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What is Azure DevOps Services?

1/31/2019 • 2 minutes to read • [Edit Online](#)

Azure DevOps Services

Azure DevOps Services 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. The features are included, as follows:

- Git repositories for source control of your code
- Build and release services 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
- Many 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

The Azure DevOps ecosystem also provides support for adding extensions and integrating with other popular services, such as: Campfire, Slack, Trello, UserVoice, and more, and developing your own custom extensions.

Choose Azure DevOps Services when you want the following results:

- Quick set up
- Maintenance-free operations
- Easy collaboration across domains
- Elastic scale
- Rock-solid security ([learn more about data protection](#))

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 services.

Sign up for free by creating an organization. Then, either upload your code to share or source control. Begin tracking your work using Scrum, Kanban, or a combination of methods.

Sign up	Add code to your repository
<ul style="list-style-type: none">▪ Sign up with Team Services▪ Create a team project▪ Invite others to join your team	<ul style="list-style-type: none">▪ Work in your favorite IDE: Xcode, Eclipse, Android Studio, IntelliJ, Visual Studio, Visual Studio Code

Try next

[Sign up and invite teammates](#)

Related articles

- [A tour of services](#)
- [Key concepts](#)
- [Client-server tools](#)
- [Software development roles](#)
- [Azure DevOps pricing](#)

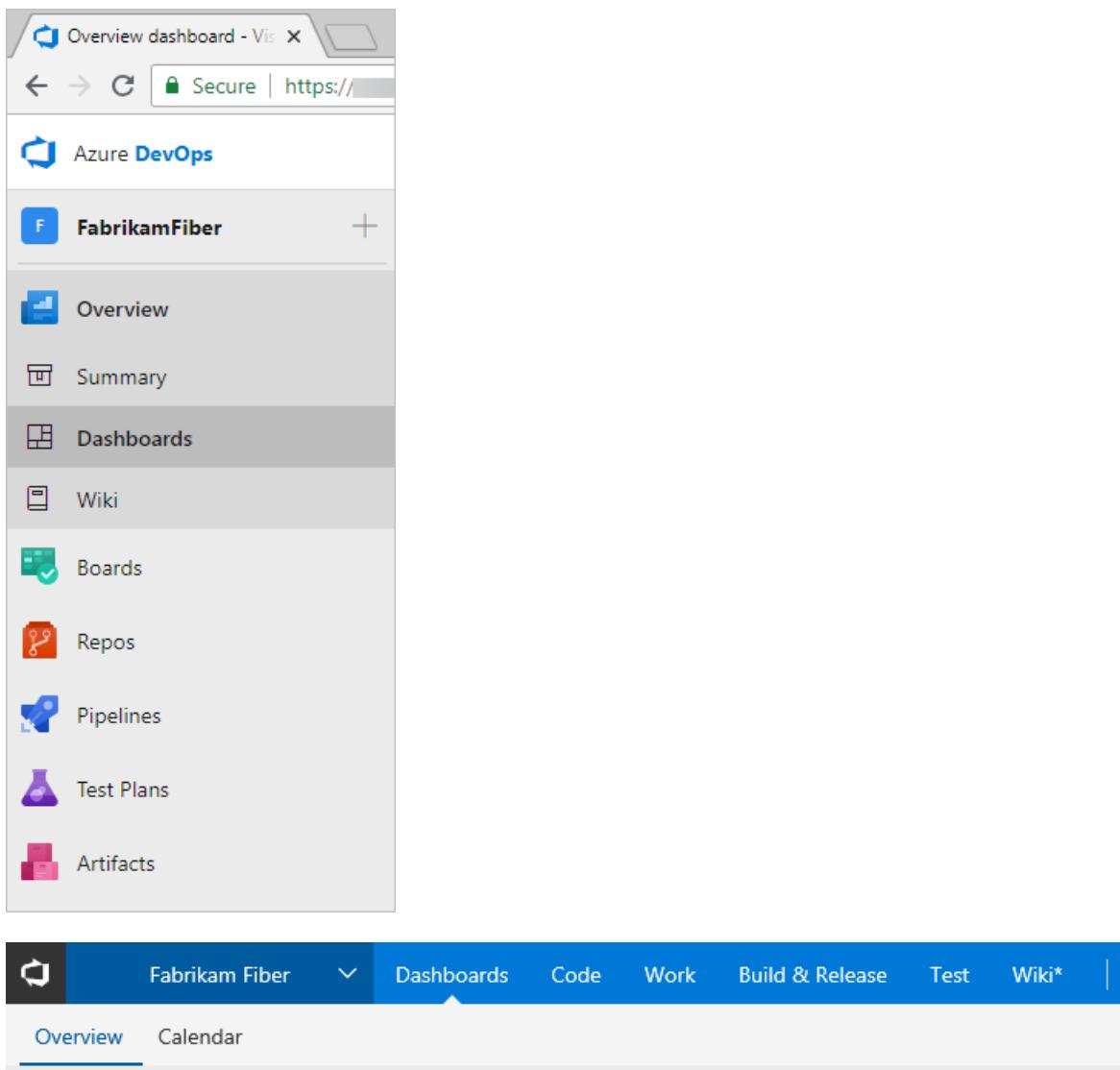
What features and services do I get with Azure DevOps and TFS?

