with TFS</a>.</p> |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

## Teams, team projects, and processes

### Processes and process guidance

## What is a process?

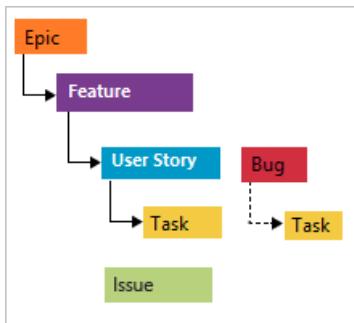
A [process defines the building blocks](#) of the work item tracking system as well as other sub-systems you access through your team project.

## Compare and choose a process

Compare the three core system processes--[Agile](#), [Scrum](#), [CMMI](#)--before you choose one to create a team project.

### Agile process

Choose [Agile](#) when your team uses Agile planning methods, including Scrum, and tracks development and test activities separately. With Agile, you can track user stories and bugs on the Kanban board, or track bugs and tasks on the task board.



## Customize a process (VSTS)

Customizations you make to an inherited process automatically update all team projects that reference that process. You can customize your team project as follows:

- Add and modify fields
- Modify the web form layout
- Modify the workflow states
- Add a custom work item type

## Manage processes (VSTS)

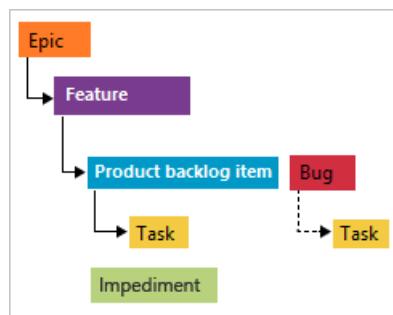
[Create inherited processes and migrate team projects to use them.](#) Set the default process and enable, disable, or delete processes you no longer want to use.

## Kanban process tools

You can use the Kanban board with any process--Agile, Scrum, CMMI--or team project that you select or create. Agile Kanban tools support working with the [Kanban board](#), [adding task checklists](#), [setting WIP limits](#), [custom columns](#), [split columns](#), [custom swimlanes](#), and [customizing cards](#).

### Scrum process

Choose [Scrum](#) when your team practices Scrum and you want to track product backlog items (PBIs) and bugs on the Kanban board, or break PBIs and bugs down into tasks on the task board.



### Scrum work items and workflow process guidance

Plan and track your work using the [work item types](#) and [workflow supported by the Scrum process](#).

### Agile work items and workflow process guidance

Plan and track your work using the [work item types](#) and [workflow supported by the Agile process](#).

### Work item field index

For descriptions and usage of each field used by the core and inherited processes, see [Work item field index](#).

## Scrum process tools

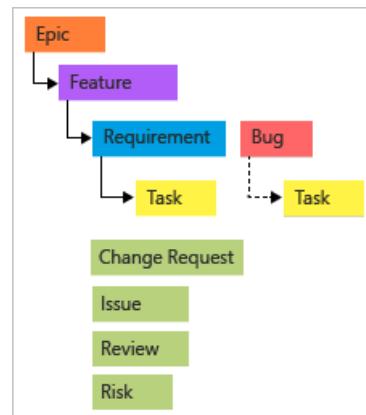
Scrum processes can be used with any process--Agile, Scrum, CMMI--or team project that you select or create. Agile Scrum tools support [sprint planning](#), [capacity planning](#), [task boards](#), and [burndown charts](#).

### Manage processes (VSTS)

Add users to [built-in groups](#) to grant them access to your team project. Optionally, create groups to customize access based on your business requirements.

### CMMI process

Choose [CMMI](#) when your team follows more formal project methods that require a framework for process improvement and an auditable record of decisions. CMMI supports tracking requirements, change requests, risks, and reviews.



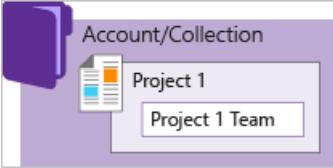
### CMMI work items and workflow process guidance

Plan and track your work using the [work item types](#) and [workflow supported by the CMMI process](#).

## Process templates (TFS)

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                                                                                                                                                                                                                                                                                                                                                                                       |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p><b>What is a process template?</b></p> <p>A process template is the forerunner and on-premises version of a process. It provides the building blocks of the work item tracking system as well as other sub-systems you access through your team project. Process templates support full <a href="#">customization of all its objects</a>.</p> <p><b>Manage process templates</b></p> <p><a href="#">Download and upload process templates</a> to support customization and upgrade of your work tracking experience and team projects.</p> | <p><b>Process template files</b></p> <p>You customize the initial configuration of team projects by <a href="#">customizing one or more process template files</a>. By customizing these files, you can define the initial configuration of all team projects that are created from the process template.</p> <p><b>Configure Features Wizard</b></p> <p>Use the Configure Features Wizard to <a href="#">configure team projects after a TFS upgrade</a> to access new features.</p> | <p><b>Changes made to process templates</b></p> <p>For a catalog of changes, see <a href="#">Changes made to process templates</a>.</p> <p><b>Customize the Microsoft Project field mapping file</b></p> <p>You can <a href="#">customize how work item fields</a> that are defined in Team Foundation map to fields in Microsoft Project. And, you can change how specific fields are published.</p> |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

## Team projects

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p><b>What is a team project?</b></p> <p>A <a href="#">team project</a> provides a repository for source code and a place for a group of developers to plan, track progress, and collaborate on building software solutions. A team project lives within a team project collection. You can grant permissions to and customize a team project to support your business needs.</p> <p><b>Create a team project</b></p> <p>You can <a href="#">create a team project hosted in the cloud (VSTS)</a>, avoiding maintenance and administrative overhead, or <a href="#">create a team project on an on-premises TFS</a>.</p> <p><b>Rename a team project</b></p> <p><a href="#">Rename a team project</a> as needed to reflect changes that occur within your org.</p> <p><b>Delete a team project</b></p> <p>Simplify the navigation to team projects that are in use by <a href="#">deleting team projects you no longer use</a>.</p> | <p><b>Collection-project-team structure</b></p> <p>The <a href="#">collection-project-team structure</a> provides teams a high-level of autonomy to configure their tools in ways that work for them. It also supports administrative tasks to occur at the appropriate level.</p>  <p><b>Change the process (VSTS)</b></p> <p>You <a href="#">change the process of a team project</a> to apply customizations you've made to an inherited process. You can <a href="#">add and modify fields and modify the layout of each work item type</a> defined for that process.</p> | <p><b>View your work across teams and team projects (VSTS)</b></p> <p>From your <a href="#">account hub</a>, you can view and quickly navigate to teams, team projects, branches, work items, pull requests and other objects that are relevant to you and that are stored in different team projects within the account collection.</p> <p><b>Customize a team project (TFS)</b></p> <p>You customize a team project defined on an on-premises TFS by <a href="#">modifying definition files for work item types or process configuration</a>, or <a href="#">changing field attributes</a>.</p> <p><b>Update a team project after an upgrade (TFS)</b></p> <p>Some features added when you upgrade your on-premises application server may require you to <a href="#">configure features to access them</a>.</p> <p><b>Upload reports (TFS)</b></p> <p><a href="#">Upload the latest reports provided for your process</a> or add reports after you've already created a team project by adding SQL Server Reporting Services.</p> |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

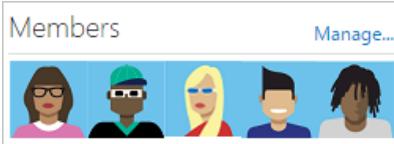
## Teams

## What is a team?

A team is an organizing unit used to support a number of [team-configurable tools and assets](#) to plan and manage work and facilitate collaboration.

### Add team members

Add accounts--[VSTS | TFS](#)--to a team to enable users to share code, plan and track work, and access other team assets and resources.



### Add a team

As your organization grows, consider moving from your [default team of one to two or more teams](#) to support feature-focused groups within your org.

### Add a team admin

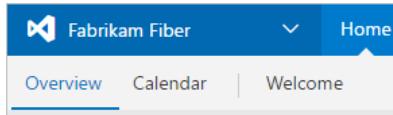
Add user accounts to the team admin role to enable them to [configure team settings](#). Team settings can only be configured by a team or project admin.

### Support stakeholders

Members within your org who don't have a license or contribute to developing the code base [can track project priorities and provide direction, feature ideas, and business alignment to a team](#).

## Team dashboards

Share progress, status, and guidance with your team using configurable team dashboards.



### Team welcome page

Provide in-project guidance through the [Welcome page and other pages you format using Markdown](#).

### Setup a team hierarchy

By [configuring your teams and backlogs into an hierarchical structure](#), program owners can more easily track progress across teams, manage portfolios, and generate rollup data.

### Set team defaults

Several Agile tools reference the team's default area path, iteration path, and activated sprints to automatically filter the set of work items they display. Understand how defaults are used and how to [set the defaults for your team](#).

### Select team sprints

[Select your team's sprints](#) to gain access to sprint backlogs and task boards.

| + Select iteration(s) <span style="color:red">X</span> Remove   New New child |            |            |
|-------------------------------------------------------------------------------|------------|------------|
| Iteration                                                                     | Start Date | End Date   |
| Fabrikam Fiber\Iteration 1                                                    | 10/3/2016  | 10/21/2016 |
| Fabrikam Fiber\Iteration 2                                                    | 10/24/2016 | 11/11/2016 |
| Fabrikam Fiber\Iteration 3                                                    | 11/14/2016 | 12/2/2016  |

## Manage team assets

Configure, customize, and manage all [team-related activities](#)

### Team alerts

As changes occur to work items, code reviews, source control files, and builds, your team can automatically [receive email notifications for alerts](#) that you define.

### Team rooms

Team rooms, like chat rooms, provide teams with a [space to discuss work in progress, ask questions, share status, and clarify issues](#) that arise. Use team rooms to foster and capture communication among team members, both near and far.

### Team groups

A [team group is created](#) when you create a team. Use this group in queries or to set permissions for your team.

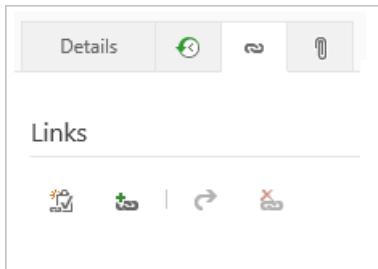
# Traceability

## Work item history & auditing

Review and query [work item change history](#) to learn of past decisions and support future ones.

## Manage risks and dependencies

Link work items to [track related work, dependencies, and changes made over time](#). Create queries based on link type to monitor dependencies.

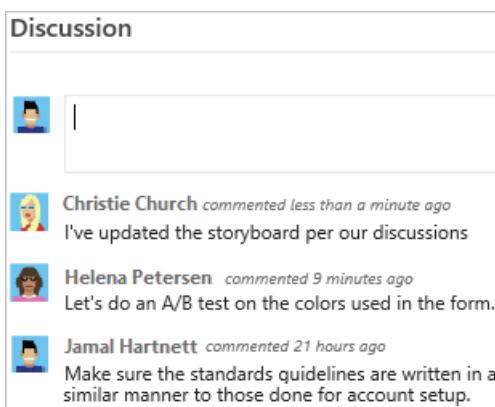


## Rich text comments

Describe and comment on work to perform using [formatted text, hyperlinks, and inline images](#).

## Discussion (VSTS)

Add or review comments added to a work item. Start by clicking the discussion icon.



## Storyboard

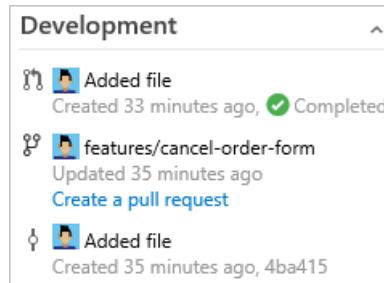
[Link your storyboards to you backlog work items](#).

## Git code changes

Get detailed information about what changes have been made to your local and centralized branches and [repositories](#), compare files and folders, review history of commits and file changes.

## Integrate Git development with work tracking (VSTS)

Drive Git development and stay in sync as a team to complete backlog items and tasks using the [Git Development section](#). Add branches, create pull requests, and view all development performed to support the specific work item.



## TFVC code changes

Get detailed information about what changes have been made to your files, compare files and folders, view where and when changesets have been merged, and view file changes using [annotate](#).

## Build changes

Determine who [changed what in the build definition and when they did it](#).

## Release audit history

Retain full audit history of all activities performed on a release with detailed release logs and approval tracking.

## Release logs

View or download log files as zip files. Log files contain the status for each step or task of a release, for each of the environments in the release definition. Each completed release--succeeded, failed, or abandoned--includes a [live log file, details, and history for each step or task](#).

## Related notes

We add new features frequently. We'll work to keep this list up-to-date. Other resources you might want to bookmark:

- [VSTS - Features update](#)
- [Microsoft devops blog](#)
- [Brian Harry's blog](#)

Get started today using our cloud offering, [VSTS](#), or our [on-premises TFS server](#).

## We welcome your feedback

Send suggestions on [UserVoice](#), and follow us on [Twitter @vsts](#).

See also our [comprehensive feedback and support page](#).

# Default permissions and access for VSTS and TFS

6/1/2018 • 5 min to read • [Edit Online](#)

## VSTS | TFS 2018 | TFS 2017 | TFS 2015 | TFS 2013

To connect and use the functions and features that VSTS and TFS provides, users must be added to a group with the appropriate permissions. The most common built-in groups include Readers, Contributors, and Project Administrators. These groups are assigned the default permissions as listed below.

In addition to permissions, access to select features are controlled by the access level assigned to a user. Contributors and administrators should be added to Basic (paid) access. Stakeholder access is available to support free access to a limited set of features by an unlimited set of stakeholders.

For a complete reference of all built-in groups and permissions, see [Permissions and groups](#). For information about assigning access levels and supporting stakeholder access, see [Manage users and access](#) for VSTS, and [Change access levels](#) for TFS.

## Code: Git and TFVC

You can connect to your code from the Code hub or the web portal, and using Xcode, Eclipse, IntelliJ, Android Studio, Visual Studio, Visual Studio Code. For an overview of code features and functions, see [Git](#) and [Use Team Foundation Version Control \(TFVC\)](#). Stakeholders have no access to the Code hub or its features.

From the team project admin content for Version Control, you can [set permissions on a repository](#). From the [Code>Branches](#) page, you can [set permissions for a specific branch](#) and [set branch policies](#).

### Git

| TASK                                                         | READERS | CONTRIBUTORS | BUILD ADMINS | ACCOUNT OWNER/PROJECT ADMINS |
|--------------------------------------------------------------|---------|--------------|--------------|------------------------------|
| Clone, fetch, pull, and explore the contents of a repository | ✓       | ✓            | ✓            | ✓                            |
| Unlimited private Git repositories                           |         | ✓            | ✓            | ✓                            |
| Create branches and tags, manage notes                       |         | ✓            | ✓            | ✓                            |
| Create, delete, and rename repositories                      |         |              |              | ✓                            |
| Manage permissions, manage branches and branch policies      |         |              |              | ✓                            |
| Powerful semantic code search                                |         | ✓            | ✓            | ✓                            |

### TFVC

| TASK                                                                                                             | READERS   | CONTRIBUTORS | BUILD ADMINS | ACCOUNT OWNER/PROJECT ADMINS |
|------------------------------------------------------------------------------------------------------------------|-----------|--------------|--------------|------------------------------|
| Contribute to a centralized version control, including Code Review (Check in, label, lock, merge, pend a change) | Read only | ✓            | ✓            | ✓                            |

|                                                     |  |  |   |   |   |
|-----------------------------------------------------|--|--|---|---|---|
| Check in, revise, undo, unlock other users' changes |  |  |   |   | ✓ |
| Manage branches, manage permissions                 |  |  |   |   | ✓ |
| Powerful semantic code search                       |  |  | ✓ | ✓ | ✓ |

## Build and release

You can define and manage your builds and releases from the web portal, **Build and Release** hub. For an overview of build and release management features and functions, see [Continuous integration on any platform](#).

From the \*\*Build and Release hub, you can set permissions for all or individual build definitions, release definitions, task groups, or variable groups. See [Set build and release permissions](#).

| TASK                                                                         | STAKEHOLDERS | READERS | CONTRIBUTORS | BUILD ADMINS | ACCOUNT OWNER/PROJECT ADMINS | RELEASE ADMINS |
|------------------------------------------------------------------------------|--------------|---------|--------------|--------------|------------------------------|----------------|
| View build and release definitions                                           |              | ✓       | ✓            | ✓            | ✓                            | ✓              |
| Define builds with continuous integration                                    |              |         | ✓            | ✓            | ✓                            |                |
| Define releases, manage deployments, manage releases with Release Management |              |         | ✓            |              | ✓                            | ✓              |
| Approve releases                                                             | ✓            |         | ✓            |              | ✓                            | ✓              |
| Package Management (5 users free)                                            |              |         | ✓            |              | ✓                            | ✓              |
| Queue builds, edit build quality                                             |              |         | ✓            | ✓            | ✓                            |                |
| Manage build queues and build qualities                                      |              |         |              | ✓            | ✓                            |                |
| Manage build retention policies, delete and destroy builds                   |              |         | ✓            | ✓            | ✓                            |                |

|                                                      |   |   |   |   |   |   |
|------------------------------------------------------|---|---|---|---|---|---|
| Administer build permissions                         |   |   |   | ✓ | ✓ |   |
| Manage release permissions                           |   |   |   |   | ✓ | ✓ |
| Create and edit task groups                          |   |   | ✓ | ✓ | ✓ | ✓ |
| Manage task group permissions                        |   |   |   | ✓ | ✓ | ✓ |
| Can view library items such as variable groups       | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Use and manage library items such as variable groups |   |   |   | ✓ | ✓ | ✓ |

## Package Management feeds

Feeds have three levels of access: Owners, Contributors, and Readers. Owners can add any type of identity—individuals, teams, and groups—to any access level. To set permissions, see [Secure feeds using permissions](#).

| PERMISSION                        | READER | CONTRIBUTOR | OWNER |
|-----------------------------------|--------|-------------|-------|
| List and restore/install packages | ✓      | ✓           | ✓     |
| Push packages                     |        | ✓           | ✓     |
| Unlist/deprecate packages         |        | ✓           | ✓     |
| Delete/unpublish package          |        |             | ✓     |
| Edit feed permissions             |        |             | ✓     |
| Rename and delete feed            |        |             | ✓     |

## Test

You can define and manage manual tests from the web portal, **Test** hub. For an overview of manual test features and functions, see [Testing overview](#).

You set [test permissions at the team project level](#) from the admin context Security page.

| Task                                                 | Stakeholders | Readers | Contributors | Account Owner/<br>Project Admins |
|------------------------------------------------------|--------------|---------|--------------|----------------------------------|
| Exploratory testing, view test runs                  |              | ✓       | ✓            | ✓                                |
| Exploratory testing, create and delete test runs     |              |         | ✓            | ✓                                |
| Provide feedback using the Test & Feedback extension | ✓            | ✓       | ✓            | ✓                                |
| Request feedback using the Test & Feedback extension |              |         | ✓            | ✓                                |
| Manage test configurations and test environments     |              |         | ✓            | ✓                                |
| Manage test plans and test suites                    |              |         | ✓            | ✓                                |
| Test Manager (purchased separately)                  |              |         | ✓            | ✓                                |

## Agile tools and work tracking

You can connect to work items from the **Work** hub of the web portal and using Eclipse, Visual Studio, Excel, Project, and other clients. For an overview of work tracking features and functions, see [About Agile tools](#). Stakeholders have limited access to select work tracking functions as described in [Work as a stakeholder](#).

In addition to the permissions set at the [project level via the built-in groups](#), you can set permissions for the following objects: [area and iteration paths](#), [queries and query folders](#), and [delivery plans](#).

The team administrator role supports configuration of team settings. To be added as a team administrator, see [Configure team settings and add team administrators](#).

### NOTE

There are no UI permissions associated with [managing tags](#). Instead, you can manage them using the [TFS Security command line tool](#).

| Task                                                     | Stakeholders | Readers            | Contributors | Team Admins | Account Owner/<br>Project Admins |
|----------------------------------------------------------|--------------|--------------------|--------------|-------------|----------------------------------|
| View work items, including bugs, requirements, and tasks | ✓            | ✓                  | ✓            | ✓           | ✓                                |
| Create and edit work items, follow a work item           | ✓            |                    | ✓            | ✓           | ✓                                |
| Change work item type                                    | ✓            |                    | ✓            | ✓           | ✓                                |
| Move or delete work items                                |              |                    | ✓            | ✓           | ✓                                |
| Search and query work items, save work item queries      | ✓            | Can't save queries | ✓            | ✓           | ✓                                |

|                                                                                          |                          |           |   |   |   |   |
|------------------------------------------------------------------------------------------|--------------------------|-----------|---|---|---|---|
| View backlogs, boards, and plans                                                         |                          | ✓         | ✓ | ✓ | ✓ | ✓ |
| Provide feedback                                                                         |                          | ✓         | ✓ | ✓ | ✓ | ✓ |
| Request feedback                                                                         |                          |           |   | ✓ | ✓ | ✓ |
| Agile tools (Kanban boards, backlogs, sprint planning, portfolio management)             | limited interactions     | view only | ✓ | ✓ | ✓ | ✓ |
| Configure Agile tools, set team defaults                                                 |                          |           |   |   | ✓ | ✓ |
| Create new work item tags                                                                | Can assign existing tags |           | ✓ | ✓ | ✓ | ✓ |
| View, add, and configure Delivery Plans                                                  |                          | view only | ✓ | ✓ | ✓ | ✓ |
| Customize project information (area paths, iteration paths, and work tracking processes) |                          |           |   |   |   | ✓ |
| Powerful semantic work tracking search                                                   |                          |           | ✓ | ✓ | ✓ | ✓ |

## Charts, dashboards, and other web portal features

You can define and manage dashboards from the web portal, **Dashboard** hub. For an overview of dashboard and chart features, see [Dashboards](#).

You set [dashboard permissions at the team level](#) from the team dashboard page.

| TASK                                      | STAKEHOLDERS | READERS | CONTRIBUTORS         | TEAM ADMINS | ACCOUNT OWNER/PROJECT ADMINS |
|-------------------------------------------|--------------|---------|----------------------|-------------|------------------------------|
| View charts and dashboards                | ✓            | ✓       | ✓                    | ✓           | ✓                            |
| Create work item and test tracking charts |              |         | ✓                    | ✓           | ✓                            |
| View the project page                     | ✓            | ✓       | ✓                    | ✓           | ✓                            |
| Edit the project page                     |              |         |                      |             | ✓                            |
| Navigate using the Account hub pages      | ✓            | ✓       | ✓                    | ✓           | ✓                            |
| Add and configure dashboards              |              |         | With permissions set | ✓           | ✓                            |

## Analytics

From the **Analytics** hub, you can create and manage Analytics views. An Analytics view provides a simplified way to specify the filter criteria for a Power BI report based on the Analytics Service data store. The Analytics Service is the reporting platform for VSTS. To learn more, see [What is the Analytics Service?](#)

You set [permissions](#) for the service at the project level, and for shared Analytics views at the object level.

| Task                                           | Stakeholders | Readers | Contributors | Team Admins | Account Owner/Project Admins |
|------------------------------------------------|--------------|---------|--------------|-------------|------------------------------|
| View Analytics service                         |              | ✓       | ✓            | ✓           | ✓                            |
| View, edit, and delete a shared Analytics view |              | ✓       | ✓            | ✓           | ✓                            |

## Notifications, alerts, and team collaboration tools

To manage notifications, see [Manage personal notifications](#) and [Manage team notifications](#).

### Note

There are no UI permissions associated with managing notifications. Instead, you can manage them using the [TFS Security command line tool](#).

| Task                                              | Stakeholders | Readers | Contributors | Team Admins | Account Owner/Project Admins |
|---------------------------------------------------|--------------|---------|--------------|-------------|------------------------------|
| Set personal notifications or alerts (see Note 1) | ✓            |         | ✓            | ✓           | ✓                            |
| Set team notifications or alerts                  |              |         |              | ✓           | ✓                            |
| Set project-level notifications or alerts         |              |         |              |             | ✓                            |
| Participate in Team (chat) rooms                  |              |         | ✓            | ✓           | ✓                            |
| READMEs                                           | See Note 2   | ✓       | ✓            | ✓           | ✓                            |
| View Wikis                                        | ✓            | ✓       | ✓            | ✓           | ✓                            |
| Provision or create a Wiki                        |              |         |              |             | ✓                            |
| View the project page                             | ✓            | ✓       | ✓            | ✓           | ✓                            |
| Edit the project page                             |              |         |              |             | ✓                            |
| Navigate using the Account hub pages              | ✓            | ✓       | ✓            | ✓           | ✓                            |
| Request feedback                                  |              | ✓       | ✓            | ✓           | ✓                            |
| Provide feedback                                  | ✓            | ✓       | ✓            | ✓           | ✓                            |
| Powerful semantic code search                     |              |         | ✓            | ✓           | ✓                            |
| Powerful semantic work tracking search            |              |         | ✓            | ✓           | ✓                            |

### Notes

1. Team (chat) rooms have been deprecated for VSTS and TFS 2018 and later versions.
2. Can view team project READMEs, but not READMEs defined for a repository.

## Related notes

- [Add users to a project or team](#)
- [Permissions and groups reference](#)
- [About access levels](#)
- [Work in the web portal](#)

# Keyboard shortcuts for VSTS, TFS, and Team Explorer

5/29/2018 • 10 min to read • [Edit Online](#)

## VSTS | TFS 2018 | TFS 2017 | TFS 2015 | TFS 2013

You can use the keyboard shortcuts listed in this topic when you work within Visual Studio Team Services (VSTS), the web portal for Team Foundation Server (TFS), or Team Explorer. In addition to these shortcuts, you can [assign your own shortcuts in Visual Studio](#) from the **Tools/Options/Environment/Keyboard** page.

## Web portal

You can use these keyboard shortcuts when working in the web portal for VSTS or TFS.

| Navigate          |                                | Navigate within lists |                               |
|-------------------|--------------------------------|-----------------------|-------------------------------|
| <b>Ctrl+Alt,a</b> | Move focus to  admin link      | <b>Tab</b>            | Move focus                    |
| <b>Ctrl+Alt,h</b> | Move focus to  help link       |                       | Move focus left/right         |
| <b>Ctrl+Alt,s</b> | Move focus to search box       |                       | Move focus up/down            |
| <b>Ctrl+Alt,</b>  | Move focus to next section     | <b>Ctrl+Home</b>      | Move focus to top of list     |
| <b>Ctrl+Alt,</b>  | Move focus to previous section | <b>Ctrl+End</b>       | Move focus to bottom of list  |
|                   |                                |                       | Move item up/down within list |
|                   |                                | <b>Shift</b>          | Highlight consecutive items   |
|                   |                                | <b>Menu</b>           | Open context menu             |
|                   |                                | <b>Esc</b>            | Dismiss context menu          |
|                   |                                |                       | Move focus left/right         |
|                   |                                |                       | Move focus up/down            |
|                   |                                | <b>Enter</b>          | Choose selected menu item     |

## Web portal, global shortcuts

Type **?** to access the Global and hub-specific shortcuts.

### NOTE

**Feature availability:** The following shortcuts are available from the web portal for VSTS and TFS 2015.2 and later versions.

Type **?** to access the Global and hub-specific shortcuts.

You can use the following keyboard shortcuts from the web portal.

? Show shortcuts  
p Projects and teams

**g,h** Go to the [Dashboards hub](#)  
**g,w** Go to the [Work hub](#)  
**g,c** Go to the [Code hub](#)  
**g,b** Go to the [Build-Release hub](#)  
**g,t** Go to the [Test hub](#)  
**g,s** Go to [Settings \(Admin context\)](#)

**f,n** Focus next section  
**f,p** Focus previous section

**s** Move focus to search

Hub-specific shortcuts only work when in a specific hub. For example, type **g c** to open the Code hub, and then type **c p** to create a pull request. These navigation shortcuts work as long as the focus is not on an input control.