2/15/2019 • 6 minutes to read • [Edit Online](#)

[Azure DevOps Services](#) | [Azure DevOps Server 2019](#) | [TFS 2018](#) | [TFS 2017](#) | [TFS 2015](#) | [TFS 2013](#)

With Azure DevOps Services and Team Foundation Server (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 them are delivered through an easy-to-use web interface that you can access from all major browsers. Some services, such as source control, build pipelines, and work tracking, can also be managed through a client.

Access web services through the following areas, as shown in the following image.



The screenshot shows the Azure DevOps Services web interface. At the top, there's a header bar with a back arrow, forward arrow, refresh icon, and a secure connection indicator (https://). Below the header is the Azure DevOps logo. The main area has a sidebar on the left with the following items:

- FabrikamFiber (selected)
- Overview
- Summary
- Dashboards (selected)
- Wiki
- Boards
- Repos
- Pipelines
- Test Plans
- Artifacts

At the bottom of the page, there's a navigation bar with tabs for Fabrikam Fiber, Dashboards, Code, Work, Build & Release, Test, and Wiki*. The 'Overview' tab is currently selected.

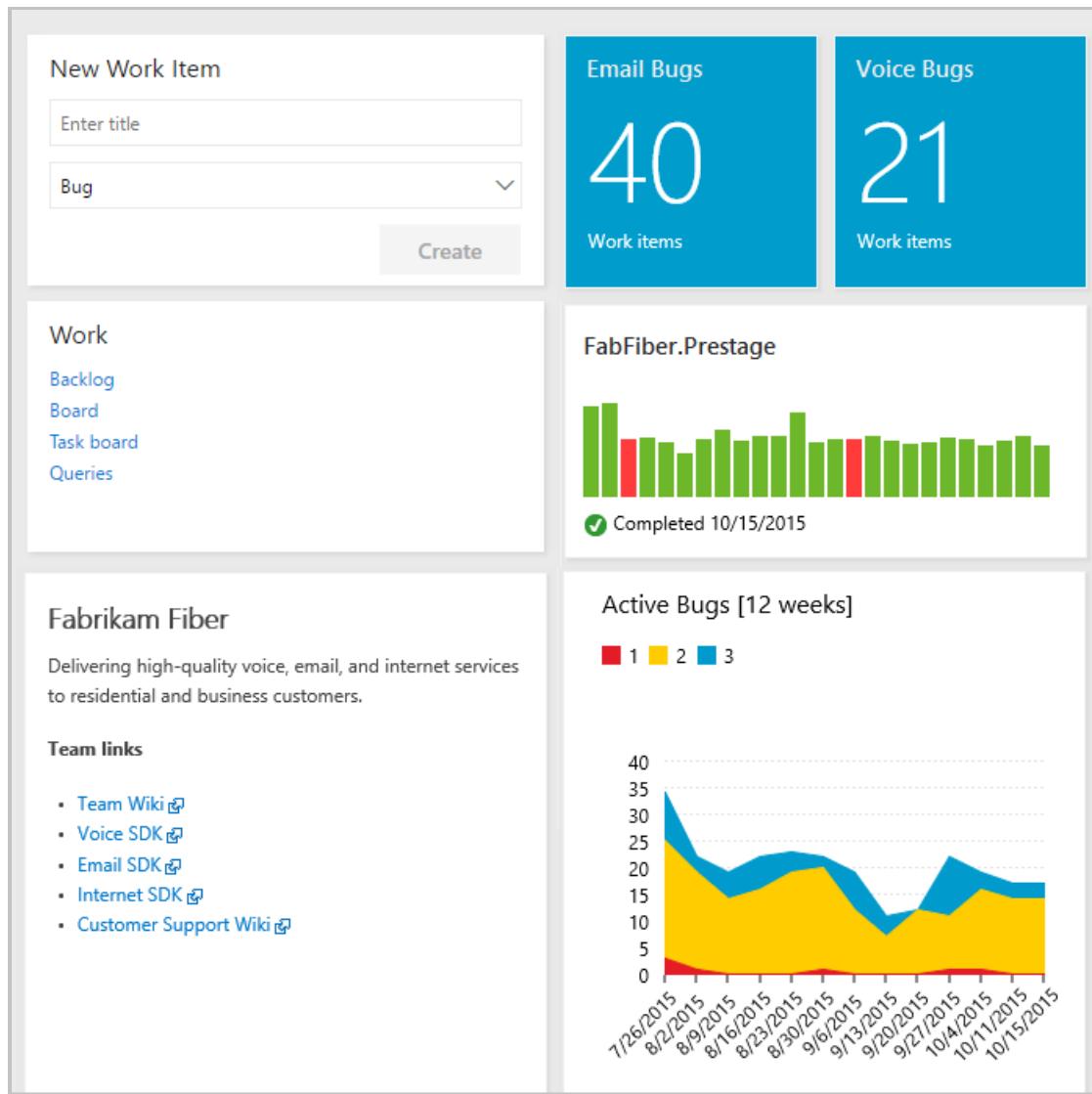
Many of our services are either free for small teams or available through a subscription model or per-use model. You can exercise a hybrid approach where you use on-premises TFS to manage your code and work, and you purchase cloud build or testing services on an as-needed basis.