## Code hub

You can use the following keyboard shortcuts when working in the **Code** hub. To view the valid shortcuts, enter **Shift+?** from the **Code** hub or when editing a wiki page.

### NOTE

**Feature availability:** The following shortcuts are available from the web portal for VSTS and TFS 2015.2 and later versions.

**Code**

- r** Select repository
- e** Open explorer
- h** Open history
- b** Open branches (Git)
- q** Open pull requests (Git)
- c,p** Create pull request (Git)

**c** Open changesets (TFVC)  
**v** Open shelvesets (TFVC)

**File Explorer**

- 1** Open contents
- 2** Open history
- t** Move focus to directory path
- w** Select branch (Git)
- y** Switch to commit (Git)
- c,b** Create branch (Git)

## Work hub, Work Items page

You can use the following keyboard shortcuts when working in the **Work** hub, **Work Items** page which is currently in preview. To enable it, see [Enable preview features](#).

### NOTE

**Feature availability:** The following shortcuts are available from the web portal for VSTS.

|                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                     |                |               |                   |               |        |
|---------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------|----------------|---------------|-------------------|---------------|--------|
|                     | <p><b>Work</b></p> <ul style="list-style-type: none"> <li><b>I</b> Open <a href="#">backlog</a></li> <li><b>b</b> Open <a href="#">board</a></li> <li><b>i</b> Open <a href="#">current iteration</a></li> <li><b>t</b> Open <a href="#">task board</a></li> <li><b>q</b> Open <a href="#">queries</a></li> <li><b>z</b> Toggle full screen</li> </ul> <p><b>Work items</b></p> <table border="0"> <tr> <td><b>Ctrl+Shift+f</b></td><td>Filter results</td></tr> <tr> <td><b>Ctrl+c</b></td><td>Copy to clipboard</td></tr> <tr> <td><b>Delete</b></td><td>Delete</td></tr> </table> | <b>Ctrl+Shift+f</b> | Filter results | <b>Ctrl+c</b> | Copy to clipboard | <b>Delete</b> | Delete |
| <b>Ctrl+Shift+f</b> | Filter results                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                     |                |               |                   |               |        |
| <b>Ctrl+c</b>       | Copy to clipboard                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                     |                |               |                   |               |        |
| <b>Delete</b>       | Delete                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                     |                |               |                   |               |        |

## Work item form shortcuts

You can use the following keyboard shortcuts when [interacting with a work item form](#). To view the valid shortcuts, enter **Shift+?** from within the form.

|                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |              |                        |                     |                  |               |              |                    |                      |                     |                         |                     |                          |
|---------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------|------------------------|---------------------|------------------|---------------|--------------|--------------------|----------------------|---------------------|-------------------------|---------------------|--------------------------|
|                     | <p><b>NOTE</b></p> <p><b>Feature availability:</b> The following shortcuts are available from VSTS.</p> <p><b>Work Item Form</b></p> <table border="0"> <tr> <td><b>Alt+i</b></td><td>Assign work item to me</td></tr> <tr> <td><b>Ctrl+Shift+d</b></td><td>Go to discussion</td></tr> <tr> <td><b>Ctrl+s</b></td><td>Save changes</td></tr> <tr> <td><b>Shift+Alt+c</b></td><td>Copy work item title</td></tr> <tr> <td><b>Ctrl+Shift+,</b></td><td>Move to left tab (page)</td></tr> <tr> <td><b>Ctrl+Shift+.</b></td><td>Move to right tab (page)</td></tr> </table> | <b>Alt+i</b> | Assign work item to me | <b>Ctrl+Shift+d</b> | Go to discussion | <b>Ctrl+s</b> | Save changes | <b>Shift+Alt+c</b> | Copy work item title | <b>Ctrl+Shift+,</b> | Move to left tab (page) | <b>Ctrl+Shift+.</b> | Move to right tab (page) |
| <b>Alt+i</b>        | Assign work item to me                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |              |                        |                     |                  |               |              |                    |                      |                     |                         |                     |                          |
| <b>Ctrl+Shift+d</b> | Go to discussion                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |              |                        |                     |                  |               |              |                    |                      |                     |                         |                     |                          |
| <b>Ctrl+s</b>       | Save changes                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |              |                        |                     |                  |               |              |                    |                      |                     |                         |                     |                          |
| <b>Shift+Alt+c</b>  | Copy work item title                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |              |                        |                     |                  |               |              |                    |                      |                     |                         |                     |                          |
| <b>Ctrl+Shift+,</b> | Move to left tab (page)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |              |                        |                     |                  |               |              |                    |                      |                     |                         |                     |                          |
| <b>Ctrl+Shift+.</b> | Move to right tab (page)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |              |                        |                     |                  |               |              |                    |                      |                     |                         |                     |                          |

Also, you can use the following keyboard shortcuts when working within the work item form in the web portal, both VSTS and TFS.

| FORMAT, COPY, PASTE RICH TEXT                                                                                                                                                                   | SAVE AND CLOSE                                                                               |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------|
| <b>Ctrl+b</b> Bold text<br><b>Ctrl+i</b> Italicize text<br><b>Ctrl+u</b> Underscore text<br><b>Ctrl+Spacebar</b> Clear formatting<br><b>Ctrl+c</b> Copy text<br><b>Ctrl+v</b> Paste copied text | <b>Ctrl+s</b> Save changes<br><b>Ctrl+Enter</b> Save and close<br><b>Esc</b> Close work item |

## Work hub, Backlog page

You can use the following keyboard shortcuts when working in the **Work** hub, **Backlogs** pages. These shortcuts work when you are on a product backlog, portfolio backlog, or sprint backlog page.

|  |                                           |
|--|-------------------------------------------|
|  | <b>Backlogs</b>                           |
|  | <b>Ctrl+Home</b> Move item to top         |
|  | <b>m,b</b> Move item to backlog           |
|  | <b>m,i</b> Move item to current iteration |
|  | <b>m,n</b> Move item to next iteration    |
|  | <b>n</b> Open new item panel              |
|  | <b>Ins</b> Add child                      |
|  | <b>Ctrl+Shift+f</b> Filter results        |
|  | <b>r</b> Show/Hide Parents                |

## Work hub, Kanban board page

You can use the following keyboard shortcuts from any Kanban board, that is, when working in the **Work** hub, **Board** page.

### NOTE

**Feature availability:** The following shortcuts are available from the web portal for VSTS and TFS 2015.2 and later versions.

|  |                                                       |
|--|-------------------------------------------------------|
|  | <b>Kanban Board</b>                                   |
|  | <b>n</b> Add new item                                 |
|  | <b>c</b> Add new child item                           |
|  | <b>Home</b> Select first item                         |
|  | <b>Enter</b> Open item                                |
|  | <b>Ctrl+Shift+f</b> Filter results                    |
|  | <b>Ctrl+ [ ]</b> Move item up                         |
|  | <b>Ctrl+ [ ]</b> Move item down                       |
|  | <b>Ctrl+ [ ]</b> Move item left                       |
|  | <b>Ctrl+ [ ]</b> Move item right                      |
|  | <b>Ctrl+Home</b> Move item to top of column           |
|  | <b>Ctrl+End</b> Move item to bottom of column         |
|  | <b>Ctrl+Shift+ [ ]</b> Move item to swimlane above    |
|  | <b>Ctrl+Shift+ [ ]</b> Move item to swimlane below    |
|  | <b>F2</b> Rename item                                 |
|  | <b>e</b> Show/hide empty fields                       |
|  | <b>o</b> Expand all swimlanes                         |
|  | <b>u</b> Collapse all swimlanes                       |
|  | <b>Shift+Pageup</b> Select first/next swimlane above  |
|  | <b>Shift+Pagedown</b> Select last/next swimlane below |

## Work hub, Queries page

You can use the following keyboard shortcuts when [working with queries](#) in the web portal. To view the valid shortcuts, enter **Shift+?** from the **Work>Queries** page.

**NOTE**

**Feature availability:** The following shortcuts are available from VSTS or TFS 2015.2 or later versions.

**Queries**

**c q** Add new query

**r** or **Alt+r** Refresh query

**Alt+q** Return to query

**j** or **Alt+n** Select next item

**k** or **Alt+p** Select previous item

**Ctrl+Shift+f** Filter results

## Work hub, Plans page

You can use the following keyboard shortcuts when [interacting with a delivery plan](#). To view the valid shortcuts, enter **Shift+?** when viewing a plan from the **Work>Plans** page.

**NOTE**

**Feature availability:** The following shortcuts are available from the web portal for VSTS and TFS 2017.2 and later versions.

Type **?** to access the Global and hub-specific shortcuts.



| Work                                                                                                                                                                     | Delivery plan                                                                                                                                                                                                           |                                                                                                                                                                                                                                                                                       |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>I</b> Open backlog<br><b>b</b> Open board<br><b>i</b> Open current iteration<br><b>t</b> Open task board<br><b>q</b> Open queries<br><b>z</b> Toggle full screen mode | <b>Home</b> Select first item<br><b>Enter</b> Open item<br><b>n</b> New item<br><b>Ctrl+ [ ]</b> Move item up<br><b>Ctrl+ [ ]</b> Move item down<br><b>Ctrl+ [ ]</b> Move item left<br><b>Ctrl+ [ ]</b> Move item right | <b>Shift+ [ ]</b> Pan timeline left<br><b>Shift+ [ ]</b> Pan timeline right<br><b>u</b> Collapse all backlogs<br><b>o</b> Expand all backlogs<br><br><b>Shift+pageup</b> Focus on previous team<br><b>Shift+pagedown</b> Focus on next team<br><br><b>Ctrl+Shift+f</b> Filter results |

## Test hub, Test Plans, Parameters, and Runs pages

You can use the following keyboard shortcuts when working in the **Test** hub.

**NOTE**

**Feature availability:** The following shortcuts are available from the web portal for VSTS and TFS 2015.2 or later versions.

|  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
|--|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|  | <p><b>Test</b></p> <ul style="list-style-type: none"> <li><b>n</b> Open test plans</li> <li><b>m</b> Open shared parameters</li> <li><b>r</b> Open runs</li> <br/> <li><b>h</b> Open machines</li> </ul>                                                                                                                                                                                                                                                                 |
|  | <p><b>Test plan</b></p> <ul style="list-style-type: none"> <li><b>1</b> Open tests</li> <li><b>2</b> Open charts</li> <br/> <li><b>e</b> Execute tests</li> <br/> <li><b>t,b</b> Mark selected tests as blocked</li> <li><b>t,f</b> Fail selected tests</li> <li><b>t,n</b> Mark selected tests as NA</li> <li><b>t,p</b> Pass selected tests</li> <li><b>t,r</b> Reset tests to active</li> </ul> <p><b>Ctrl+Shift+f</b> Filter results</p> <p><b>v,g</b> View grid</p> |
|  | <p><b>Parameters</b></p> <ul style="list-style-type: none"> <li><b>1</b> View parameter set grid</li> <li><b>2</b> Open properties</li> <br/> <li><b>c,s</b> Add parameter set</li> <li><b>c,t</b> Add test case</li> <li><b>v,t</b> Toggle test cases pane</li> </ul>                                                                                                                                                                                                   |
|  | <p><b>Test runs</b></p> <ul style="list-style-type: none"> <li><b>1</b> Test runs</li> <li><b>2</b> Filter</li> </ul>                                                                                                                                                                                                                                                                                                                                                    |

## Wiki hub

### NOTE

Keyboard shortcuts to manage Wiki pages are supported on TFS 2018.2 or later versions. To download TFS 2018.2, see [Team Foundation Server 2018 Update 2 Release Notes](#).

You can use the following keyboard shortcuts when [managing or editing Wiki pages](#). To view the valid shortcuts, enter **Shift+?** from the **Wiki** hub or when editing a wiki page.

### NOTE

**Feature availability:** The following shortcuts are available from the web portal for VSTS and TFS 2018.2 and later versions.

|  |                                           |
|--|-------------------------------------------|
|  | <b>Wiki (manage)</b>                      |
|  | <b>n</b> Add new page                     |
|  | <b>e</b> Edit page                        |
|  | <b>c</b> Add new sub-page                 |
|  | <b>Ctrl+</b> [ ] Move page up the order   |
|  | <b>Ctrl+</b> [ ] Move page down the order |
|  | <b>Ctrl+Shift+f</b> Filter page           |
|  | <b>Wiki edit</b>                          |
|  | <b>Ctrl+b</b> Bold text                   |
|  | <b>Ctrl+i</b> Italicize text              |
|  | <b>Ctrl+k</b> Insert hyperlink            |
|  | <b>Ctrl+c</b> Copy text                   |
|  | <b>Ctrl+v</b> Paste copied text           |
|  | <b>Ctrl+s</b> Save changes                |
|  | <b>Ctrl+Enter</b> Save and Close          |
|  | <b>Esc</b> Close                          |

## Team Explorer navigational shortcuts

Use these shortcuts when working in Team Explorer.

|                                                          |                                            |
|----------------------------------------------------------|--------------------------------------------|
| <b>Navigate</b>                                          | <b>Context menu</b>                        |
| <b>Ctrl+0,a</b> Open web portal                          | [ ] Open a context menu                    |
| <b>Ctrl+0,b</b> Open Build                               | <b>Esc</b> Dismiss a context menu          |
| <b>Ctrl+0,c</b> Open Connect                             | [ ← → ] Move focus left/right              |
| <b>Ctrl+0,d</b> Open Documents                           | [ ↑ ↓ ] Move focus up/down                 |
| <b>Ctrl+0,e</b> Open Branches (Git)                      | <b>Enter</b> Choose Context menu           |
| <b>Ctrl+0,g</b> Open Changes (Git)                       |                                            |
| <b>Ctrl+0,h</b> Open Home                                |                                            |
| <b>Ctrl+0,m</b> Open My Work (TFVC)                      |                                            |
| <b>Ctrl+0,p</b> Open Pending changes (TFVC)              | <b>Alt+m,g</b> Open work item              |
| <b>Ctrl+0,r</b> Open Reports                             | <b>Alt+m,i</b> Add a work item             |
| <b>Ctrl+0,s</b> Open Settings                            | <b>Alt+m,q</b> Add a query                 |
| <b>Ctrl+0,w</b> Open Work items                          | <b>Shift+Alt,c</b> Copy selected work item |
| <b>Ctrl+0,y</b> Open Synchronization (Git)               | <b>Shift+Alt,l</b> Link to new work item   |
| <b>Ctrl+'</b> Move focus to search box                   | <b>Enter</b> Open selected work item       |
| <b>Alt+0</b> Move focus to top of page                   |                                            |
| <b>Alt+1..9</b> Move focus to visible section [1 thru 9] |                                            |
| <b>Alt+ ↑ ↓</b> Move focus to next/previous section      |                                            |

You can use query results shortcuts whenever you have a list of work items, such as the query results view or a list of linked work items within a work item form.

| QUERY EDITOR      | ACTION                        | QUERY RESULTS     | ACTION                     |
|-------------------|-------------------------------|-------------------|----------------------------|
| [ ]               | Move focus left/right         | [ ]               | Scroll left/right          |
| [ ]               | Move focus up/down            | <b>PgUp/PgDn</b>  | Scroll up/down             |
| <b>Shift+ [ ]</b> | Highlight consecutive clauses | <b>Shift+ [ ]</b> | Highlight consecutive rows |

| QUERY EDITOR                        | ACTION                                     | QUERY RESULTS      | ACTION                       |
|-------------------------------------|--------------------------------------------|--------------------|------------------------------|
| <b>Shift+ </b> <input type="text"/> | Move focus left one field at a time        | <b>Shift+Alt,n</b> | Move focus to next item      |
| <b>Shift+ </b> <input type="text"/> | Move focus right one field at a time       | <b>Shift+Alt,p</b> | Move focus to previous item  |
| <b>End</b>                          | Move focus to end of current clause        | <b>End</b>         | Move focus to bottom of list |
| <b>Enter</b>                        | Move focus down                            | <b>Enter</b>       | Open selected work item      |
| <b>Tab</b>                          | Move focus right, one field at a time      | <b>Home</b>        | Move focus to top of list    |
| <b>Ctrl+c</b>                       | Copy selected clause                       | <b>+/-</b>         | Expand/collapse current row  |
| <b>Ctrl+s</b>                       | Save changes (editor)                      | <b>Ctrl+s</b>      | Save changes (results)       |
| <b>Ctrl+v</b>                       | Paste copied clause                        | <b>F5</b>          | Refresh                      |
| <b>Del</b>                          | Delete contents of current field or clause |                    |                              |

## Related articles

- [Keyboard shortcuts for Microsoft Test Manager](#)
- [Customize Visual Studio keyboard shortcuts](#)
- [Default keyboard shortcuts for Visual Studio](#)
- [Accessibility Features of Visual Studio](#)
- [Work in the web portal](#)

### Install Team Explorer

Team Explorer is a plug-in to Visual Studio. By installing the free [Visual Studio Community](#), other Visual Studio version, or Visual Studio Team Explorer 2017 you gain access to Team Explorer.

Learn more about [working in Team Explorer](#).

# Syntax guidance for Markdown files, widgets, wikis, and pull request comments

6/1/2018 • 13 min to read • [Edit Online](#)

[VSTS](#) | [TFS 2018](#) | [TFS 2017](#) | [TFS 2015](#)

Having the right guidance at the right time is critical to success. To support your team or contributors to your project, use [markdown](#) to add rich formatting, tables, and images to your project pages, readme files, dashboards, and pull request comments.

You can provide guidance to your team in these places using markdown:

- [Team project wiki \(provisioned wiki\)](#)
- [Publish code as wiki](#)
- [Add Markdown to a dashboard](#)
- [Project vision page or Welcome pages](#)
- [Repository Readme files](#)
- [Pull request comments](#)
- [Add and edit wiki pages](#)
- [Add Markdown to a dashboard](#)
- [Project vision page or Welcome pages](#)
- [Repository Readme files](#)
- [Pull request comments](#)
- [Add Markdown to a dashboard](#)
- [Project vision page or Welcome pages](#)
- [Repository Readme files](#)
- [Pull request comments \(Supported in TFS 2017 and later versions\)](#)

In this topic you'll find some basic Markdown syntax guidance. You can use both common [Markdown conventions](#) and [GitHub-flavored extensions](#).

## Headers

Structure your comments using headers. Headers segment longer comments, making them easier to read.

Start a line with a hash character `#` to set a heading. Organize your remarks with subheadings by starting a line with additional hash characters, for example `####`. Up to six levels of headings are supported.

### Example:

```
This is a H1 header
This is a H2 header
This is a H3 header
This is a H4 header
This is a H5 header
```

### Result:

This is an H1 header

This is an H2 header

This is an H3 header

This is an H4 header

This is an H5 header

## Paragraphs and line breaks

Make your text easier to read by breaking it up with paragraphs or line breaks.

In pull request comments, press Enter to insert a line break and begin text on a new line.

While in a Markdown file, wiki, or widget, enter two spaces prior to the line break to begin a new paragraph, or enter two line breaks consecutively to begin a new paragraph.

In pull request comments and the wiki, press Enter to insert a line break and begin text on a new line.

In a Markdown file or widget, enter two spaces prior to the line break to begin a new paragraph, or enter two line breaks consecutively to begin a new paragraph.

In pull request comments, press Enter to insert a line break and begin text on a new line.

In a Markdown file or widget, enter two spaces prior to the line break to begin a new paragraph, or enter two line breaks consecutively to begin a new paragraph.

### **Example - pull request comment:**

Add lines between your text with the Enter key.  
This spaces your text better and makes it easier to read.

### **Result:**

Add lines between your text with the Enter key.

This spaces your text better and makes it easier to read.

### **Example - markdown file or widget:**

Add two spaces prior to the end of the line.(space, space)  
This adds space in between paragraphs.

### **Result:**

Add two spaces prior to the end of the line.

This adds space in between paragraphs.

## Quotes

Quote previous comments or text to set context for your comment or text.

Quote single lines of text by putting a > before the text. Use multiple > characters to nest quoted text. Quote blocks of lines of text by using the same level of > across multiple lines.

### **Example:**

```
> Single line quote
>> Nested
>> multiple line
>> quote
```

**Result:**

```
Single line quote
| Nested quote
| multiple line
| quote
```

## Horizontal rules

Add a horizontal rule by adding a new line that's just a series of dashes `---`. There must be a blank line above the line containing the `---`.

**Example:**

```
above

below
```

**Result:**

```
above

below
```

## Lists

Organize related items with lists. You can add ordered lists with numbers, or unordered lists with just bullets.

Ordered lists start with a number followed by a period for each list item. Unordered lists start with a `-`. Begin each list item on a new line. In a Markdown file or widget, enter two spaces prior to the line break to begin a new paragraph, or enter two line breaks consecutively to begin a new paragraph.

**Ordered or numbered lists**

**Example:**

```
0. First item.
0. Second item.
0. Third item.
```

**Result:**

1. First item.
2. Second item.
3. Third item.

**Bullet lists**

**Example:**

- Item 1
- Item 2
- Item 3

### Result:

- Item 1
- Item 2
- Item 3

### Nested lists

#### Example:

- ```
1. First item.  
  - Item 1  
  - Item 2  
  - Item 3  
1. Second item.  
  - Nested item 1  
  - Nested item 2  
  - Nested item 3
```

Result:

1. First item.
 - Item 1
 - Item 2
 - Item 3
2. Second item.
 - Nested item 1
 - Nested item 2
 - Nested item 3

Links

In pull request comments and wikis, HTTP and HTTPS URLs are automatically formatted as links. Also, within pull requests, you can link to work items by typing the # key and a work item ID, and then choosing the work item from the list.

You can escape auto suggestion of work items by prefixing # with a backslash (\). E.g. This can be useful if you want to use # for color hex codes.

In markdown files and widgets, you can set text hyperlinks for your URL using the standard markdown link syntax:

```
[Link Text](Link URL)
```

When linking to another Markdown page in the same Git or TFVC repository, the link target can be a relative path or an absolute path in the repository.

Supported links for Welcome pages:

- Relative path: [text to display](./target.md)
- Absolute path in Git: [text to display](/folder/target.md)
- Absolute path in TFVC: [text to display](\$/project/folder/target.md)

- URL: [text to display](<http://address.com>)

Supported links for Markdown widget:

- URL: [text to display](<http://address.com>)

Supported links for Wiki:

- Absolute path of Wiki pages: [text to display](/parent-page/child-page)
- URL: [text to display](<http://address.com>)

NOTE

Links to documents on file shares using `file://` are not supported on VSTS or TFS 2017.1 and later versions. This restriction has been implemented for security purposes.

For information on how to specify relative links from a Welcome page or Markdown widget, see [Source control relative links](#).

Example:

[C# language reference](<https://msdn.microsoft.com/en-us/library/618ayhy6.aspx>)

Result:

[C# language reference](#)

Link to work items from a Wiki page

Simply enter the pound sign (`#`) and enter a work item ID.

NOTE

This feature is available with TFS 2018.2 and later versions.

Source control relative links

Links to source control files are interpreted differently depending on whether you specify them in a Welcome page or a Markdown widget. The system interprets relative links as follows:

- **Welcome page:** relative to the root of the source control repository in which the welcome page exists
- **Markdown widget:** relative to the team project collection URL base.

For example:

WELCOME PAGE	MARKDOWN WIDGET EQUIVALENT
/BuildTemplates/AzureContinuousDeploy.11.xaml	/DefaultCollection/Fabrikam Fiber/_versionControl#path=\$/Tfvc Welcome/BuildTemplates/AzureContinuousDeploy.11.xaml
./page-2.md	/DefaultCollection/Fabrikam Fiber/_versionControl#path=\$/Tfvc Welcome/page-2.md

Anchor links

Within Markdown files, anchor IDs are assigned to all headings when rendered as HTML. The ID is the heading text, with the spaces replaced by dashes (-) and all lower case. In general, the following conventions:

- Punctuation marks and leading white spaces within a file name are ignored

- Upper case letters are converted to lower
- Spaces between letters are converted to dashes (-).

Example:

```
###Link to a heading in the page
```

Result:

The syntax for an anchor link to a section...

```
[Link to a heading in the page](#link-to-a-heading-in-the-page)
```

The ID is all lower case, and the link is case sensitive, so be sure to use lower case, even though the heading itself uses upper case.

You can also reference headings within another Markdown file:

```
[text to display](./target.md#heading-id)
```

In wiki, you can also reference heading in another page:

```
[text to display](/page-name#section-name)
```

Images

Add images and animated GIFs to your pull request comments, markdown files, or wiki pages to highlight issues or just to liven the discussion.

Use the following syntax to add an image:

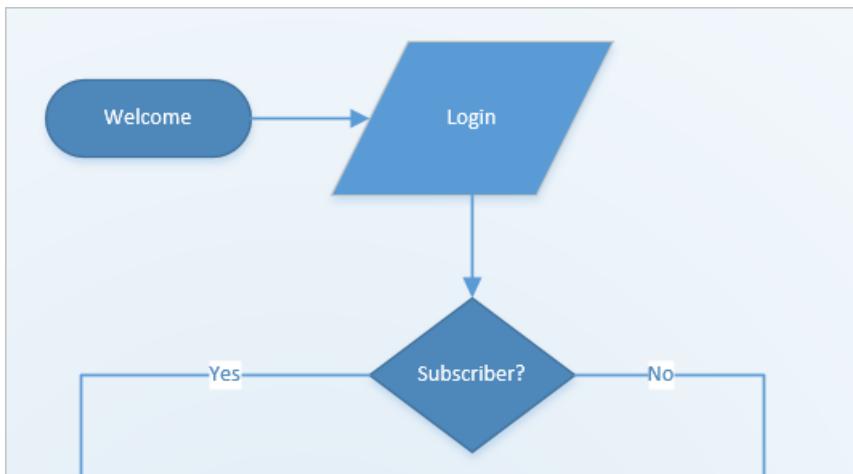
```
![Text](URL)
```

The text in the brackets describes the image being linked and the URL points to the image location.

Example:

```
![Let's use this flow for the login experience](http://dev.fabrikam.net/images/uxflow.png)
```

Result:



The path to the image file can be a relative path or the absolute path in Git or TFVC, just like the path to another Markdown file in a link.

- Relative path:

```
![Image alt text](./image.png)
```

- Absolute path in Git:

```
![Image alt text](/_img/markdown-guidance/image.png)
```

- Absolute path in TFVC:

```
![Image alt text]($/project/folder/_img/markdown-guidance/image.png)
```

- Resize image:

```
![Image alt text]($/project/folder/_img/markdown-guidance/image.png =WIDTHxHEIGHT)
```

NOTE

Feature availability: The syntax to support image resizing is only supported in pull requests and the Wiki.

Tables

Organize structured data with tables. Tables are especially useful for describing function parameters, object methods, and other data that has a clear name to description mapping.

- Place each table row on its own line
- Separate table cells using the pipe character |
- The first two lines of a table set the column headers and the alignment of elements in the table
- Use colons (:) when dividing the header and body of tables to specify column alignment (left, center, right)
- To start a new line, use the HTML break tag (
) (Works within a Wiki but not elsewhere)
- Make sure to end each row with a CR or LF.

Example:

Heading 1	Heading 2	Heading 3
Cell A1	Cell A2	Cell A3
Cell B1	Cell B2	Cell B3 second line of text

Result:

HEADING 1	HEADING 2	HEADING 3
Cell A1	Cell A2	Cell A3
Cell B1	Cell B2	Cell B3 second line of text

Checklist or task list in pull requests or markdown

Lightweight task lists are a great way to track progress on a list of todos as either a pull request creator or reviewer in the description or a single, consolidated comment. Click the Markdown toolbar to get started or apply the format to selected text.

You can use [] or [x] to support checklists. You need to precede the checklist with either -<space> or 1.<space> (any numeral).