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

Dashboards

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

The screenshot shows the 'Overview dashboard - Vis' window in a browser. The URL is https://dev.azure.com/FabrikamFiber/_dashboards/FabrikamFiber%20Team/11c. The page title is 'Fabrikam / FabrikamFiber / Overview / Dashboards'. On the left, a sidebar for 'FabrikamFiber' lists 'Overview', 'Summary', 'Dashboards' (which is selected), 'Wiki', 'Boards', 'Repos', 'Pipelines', 'Test Plans', and 'Artifacts'. The main content area is titled 'FabrikamFiber Team Overview'. It features a 'Welcome' section with the message: 'Get started using Azure DevOps to make the most of your team dashboard.' Below it are four cards: 'Manage Work' (Add work to your board), 'Collaborate on code' (Add code to your repository), 'Continuously integrate' (Automate your builds), and 'Visualize progress' (Learn how to add charts). A 'Code Tile' section on the right is partially visible. At the bottom, there's a 'Team Members' section with three icons: 'CC', a person icon, and a plus sign.



You can perform the following tasks in **Dashboards**:

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

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

Source control

From **Repos**, you gain access to your source control Git-based or Team Foundation Version Control (TFVC) repositories to support version control of your software projects. These repositories are private.

The screenshot shows the Azure DevOps interface for the 'DotNetSample' repository. The left sidebar has a navigation menu with items like Overview, Boards, Repos, Files (which is selected), Commits, Pushes, Branches, Tags, Pull requests, Pipelines, Test Plans, and Artifacts. The main area displays a file tree for the 'DotNetSample' folder. The tree includes subfolders 'docs', 'dotnetcore-sample', and 'dotnetcore-tests', and files like '.gitignore', '.vsts-ci.acr.yml', '.vsts-ci.docker.yml', '.vsts-ci.yml', 'Dockerfile', 'dotnetcore-sample.sln', 'LICENSE', 'LICENSE-CODE', and 'README.md'. There are also two additional sets of files on the right side of the tree.

From **Code**, 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 Azure DevOps interface for the 'Fabrikam Fiber' repository. The left sidebar has a navigation menu with items like Dashboards, Code (which is selected), Work, Build & Release, Test, and Wiki*. The main area displays a file tree for the 'Fabrikam Fiber' folder. The tree includes files like 'page-1.md', 'page-2.md', 'page-3.md', and 'README.md'. The interface also includes a search bar at the top and a table below the tree view showing file details such as name, last change, commit hash, and file status.

From Azure Repos for Git, you can perform the following 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 on, and complete pull requests

- Add and manage Git tags

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

Plan and track work

From **Boards**, you gain access to Agile tools to support planning and tracking work.