Example - Apply the task list markdown to a highlighted list

The screenshot shows a rich text editor interface. At the top, there's a toolbar with various icons like bold, italic, and underline. Below the toolbar is a text area containing the following text:

```
**What testing scenarios are required?**
Create new account
Add new user
Assign licenses
```

Below the text area, there's a "Task List" button in the toolbar, which is highlighted with a red box. The text area also contains the placeholder text "Markdown supported. Drag & drop, paste files to insert." At the bottom right of the editor are "Save" and "Cancel" buttons.

Once you've added a task list, you can simply check the boxes to mark items as completed. These are expressed and stored within the comment as [] and [x] in Markdown.

The screenshot shows a rich text editor interface. At the top, there's a toolbar with various icons. Below the toolbar is a text area containing the following text:

What testing scenarios are required?

- Create new account
- Add new user
- Assign licenses

Example - Format a list as a task list

The screenshot shows a rich text editor interface. In the text area, there is a list of items formatted as a task list:

- [] A
- [] B
- [] C
- [x] A
- [x] B
- [x] C

Result:

- A
- B
- C
- A
- B
- C

NOTE

A checklist within a table cell isn't supported.

Emphasis (bold, italics, strikethrough)

You can emphasize text by applying bold, italics, or strikethrough to characters:

- To apply italics: surround the text with an asterisk `*` or underscore `_`
- To apply bold: surround the text with double asterisks `**`.
- To apply strikethrough: surround the text with double tilde characters `~~`.

Combine these elements to apply multiple emphasis to text.

NOTE

There is no markdown syntax that supports underlining text. Within a wiki page, you can use the HTML `<u>` tag to generate underlined text. For example, `<u>underlined text</u>` will yield underlined text.

Example:

```
Use _emphasis_ in comments to express **strong** opinions and point out ~~corrections~~  
**_Bold, italicized text_**  
**~~Bold, strike-through text~~**
```

Result:

Use *emphasis* in comments to express **strong** opinions and point out ~~corrections~~

Bold, italicized text

~~Bold, strike-through text~~

Code highlighting

Highlight suggested code segments using code highlight blocks. To indicate a span of code, wrap it with three backtick quotes (`````) on a new line at both the start and end of the block. To indicate code inline, wrap it with one backtick quote (`'``).

Example:

```
```  
$ sudo npm install vsoagent-installer -g
```
```

Result:

```
$ sudo npm install vsoagent-installer -g
```

Example:

To install the Microsoft VSTS Cross Platform Build & Release Agent, run the following: ``$ sudo npm install vsoagent-installer -g``.

Result: To install the Microsoft VSTS Cross Platform Build & Release Agent run the following:

```
$ sudo npm install vsoagent-installer .
```

Within a markdown file, text with four spaces at the beginning of the line automatically converts to a code block.

Set a language identifier for the code block to enable syntax highlighting for any of the [supported languages](#).

```
``` language
code
```

```

Additional examples:

```
``` js
const count = records.length;
```

```

```
const count = records.length;
```

```
``` csharp
Console.WriteLine("Hello, World!");
```

```

```
Console.WriteLine("Hello, World!");
```

Emoji

In pull request comments and wiki pages, you can use emojis to add character and react to comments in the request. Type in what you're feeling surrounded by `:` characters to get a matching emoji in your text. The [full set of emojis](#) are supported.

Example:

```
:smile:
:angry:
```

Result:



To escape emojis, enclose them using the ` character.

Example:

```
`:smile:` `:)` `:angry:`
```

Result:

```
:smile: :) :angry:
```

Ignore or escape markdown syntax to enter specific or literal characters

| SYNTAX | EXAMPLE/NOTES |
|--|--|
| To insert one of the following characters, prefix with a backslash:

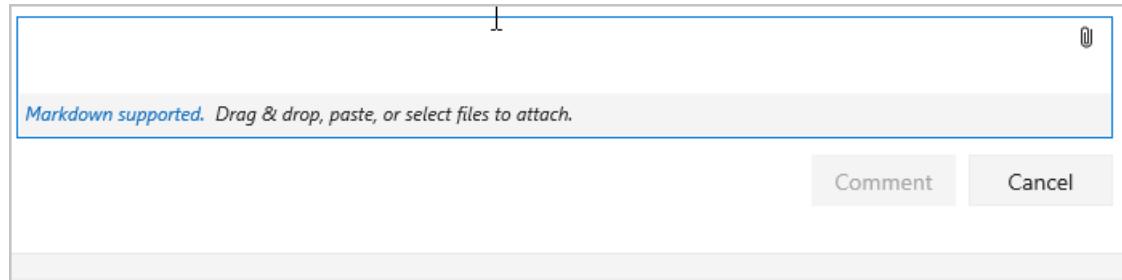
\\ backslash
` backtick
_ underscore
{ } curly braces
[] square brackets
() parentheses
hash mark
+ plus sign
- minus sign (hyphen)
. dot
! exclamation mark | Some examples on inserting special characters
Enter \\ to get \
Enter _ to get _
Enter \# to get #
Enter \() to get (
Enter \. to get .
Enter \! to get ! |

Attachments

In pull request comments and wiki pages, you can attach files to illustrate your point or to give more detailed reasoning behind your suggestions. To attach a file, drag and drop it into the comment field or wiki page edit experience. You can also select the paper-clip icon in the upper-right of the comment box or the format pane in wiki page.

NOTE

Attachments in pull requests is available with TFS 2017.1 and later versions.



If you have an image in your clipboard, you can paste it from the clipboard into the comment box or wiki page and it will render directly into your comment or wiki page.

Attachments support the following file formats:

| TYPE | FILE FORMATS |
|------------------|--|
| Code | CS (.cs), Extensible Markup Language (.xml), JavaScript Object Notation (.json), Layer (.lyr), Windows PowerShell script (.ps1), Roshal Archive (.rar), Remote Desktop Connection (.rdp), Structured Query Language (.sql) |
| Compressed files | ZIP (.zip) and GZIP (.gz) |
| Documents | Markdown (.md), Microsoft Office Message (.msg), Microsoft Project (.mpp), Word (.doc and .docx), Excel (.xls, .xlsx and .csv), and Powerpoint (.ppt and .pptx), text files (.txt), and PDFs (.pdf) |
| Images | PNG (.png), GIF (.gif), JPEG (both .jpeg and .jpg) |
| Visio | VSD (.vsd and .vsdx) |
| Video | MOV (.mov), MP4 (.mp4) |

Attaching non-image files creates a link to the file in your comment. Update the description text between the brackets to change the text displayed in the link. Attached image files render directly into your comment or wiki pages.

Once you save or update a comment or wiki page with an attachment, you can see the attached image(s) and can select links to download attached files.

HTML Tags

In wiki pages, you can also create rich content using HTML tags.

NOTE

Pasting rich content as HTML is supported in TFS 2018.2 and later versions.

Example - Embedded video

```
<video src="path of the video file" width=400 controls>
</video>
```

**For example: **

```
<video src="https://sec.ch9.ms/ch9/7247/7c8ddc1a-348b-4ba9-ab61-51fded6e7247/vstswiki_high.mp4" width=400
controls>
</video>
```

Or,

```
<video src="_media/vstswiki_mid.mp4" width=400 controls>
</video>
```

Result:

Example - Rich text format

```
<p>This text needs to <del>strikethrough</del> <ins>since it is redundant</ins>!</p>
<p><tt>This text is teletype text.</tt></p>
<font color="blue">Colored text</font>
<center>This text will be center-aligned.</center>
<p>This text contains <sup>superscript</sup> text.</p>
<p>This text contains <sub>subscript</sub> text.</p>
<p>The project status is <span style="color:green;font-weight:bold">GREEN</span> even though the bug count / developer may be in <span style="color:red;font-weight:bold">red.</span> - Capability of span
<p><small>Disclaimer: Wiki also supports showing small text</small></p>
<p><big>Bigger text</big></p>
```

Result:

This text needs to ~~strikethrough~~ since it is redundant!

This text is teletype text.

Colored text

This text will be center-aligned.

This text contains ^{superscript} text.

This text contains _{subscript} text.

The project status is **GREEN** even though the bug count / developer may be in **red**. - Capability of span

Disclaimer: Wiki also supports showing small text

Bigger text

Mathematical notation and characters

Both inline and block **KaTeX** notation is supported in wiki pages and pull requests. This includes inserting symbols, Greek letters, mathematical operators, powers and indices, fractions and binomials, and other KaTeX supported elements.

To include mathematical notation, surround the mathematical notation with a `$` sign, for inline, and `$$` for block, as shown in the following examples:

NOTE

This feature is supported within Wiki pages and pull requests for TFS 2018.2 or later versions.

Example: Greek characters

```
$\alpha, \beta, \gamma, \delta, \epsilon, \zeta, \eta, \theta, \kappa, \lambda, \mu, \nu, \omicron, \pi, \rho, \sigma, \tau, \upsilon, \phi, ...
$\Gamma, \Delta, \Theta, \Lambda, \Xi, \Pi, \Sigma, \Upsilon, \Phi, \Psi, \Omega$
```

Result:

$\alpha, \beta, \gamma, \delta, \epsilon, \zeta, \eta, \theta, \kappa, \lambda, \mu, \nu, \sigma, \pi, \rho, \sigma, \tau, v, \phi, \dots$

$\Gamma, \Delta, \Theta, \Lambda, \Xi, \Pi, \Sigma, \Upsilon, \Phi, \Psi, \Omega$

Example: Algebraic notation

```
Area of a circle is $\pi r^2$
```

And, the area of a triangle is:

```
$$
A_{triangle}=\frac{1}{2}(b\cdot h)
$$
```

Result:

Area of a circle is πr^2

And, the area of a triangle is:

$$A_{triangle} = \frac{1}{2}(b \cdot h)$$

Example: Sums and Integrals

```
$$
\sum_{i=1}^{10} t_i
$$
```

```
$$
\int_0^\infty e^{-x} dx
$$
```

Result:

$$\sum_{i=1}^{10} t_i$$

$$\int_0^\infty e^{-x} dx$$

Related articles

- [Project vision page or Welcome pages](#)
- [Readme files](#)
- [Pull requests](#)
- [Markdown widget](#)
- [Dashboards](#)
- [Widget catalog](#)
- [Wiki](#)

Navigating in the web portal

6/1/2018 • 15 min to read • [Edit Online](#)

VSTS | TFS 2018 | TFS 2017 | TFS 2015 | TFS 2013

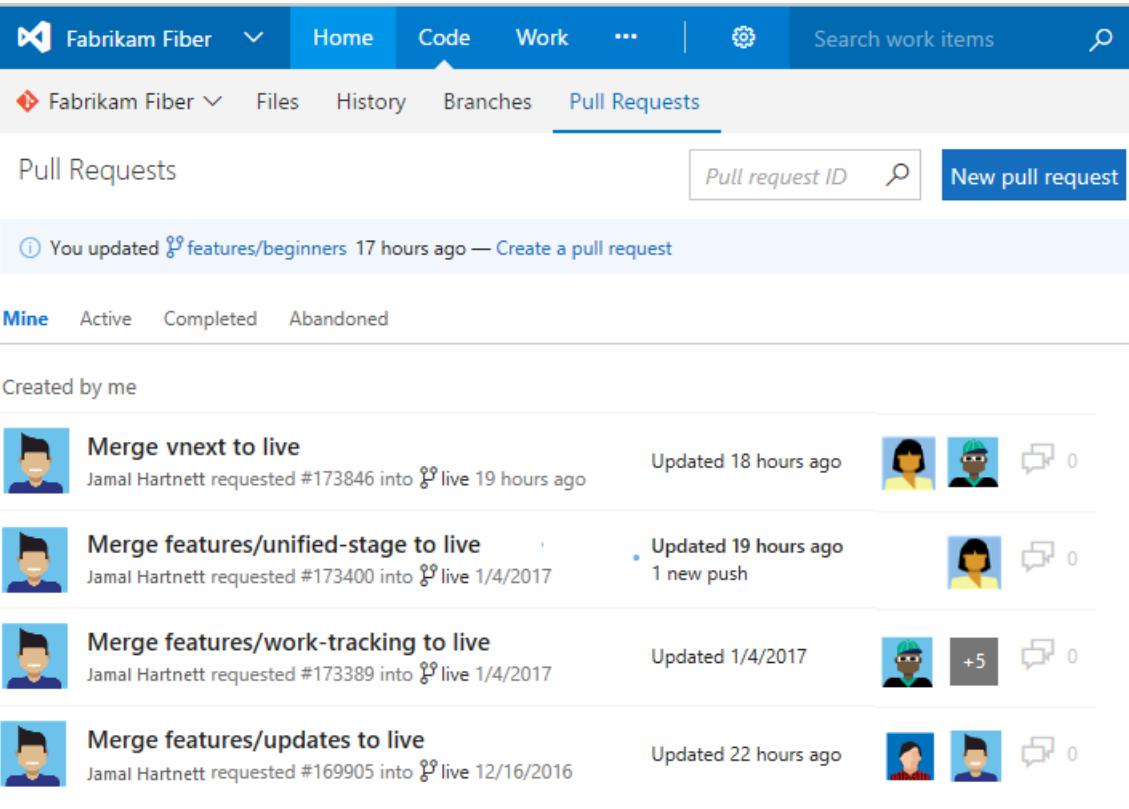
The web portal provides support for teams to collaborate through the planning, development, and release cycles. You use the web portal to perform both software development and administrative tasks.

You can manage source code, plan and track work, define builds, run tests, and manage releases. The web portal connects you to the team project defined for an account in Visual Studio Team Services (VSTS) or within an on-premises Team Foundation Server (TFS).

If you don't have a team project yet, create one in [VSTS](#) or set one up in an [on-premises TFS](#). If you don't have access to the team project, [get invited to the team](#).

NOTE

The images you see from your web portal may differ from the images you see in this topic. These differences result from updates made to VSTS or your on-premises TFS and [options that you or your admin have enabled](#). However, the basic functionality available to you remains the same unless explicitly mentioned.