The screenshot shows the Azure DevOps interface for the 'FabrikamFiber Team' board. The left sidebar lists various project management sections: Overview, Boards (selected), Backlogs, Sprints, Queries, Repos, Pipelines, Test Plans, and Artifacts. The main area displays the 'Stories backlog' for the 'FabrikamFiber Team'. It includes a 'New' section with a 'New item' button, two backlog items ('Technician can report busy/late on Windows Phone' and 'Technician can see service tickets on Windows Phone'), and a summary of 3 items. To the right, there's an 'Active' section showing '3/5' items, including 'Add an information form', 'Welcome back page', 'Secure sign in' (with 1 unassigned item), and options to 'Add Test' and 'Test for secure sign in'.

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

The screenshot shows the Azure DevOps interface for the 'Fabrikam Fiber' project. The left sidebar has 'Backlogs' selected. The main area displays a backlog of 'Stories'. A chart at the top right shows progress: a blue bar is high, a green bar is low. Below the chart are buttons for 'Backlog', 'Board', 'Forecast Off', 'Parents Hide', 'In progress items Show', 'Mapping On', and a gear icon. A modal window is open, titled 'User Story', with a 'Type' dropdown set to 'User Story' and a 'Title' input field. Below the modal is a table listing five user stories:

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

Specifically, you can perform the following 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 by using sprint backlogs
- Review sprint tasks and update tasks through the task boards
- Visualize the workflow and update the status by using Kanban boards
- Manage portfolios by grouping stories under features and grouping features under epics

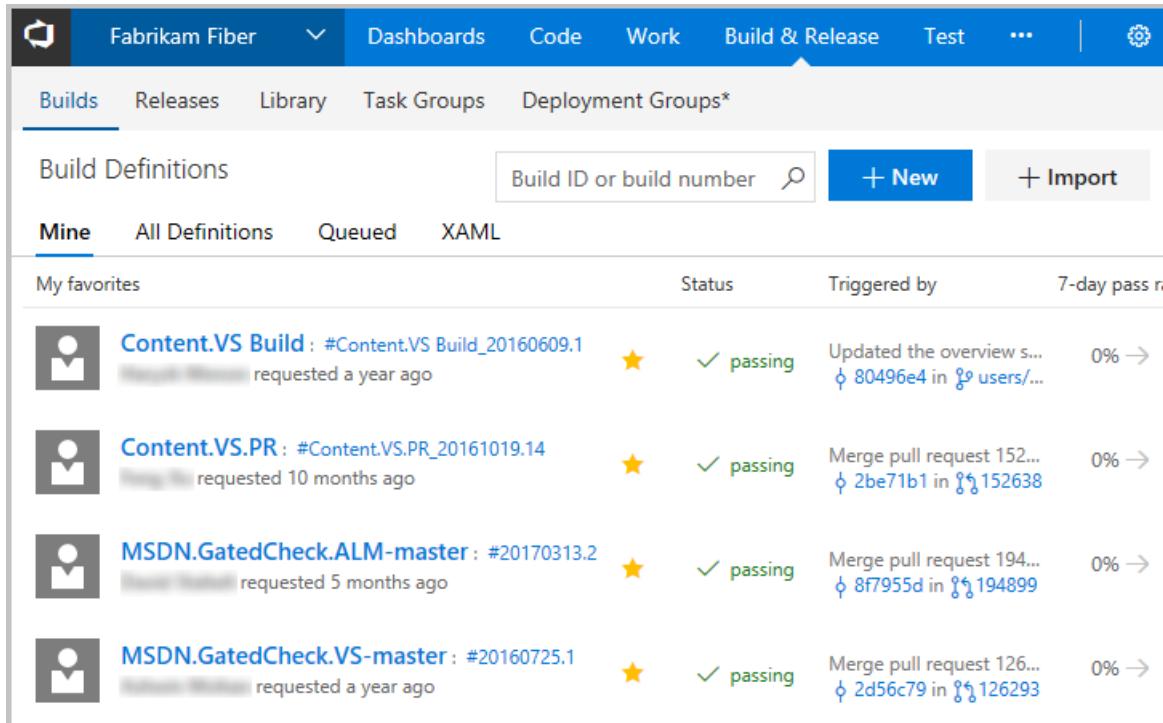
See [Backlogs, boards, and plans](#) for an overview of each.

Continuous integration and deployment

Azure Pipelines provides an integrated set of features to support building and deploying your applications.