The screenshot shows the VSTS web portal interface. At the top, there's a navigation bar with the project name "Fabrikam Fiber", a dropdown menu, and links for "Home", "Code", "Work", "...", and a gear icon. To the right is a search bar labeled "Search work items" with a magnifying glass icon. Below the navigation bar, there's a secondary navigation bar with links for "Fabrikam Fiber", "Files", "History", "Branches", and "Pull Requests", where "Pull Requests" is underlined. On the left, a sidebar shows "Pull Requests" and a message: "You updated 8 features/beginners 17 hours ago — [Create a pull request](#)". Below this, there are filters for "Mine", "Active", "Completed", and "Abandoned". The main area displays a list of pull requests created by the user, each with a small profile picture, the title, the requester, the target branch, the creation time, and a comment count. The pull requests listed are:

- Merge vnext to live (Jamal Hartnett requested #173846 into vnext live 19 hours ago)
- Merge features/unified-stage to live (Jamal Hartnett requested #173400 into unified-stage live 1/4/2017)
- Merge features/work-tracking to live (Jamal Hartnett requested #173389 into work-tracking live 1/4/2017)
- Merge features/updates to live (Jamal Hartnett requested #169905 into updates live 12/16/2016)

NOTE

Feature availability: The features available to you depend on the platform (VSTS or on-premises TFS), TFS version, features enabled for your team project or collection, and your access level. New features are deployed regularly to VSTS. Many of these features are then made available to [on-premises TFS through regular updates](#).

To get started, from a [supported web browser](#) enter the following URL:

<https://AccountName.visualstudio.com/DefaultCollection/ProjectName>

<http://ServerName:8080/tfs/DefaultCollection/ProjectName>

NOTE

Your TFS administrator can configure the following elements: protocol (*https* vs *http*), port (8080), virtual directory (*tfs*), and collection name (*DefaultCollection*) (See [Web site settings and security](#).) For example, a deployment configured on port 443 with no vdir, an FQDN, and a custom collection name might look like:

<https://tfs.contoso.com/CustomCollection/ProjectName>. If the above pattern doesn't work for you, check with your TFS administrator.

The web portal is one of several clients that can connect to a team project. Different clients support different features and functions. For a list of all clients that support connection to a team project, see [Tools and clients that connect to VSTS and TFS](#).

Navigational concepts

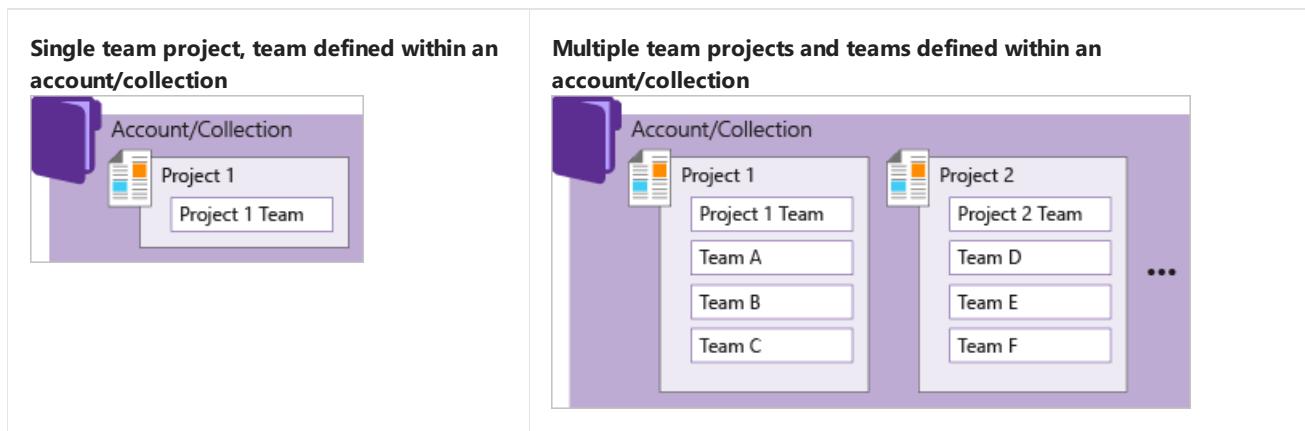
There are three main navigational concepts to understand. The first is the collection-project-team structure, the second is the user/administrative context, and the third corresponds to user-focused and team-scoped features that provide quick access to tasks targeted for the logged-in user or for the selected team.

Collection-project-team structure

When you connect to VSTS or an on-premises TFS, you connect to an account or team project collection. Within that collection, one or more team projects may be defined. At a minimum, at least one team project must be created in order to use the system.

When you create your team project, a team of the same name is automatically created. For small teams, this is sufficient.

However, for enterprise-level organizations, it may be necessary to scale up, to create additional teams and/or team projects. These can be created within the single account or collection.



The collection-project-team structure provides teams a high-level of autonomy to configure their tools in ways that work for them. It also supports administrative tasks to occur at the appropriate level.

To learn more about adding teams and the features that support team autonomy, see [Multiple teams](#) and [Manage team assets](#).

User/administrative context

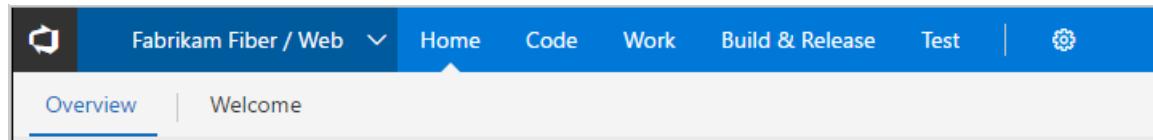
The user context is used to get work done—manage code, plan and track work, define and manage builds, create

and run tests, and so on. Administrators use the admin context to configure shared resources and permissions. Tasks performed in this context can impact the team project and team functions.

User context

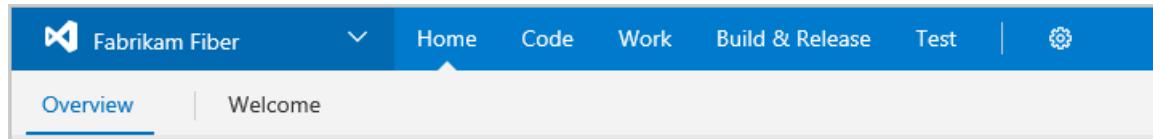
You and other team members use the user context to collaborate, plan, and build working software.

Click any hub to open that hub. Hover your mouse over a hub to access a drop-down menu of pages and other options for that hub. To access administrative options, click the gear Settings icon or choose the admin level you want from the drop-down menu.



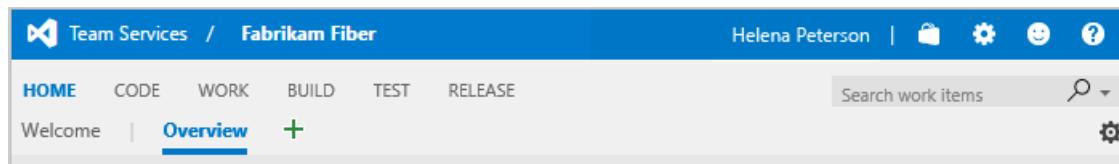
TFS 2017, TFS 2017.1

Click any hub to open that hub. Hover your mouse over a hub to access a drop-down menu of pages and other options for that hub. To access administrative options, click the gear Settings icon or choose the admin level you want from the drop-down menu.



TFS 2015, TFS 2013

Click any hub to open that hub. Then, click a page within the hub to open that page.



Administrative context

You use the administrative context to set team, team project, and account or collection settings. The hubs and pages available change based on what level of administrative context you're in.

To learn more about each administrative context level, see the [Administrative context and team, team project, and account/collection settings](#) later in this topic.

User-focused features

Several features display information based on the logged-in user account or the selected team context. First off, users can [set their preferences](#) through their profile or account menu:

The screenshot shows the Microsoft VSTS account hub. At the top, there's a navigation bar with 'Fabrikam Fiber' (dropdown), 'Dashboards', 'Code', '...', and a gear icon. To the right are search, notifications, and user profile icons. Below the navigation is a 'Overview' section. On the left, there's a 'Visual Studio' section with a purple 'Open in Visual Studio' button (labeled 'Requires Visual Studio 2013+') and a 'Get Visual Studio' button (labeled 'See Visual Studio downloads'). To the right is a 'New Work Item' section with a text input field ('Enter title') containing 'Bug'. On the far right, a vertical menu for the current user ('Raisa') includes 'My profile' (which is highlighted with an orange border), 'Notification settings', 'Security', 'Usage', 'Preview features', and 'Sign out'.

In addition, they have access to special queries—Assigned to me query, Followed work items, and more—dashboard widget such as the Assigned to me widget, and the ability to save favorites under a **My favorites** folder. Here's an example of the Assigned to me widget that you can add to a dashboard.

This screenshot shows a dashboard widget titled 'Work assigned to Jamal Hartnett (8)'. It displays a summary of work items: 4 Bugs, 2 Scenarios, and 2 Features. Below this, a table lists 8 specific work items with columns for ID, State, and Title:

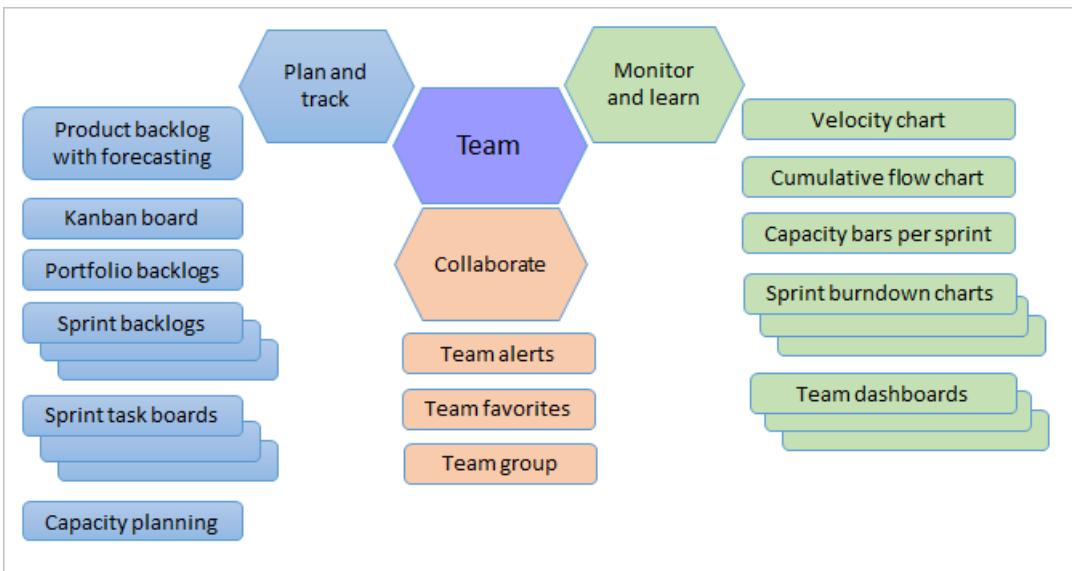
ID	State	Title
646172	Active	Typo on the description of new items
646173	Active	Shopping cart breaks when adding new items
646171	Resolved	API to add new items returning null result
646174	Resolved	Shopping cart animation feels slow

NOTE

If you work in VSTS, you can also use your account hub to view and quickly navigate to teams, team projects, branches, work items, pull requests and other objects that are relevant to you. For details, see [Work effectively from your account hub](#).

Team-scoped features

Teams access their set of team-scoped features by choosing their team context. Each team gets access to a suite of Agile tools and team assets. These tools provide teams the ability to work autonomously and collaborate with other teams across the enterprise.



Also, teams can set their query and build favorites within **Team favorites** folders. For more information, see [Manage team assets](#).

User context: hubs and tabs

You perform the bulk of your tasks by accessing a page within one of the these hubs—**Home**, **Code**, **Work**, **Build** and **Test**—and their corresponding tabs—such as **Overview**, **Backlogs**, **Queries**. For an overview of each hub, see [Essential services](#).

The next sections list what you can do, based on the hub and page you select.

Welcome page, dashboards, and plan and track work

The **Home** or **Dashboards** hub supports a configurable Welcome page and dashboards. From the **Work** hub, you gain access to a highly configurable suite of Agile tools to plan and track your work.

HOME OR DASHBOARDS	WORK
<ul style="list-style-type: none"> - Account hub - Project vision and status page - Project welcome page - Overview (view/edit default dashboard) - >Add/modify dashboards 	<ul style="list-style-type: none"> - Backlogs: Create your backlog Organize backlogs Plan sprints - Boards: Kanban board Features and epics Cumulative flow chart - Boards: Add task checklists Task board - Queries: Run/define queries Add work items Manage bugs

Source code control: Git and TFVC repositories

The **Code** hub supports management of your source control repositories. You can choose between two types of repos: Git (distributed) or Team Foundation version control (centralized). For a comparison of the two repos, see [Choosing the right version control for your project](#).

CODE: GIT	CODE: TFVC
<ul style="list-style-type: none"> - Add/manage repositories Rename a repo Delete a repo - Explorer - History: review - Branches: Manage branches - Pull Requests: View and create pull requests 	<ul style="list-style-type: none"> - Add/manage repositories Rename a repo Delete a repo - Explorer: View, download, and compare version-controlled files - Changesets: find/view - Shelvesets

Build, test, and release

The **Build & Release** hub supports defining and managing builds and releases to deploy your software to

different staging and production environments. From the **Test** hub, you can create test plans, test cases, and run tests.

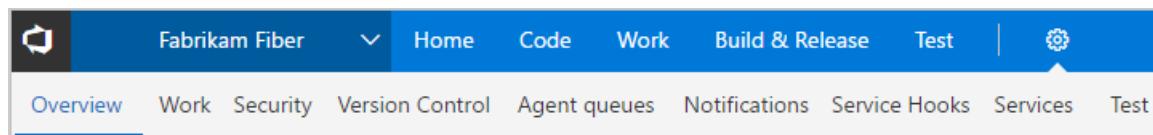
BUILD	RELEASE	TEST
<ul style="list-style-type: none">- Definitions: Define a build- Options: Define multiple configurations- Repository: Specify repository for build- Variables: Use build variables- Triggers: Set build triggers- Retention: Set retention policies- History: View change history	<ul style="list-style-type: none">- Release definition- Triggers: continuous integration- Approve a release- Tests: view test results- Logs: view release logs- Run unit tests with a build	<ul style="list-style-type: none">- Test plans- Parameters- Configurations- Runs- Machines- Load test

Administrative context and team, team project, and account/collection settings

From a user context, open the admin context by clicking the gear icon. The tabs and pages available differ depending on which admin context you access.

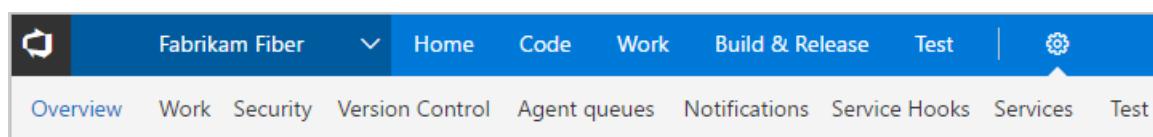
Below we show the admin context for the team project level.

Open any admin page by clicking its name. Click or hover over the gear icon to access other administrative options. Note that you can click any of the user-context hubs of **Home**, **Code**, **Work**, and so on to return to the user context.

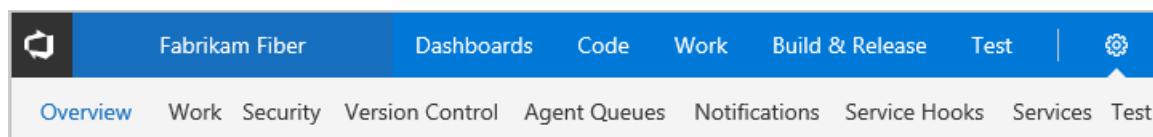


Open any admin page by clicking its name. Hover your mouse over a hub to access a drop-down menu of pages and other options for that hub. Click or hover over the gear icon to access other administrative options. Note that you can click any of the user-context hubs of **Home**, **Code**, **Work**, and so on to return to the user context.

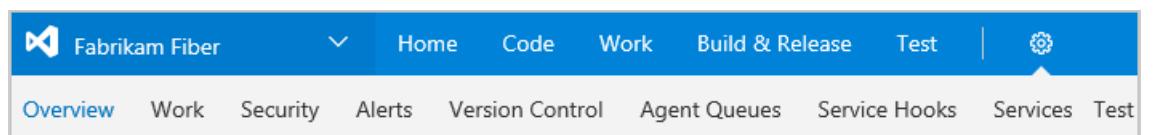
TFS 2017.2



TFS 2017.1



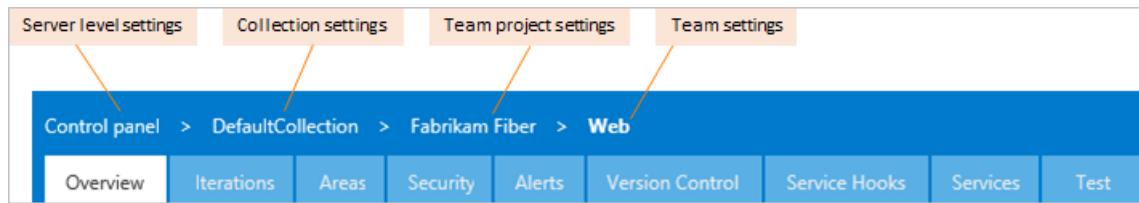
TFS 2017



Open any admin page by clicking its corresponding hub.



From within the admin context, click one of the breadcrumb links to access the settings available at the account/collection, team project, or team level.



You must be a member of the listed administrator group or role to perform the tasks listed.

TEAM SETTINGS	TEAM PROJECT SETTINGS
<p>Required membership: Team administrator role</p> <ul style="list-style-type: none"> - Overview: Add team members Add team admins - Select backlog levels Set working days Working with bugs - Work/Iterations & Areas (team defaults) - Work/Templates - Security (manage team-level permissions) - Notifications <p>For a complete overview of all team assets that you can configure, see Manage team assets</p>	<p>Required membership: Project Administrators</p> <ul style="list-style-type: none"> - Overview: Add teams - Work/Iterations & Areas (project-wide) - Security (manage project-level permissions) - Notifications - Version Control (manage repository permissions) - Agent queues - Service hooks - Services - Test (manage test retention policies)
ACCOUNT SETTINGS	
<p>Required membership: Project Collection Administrators</p> <ul style="list-style-type: none"> - Overview: Create team projects Rename team project - Delete team project Change process - Settings: Set account preferences Change application access policies - Change account owner Delete your account Recover your account - Security (manage collection-level permissions) - Process (customize work tracking) - Build (manage build policies) - Agent pools (manage build agents) - Extensions (install/manage extensions) 	
TEAM SETTINGS	TEAM PROJECT SETTINGS
<p>Required membership: Team administrator role</p> <ul style="list-style-type: none"> - Overview: Add team members Add team admins - Select backlog levels Set working days Working with bugs - Work/Iterations & Areas (team defaults) - Work/Templates - Security (manage team-level permissions) - Notifications <p>For a complete overview of all team assets that you can configure, see Manage team assets</p>	<p>Required membership: Project Administrators</p> <ul style="list-style-type: none"> - Overview: Add teams - Work/Iterations & Areas (project-wide) - Security (manage project-level permissions) - Notifications - Version Control (manage repository permissions) - Agent queues - Service hooks - Services - Test (manage test retention policies)

COLLECTION SETTINGS	SERVER-LEVEL SETTINGS
<p>Required membership: Project Collection Administrators</p> <ul style="list-style-type: none"> - Overview: Create team projects Rename team project Delete team project - Security (manage collection-level permissions) - Build (manage build policies) - >Agent queues - Extensions (install/manage extensions) 	<p>Required membership: Team Foundation Administrators</p> <ul style="list-style-type: none"> - Overview: Choose team project/team - Access levels (Stakeholder, Basic, Advanced) - Extensions (manage) - Agent pools (manage build agents)

Related notes

Now that you have an understanding of how the user interface is structured, it's time to get started using it. As you can see, there are a lot of features and functionality.

If all you need is a code repository and bug tracking solution, then start with the [Git get started guide](#) and [Manage bugs](#).

To start planning and tracking work, see [Get started with Agile tools to plan and track work](#).

Additional resources you may find of interest:

- [Work effectively from your account home page](#)
- [Connect to team projects](#)
- [Work in Team Explorer](#)
- [Troubleshoot connection](#)

User accounts and licensing

To connect to the web portal, you need your user account added to the team project. This is typically done by the [account owner](#).

Five account users are free as are Visual Studio subscribers and stakeholders. After that, you need to [pay for more users](#). Find out more about licensing from [VSTS pricing](#).

To connect to the web portal, you need your user account added to the team project. This is typically done by the [project administrator](#).

Limited access is available to an unlimited number of stakeholders for free. For details, see [Work as a Stakeholder](#). Most regular contributors must have a TFS client access license (CAL). All Visual Studio subscriptions include a TFS CAL. Find out more about licensing from [TFS pricing](#).

Refresh the web portal

If data doesn't appear as expected, the first thing to try is to refresh your web browser. Refreshing your client updates the local cache with changes that were made in another client or the server. To refresh the page or object you're currently viewing, refresh the page or choose the  **Refresh** icon if available.

To avoid potential errors, you should refresh your client application under the following circumstances:

- Process changes are made
- Work item type definitions are added, removed, renamed or updated
- Area or iteration paths are added, removed, renamed or updated
- Users are added to or removed from security groups or permissions are updated
- A team member adds a new shared query or changes the name of a shared query
- A build definition is added or deleted
- A team or team project is added or deleted.

Clients that support connection to a team project

In addition to connecting through a web browser, you can connect to a team project from these clients:

- [Visual Studio \(Professional, Enterprise, Test Professional\)](#)
- [Visual Studio Code](#)
- [Visual Studio Community](#)
- [Eclipse: Team Explorer Everywhere](#)
- [Office Excel](#)
- [Office Project](#)
- [PowerPoint Storyboarding](#)
- [Microsoft Test Manager](#)
- [Microsoft Feedback Client](#)

Differences between the web portal and Visual Studio

Although you can access source code, work items, and builds from both clients, some task-specific tools are only supported in the web browser or an IDE, but not in both.

WEB PORTAL	VISUAL STUDIO
<ul style="list-style-type: none">● Product backlog, Portfolio backlogs, Sprint backlogs, Task boards, Capacity planning● Kanban board● Dashboards, Widgets, and Charts● Team rooms● Request feedback● Web-based Test Management● Administration pages to administer accounts, team projects, and teams	<ul style="list-style-type: none">● Task specific interfaces that integrate with Git and TFVC, such as:<ul style="list-style-type: none">○ Git: Changes Branches Pull Requests Sync Work Items Builds○ TFVC: My Work Pending Changes Source Control Explorer Work Items Builds● Greater integration with work items and Office-integration clients. You can open a work item or query result in an office supported client.● Additional text formatting options for rich-text fields in work item forms.

Can I open a query in Excel or Project from the web portal?

To open Excel from the web portal, install the [VSTS Open in Excel](#) Marketplace extension. Otherwise, you can open [Excel](#) or [Project](#) and then open a query that you've created in the web portal.

Feedback and support

We welcome your feedback.

For product related inquiries, review our [User Voice page](#) or report a problem at [Developer Community](#). Also, you can get advice on [Stack Overflow](#), or get support via our [Support](#) page.

Follow us on [Twitter @vsts](#).

Navigate in Team Explorer

5/31/2018 • 7 min to read • [Edit Online](#)

VSTS | TFS 2018 | TFS 2017 | TFS 2015 | TFS 2013

You use Team Explorer to manage work that is assigned to you, your team, or your team projects, and to coordinate your efforts with other team members to develop a project. Team Explorer is a plug-in that installs with Visual Studio or Eclipse. Working from different platforms, developers and stakeholders can effectively collaborate using Team Explorer connected to team projects hosted on Visual Studio Online or on-premises Team Foundation Server (TFS).

TIP

You can access the latest version of Visual Studio clients from the [Visual Studio Downloads page](#). Additional options for connecting to VSTS or TFS include:

- [Team Explorer Everywhere](#)
- [VSTS Plugin for Android Studio](#)
- [VSTS Plugin for IntelliJ](#)
- [Visual Studio Code](#)

For information about compatibility among client and server versions, see [Requirements and compatibility](#).

The operations available to you depend on which source control option—Team Foundation version control (TFVC) or Git—was selected to manage source code when the team project was created.

Team Explorer plug-in for Visual Studio

Team Explorer connects Visual Studio to team projects. You can manage source code, work items, and builds. Or, create a team project.

TIP

If you open Visual Studio and the Team Explorer pane doesn't appear, click the **View/Team Explorer** menu option.

HOME PAGE WITH GIT

The screenshot shows the Team Explorer - Home interface for a Git repository named 'Fabrikam Fiber'. The top navigation bar includes links for Home, Search Work Items, and a dropdown menu. Below the navigation is a header for 'Fabrikam Fiber' with a 'Fabrikam Fiber/Fabrikam Git' link and its URL. A 'Project' section contains links for Web Portal, Task Board, and Team Room. A sidebar on the left lists various project management and development tasks: Changes, Branches, Pull Requests, Sync, Work Items, Builds, Team Members, and Settings. A 'Solutions' section at the bottom has 'New...' and 'Open...' buttons. A note states 'There were no solutions found.'

HOME PAGE WITH TFVC

The screenshot shows the Team Explorer - Home interface for a TFVC repository named 'Fabrikam Fiber'. The layout is similar to the Git version, with a top navigation bar, a header for 'Fabrikam Fiber', and a 'Project' section with links for Web Portal, Task Board, and Team Room. The sidebar on the left lists: My Work, Pending Changes, Source Control Explorer, Work Items, Builds, Team Members, and Settings. A 'Solutions' section at the bottom has 'New...' and 'Open...' buttons. A note states 'There were no solutions found.'

NOTE

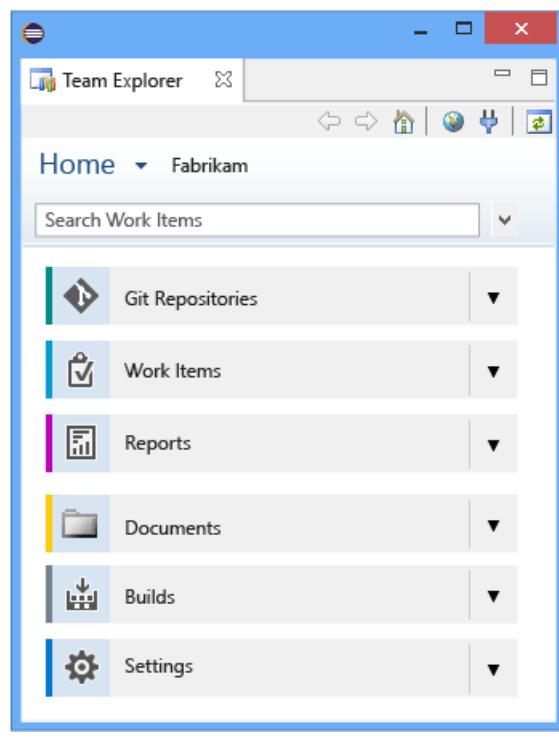
Some pages, such as **Reports** and **Documents**, only appear when an on-premises TFS is configured with the required resources, such as SQL Server Reporting Services and SharePoint.

If you don't need Visual Studio, but do want to connect to VSTS or TFS or get one or more Team Foundation add-ins, you can install the free [Visual Studio Community](#).

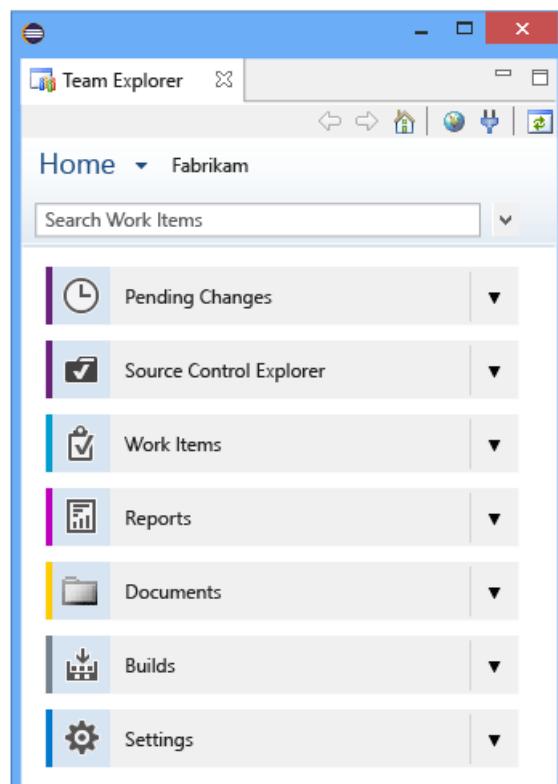
Team Explorer plug-in for Eclipse

If you work in Eclipse or on a non-Windows platform, you can [install the Team Explorer plug-in for Eclipse](#). Once installed, you can share your Eclipse projects by adding them to VSTS or TFS using [Git](#) or [TFVC](#).

HOME PAGE WITH GIT (ECLIPSE)



HOME PAGE WITH TFVC (ECLIPSE)



NOTE

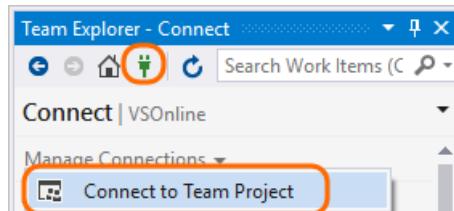
Some pages, such as **Reports** and **Documents**, only appear when TFS is configured with the required resources, such as SQL Server Reporting Services and SharePoint.

Choose the page to access the task you want

Based on the page you select and the options configured for your team project.

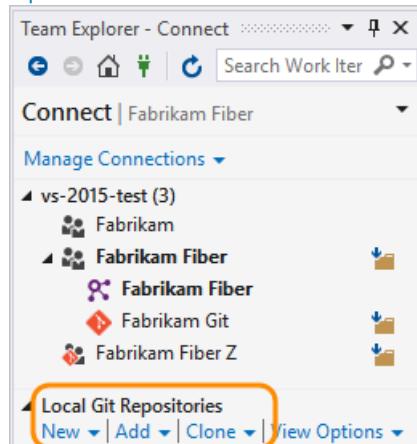
Connect page

From the **Connect** page, you can select the team projects you want to connect to and quickly switch context between team projects.



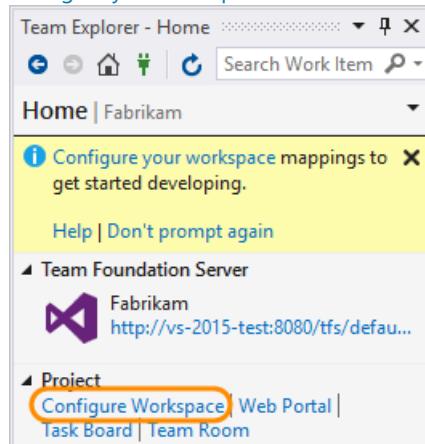
GIT: LOCAL GIT REPO

If you connect to a Git repo, you also can [create, add, or clone repositories](#).



TFVC: MAP WORKSPACE

If you connect to a TFVC repo, you'll be prompted to [Configure your workspace \(TFVC\)](#) on first connect.



IMPORTANT

From the Visual Studio plug-in, you can [Create a team project](#). The ability to create team projects is not supported from the Eclipse plug-in. You can, however, create team projects from the web portal account/collection administration context.

Home, Work, and Build pages

HOME	WORK ITEMS	BUILD
<ul style="list-style-type: none">- Configure workspace- Open Web portal- Open Task Board- Open Team Room	<ul style="list-style-type: none">- Add work items- Use the query editor to list and manage queries- Organize query folders and set query permissions- Open query in Excel- Open query in Project- Email query results list using Outlook- Create reports from query in Excel (TFS only)	<ul style="list-style-type: none">- Create build definitions- View and manage builds- Manage the build queue

NOTE

If inline images aren't displaying correctly, see [Resolve images that don't display in Team Explorer](#).

Git and TFVC pages

The Git and TFVC repos support different pages and functions. You'll see one or the other pages depending on the team project and repro you connect to. For a comparison of the two repos, see [Choosing the right version control for your project](#).

GIT	TFVC
<ul style="list-style-type: none">- Changes: Save work with commits- Branches: Create work in branches- Pull Requests: Review code with pull requests- Sync: Update code with fetch and pull	<ul style="list-style-type: none">- My Work: Suspend/resume work Code review- Pending Changes: Manage pending changes Find shelvesets Resolve conflicts- Source Control Explorer: Add/view files and folders

Report and Document pages (TFS only)

The **Report** page opens the [Reporting Services report site](#). This page appears only when your team project has been configured with SQL Server Analysis Services and Reporting Services. Also, the option to **Create Report in Microsoft Excel** appears only when reporting has been configured for the team project.

From the **Document** page, you can [open project portal](#) and [manage documents and document libraries](#). This page appears only if your team project has been configured with a SharePoint Products portal.

If your team project is missing one or more pages, you may be able to [add functionality to your on premises TFS deployment](#).

Settings page

From the **Settings** page, you can configure administrative features for either a team project or team project collection. Configuring features in these areas requires you to be a member of a VSTS or TFS administrator group.

Most of the links open to a web portal administration page. Not all settings are available from the Team Explorer plug-in for Eclipse.

TEAM PROJECT SETTINGS	COLLECTION SETTINGS (TFS)
<p>Required membership: Project Administrators</p> <ul style="list-style-type: none">- Security (manage project-level permissions)- Group membership: manage group permissions- Source Control: Configure the check-in and check-out policies (TFVC)- Work Item Areas (project-wide)- Work Item Areas (project-wide)- Portal Settings (Enable portal or process guidance)- Project Alerts	<p>Required membership: Project Collection Administrators</p> <ul style="list-style-type: none">- Security (manage project-level permissions)- Group membership: manage group permissions- Source Control: Configure the default workspace type for the collection (TFVC)- Process Template Manager: download or upload a process template

To learn more about administration features, see [Work in the web portal, administration context](#).

Related notes

You've now got a basic understanding of how to work in the Team Explorer add-in for Visual Studio and Eclipse.

- [Troubleshoot connection](#)

Clients that connect to VSTS or TFS

In addition to connecting through Team Explorer, you can connect to a team project from these clients:

- [Web portal](#)
- [Visual Studio Code](#)
- [Visual Studio Community](#)
- [Eclipse: Team Explorer Everywhere](#)
- [Office Excel](#)
- [Office Project](#)
- [PowerPoint Storyboarding](#)
- [Microsoft Test Manager](#)
- [Microsoft Feedback Client](#)

Refresh Team Explorer

If data doesn't appear as expected, the first thing to try is to refresh your client. Refreshing your client updates the local cache with changes that were made in another client or in TFS. To refresh Team Explorer, do one of the following actions:

- To refresh a page that you are currently viewing, choose  **Refresh** icon in the menu bar (or choose the F5

key).

- To refresh the team project you currently have selected, choose  **Home**, and then choose  **Refresh** icon (or choose the F5 key).
- To refresh the set of teams defined for the team project that you currently have selected, choose the Connect icon, and then choose  **Refresh** icon (or choose the F5 key).

To avoid potential errors, you should refresh your client application under the following circumstances:

- Process changes are made
- Work item type definitions are added, removed, renamed or updated
- Area or iteration paths are added, removed, renamed or updated
- Users are added to or removed from security groups or permissions are updated
- A team member adds a new shared query or changes the name of a shared query
- A build definition is added or deleted
- A team or team project is added or deleted.

Resolve images that don't display in Team Explorer

If an in-line image fails to display in a work item form you view from Visual Studio Team Explorer, but does display in the web portal, your credentials may have expired.

You can resolve it with the following steps.

1. In Visual Studio, click **View>Other Windows>Web Browser** (Or, use the shortcut **Ctrl+Alt+R**).
2. In the web browser, locate your account.
3. Login with your account.
4. Refresh your work item in Team Explorer.

Additional tools provided with TFS Power Tools (Visual Studio 2015 & TFS 2015)

By installing [TFS Power Tools](#), you gain access to these additional tools through the Team Explorer plug-in for Visual Studio:

- Process Template Editor
- Additional check-in policies for Team Foundation Version Control
- Team Explorer enhancements including Team Members
- Team Foundation Power Tool Command Line
- Test Attachment Cleaner
- Work Item Templates

Additional requirements may apply.

NOTE

For TFS 2017 and later versions, you can [install the TFS Process Template editor from the Visual Studio Marketplace](#). You can use this version of the Process Editor to modify the old-style work item forms. You can't use it to edit forms associated with the [new web forms](#).

FAQs

6/1/2018 • 2 min to read • [Edit Online](#)

[VSTS](#) | [TFS 2018](#) | [TFS 2017](#) | [TFS 2015](#) | [TFS 2013](#)

Q: How do I get started?

A: To get started in the cloud or on-premises:

- To get started with Visual Studio Team Services (VSTS) begin by [creating a user account](#). Step-by-step instructions are provided in [Sign up for VSTS](#).
- To get started with an on-premises TFS, download and install the [latest version of TFS](#). See [Install and configure TFS](#) for details.
- If you need to create a team project, create one in [VSTS](#) or set one up in an [on-premises TFS](#).
- If you don't have access to the team project, [get invited to the team](#).
- If it's your first time connecting to a team project, see [Connect to a team project](#).

A: To get started with a client tool: Go to one of these pages to download a version of Visual Studio or client tool plug-in that will support connecting to a team project:

- [Visual Studio](#)
- [Eclipse/Team Explorer Everywhere](#)
- [Android Studio with the VSTS Plugin for Android Studio](#)
- [IntelliJ with the VSTS Plugin for IntelliJ](#)
- [Visual Studio Code](#)

A: To get started with sharing code, work item tracking, builds, or other tasks: See [Software development roles](#).

Q: What compatibility issues exist between client and server versions?

A: See [Requirements and compatibility](#).

Q: Can stakeholders who don't use Visual Studio participate on our team?

A: Yes. You can provide access to stakeholders who have no CAL for the following activities:

- **Stakeholder access:** This view allows anyone on your team to check project status and provide feedback. Stakeholders can [track project priorities and provide direction, feature ideas, and business alignment to a team](#).

To grant stakeholders access, add them to the [Stakeholder access group](#).

- **Provide feedback:** To allow your stakeholders to provide feedback, you must [grant them specific permissions](#).

Q: Are there other clients that connect to VSTS or TFS? Are there other tools I can use?

A: Yes. You can connect to a team project from one of these clients:

- [Excel](#) (Requires the Team Foundation add-in is installed)
- [Project](#) (Requires the Team Foundation add-in is installed)
- [Project Professional](#)
- [PowerPoint Storyboarding](#) (Requires the Team Foundation add-in is installed)
- [Microsoft Test Manager](#)

- [Test & Feedback extension \(previously called the Exploratory Testing extension\)](#)
- [Microsoft Feedback Client](#)

NOTE

Native support for integrating TFS with Project Server is deprecated for TFS 2017. However, synchronization support is provided by a third party. See [Synchronize TFS with Project Server](#) for details.

Test Manager is deprecated for TFS 2017.

Also, you can find several open-source clients that have been added to [Marketplace extensions](#). For example, you can install extensions to Visual Studio that support additional features:

- For TFS 2017 and later versions, you can [install the TFS Process Template editor from the Visual Studio Marketplace](#). You can use this version of the Process Editor to modify the old-style work item forms. You can't use it to edit forms associated with the [new web forms](#).
- For TFS 2015 and earlier versions, you can install [TFS Power Tools](#) which provides enhancements, tools, and command-line utilities that support increased productivity.

NOTE

Team Foundation Server Power Tools is deprecated for TFS 2017 and later versions.

Related notes

- [Key concepts](#)
- [Essential services](#)
- [Client-server tools](#)
- [Software development roles](#)

Have more questions? Search for an answer or pose a question in one of the community forums listed in [Provide product and content feedback](#), [Platforms and version support](#).

Account Management

4/25/2018 • 1 min to read • [Edit Online](#)

VSTS | TFS 2018 | TFS 2017 | TFS 2015 | TFS 2013

Sign up for a VSTS account, add users, and manage permissions and access.

5-Minute Quickstarts

- [Create your VSTS account](#)
- [Try extensions for free](#)

Step-by-Step Tutorials

- [Connect VSTS to AAD](#)

Reference

- [Default permissions and access](#)
- [Access with Azure AD](#)

Resources

- [New User Guide](#)
- [Billing](#)
- [Security & Identity](#)
- [Manage Extensions](#)
- [Service Hooks](#)

Security & Identity

5/31/2018 • 1 min to read • [Edit Online](#)

VSTS | TFS 2018 | TFS 2017 | TFS 2015 | TFS 2013

For anyone to access a team project, you must add them to a security group. For a quick look at what permissions are assigned to the default security groups, see [Default permissions and access assignments](#).

5-Minute Quickstarts

- [View permissions](#)
- [Look up the account owner or a project administrator](#)
- [Add users to a team project or team](#)
- [Set Git or TFVC repository permissions](#)
- [Add administrators or set permissions at the project or collection level](#)

Tutorials

- [Set up Active Directory or Azure Active Directory](#)
- [Add AD/AAD security groups to built-in security groups](#)
- [Change individual permissions, grant select access to specific functions](#)
- [Grant or restrict permissions to select tasks](#)
- [Remove user accounts](#)

Concepts

- [About permissions and groups](#)
- [About security roles](#)
- [About access levels](#)
- [Azure Active Directory groups \(VSTS\)](#)
- [Active Directory groups \(TFS\)](#)
- [Security glossary](#)

How-to Guides

- [Set Git branch permissions](#)
- [Set build and release permissions](#)
- [Set permissions and access for work tracking](#)
- [Change access levels \(TFS\)](#)

Reference

- [Default permission and access assignments](#)
- [Permissions lookup guide](#)
- [Permissions and groups reference](#)

Resources

- [Account Management \(VSTS\)](#)
- [Server Administration \(TFS\)](#)
- [Billing](#)
- [Authentication guidance for REST APIs](#)
- [VSTS Data Protection Overview](#)
- [Technical Articles](#)