The screenshot shows the Azure DevOps Pipelines interface for the 'FabrikamFiber' project. The left sidebar has 'Pipelines' selected. The main area shows a list of pipelines, with one named 'FabrikamFiber' highlighted. A context menu is open over this pipeline, with options 'Build pipeline' and 'Import a pipeline'. The right side of the screen shows a 'History' section with a commit from a user named 'Updated manual b'.

Azure Pipelines provides an integrated set of features to support building and deploying your applications.



The screenshot shows the Azure Pipelines interface. At the top, there's a navigation bar with 'Fabrikam Fiber' selected. Below it is a secondary navigation bar with tabs: Builds, Releases, Library, Task Groups, Deployment Groups*, Dashboards, Code, Work, Build & Release, Test, and a '...' button. A gear icon is also present. The main area is titled 'Build Definitions' and includes a search bar ('Build ID or build number') and buttons for '+ New' and '+ Import'. Below this, there are filters: 'Mine', 'All Definitions', 'Queued', and 'XAML'. A section titled 'My favorites' lists four build definitions:

Definition	Requested By	Requested Date	Status	Triggered By	7-day pass rate		
Content.VS Build : #Content.VS Build_20160609.1	[User Icon]	[Redacted]	requested a year ago	star icon	✓ passing	Updated the overview s... 80496e4 in 8 users/...	0% →
Content.VS.PR : #Content.VS.PR_20161019.14	[User Icon]	[Redacted]	requested 10 months ago	star icon	✓ passing	Merge pull request 152... 2be71b1 in 152638	0% →
MSDN.GatedCheck.ALM-master : #20170313.2	[User Icon]	[Redacted]	requested 5 months ago	star icon	✓ passing	Merge pull request 194... 8f7955d in 194899	0% →
MSDN.GatedCheck.VS-master : #20160725.1	[User Icon]	[Redacted]	requested a year ago	star icon	✓ passing	Merge pull request 126... 2d56c79 in 126293	0% →

Use pipelines to implement continuous integration and continuous delivery.

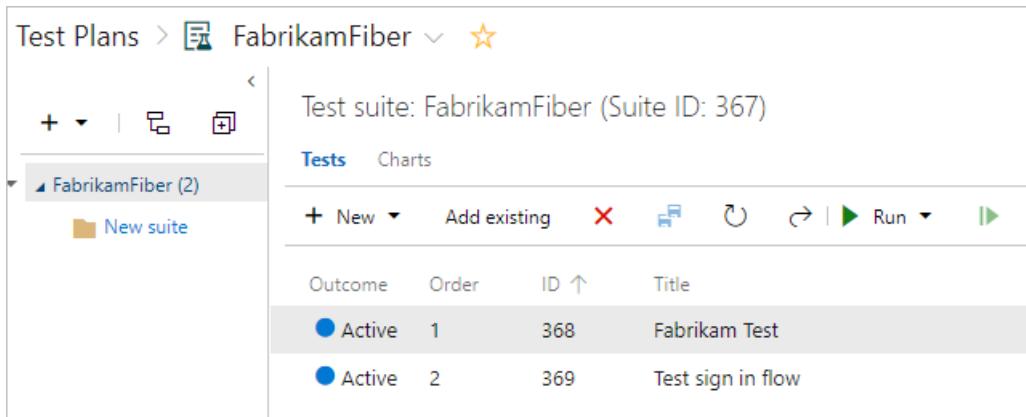
- **Build automation:** Define the steps to take during build and the triggers that initiate a build.
- **Release management:** Supports a rapid release cadence and management of simultaneous releases. You can configure release pipelines that represent your environments from development to production. Run automation 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](#).

Manual, exploratory, and load testing

Test features support manual and exploratory testing, load or performance testing, and continuous testing.

Test Plans supports creating and managing manual tests.



The screenshot shows the Azure Test Plans interface. On the left, there's a sidebar with 'Test Plans' and a dropdown for 'FabrikamFiber'. Below that is a tree view with 'FabrikamFiber (2)' expanded, showing 'New suite'. The main area displays a test suite named 'FabrikamFiber (Suite ID: 367)'. It includes tabs for 'Tests' and 'Charts'. Under 'Tests', there's a table with two rows:

Outcome	Order	ID	Title
Active	1	368	Fabrikam Test
Active	2	369	Test sign in flow

Test supports creating and managing manual tests.

The screenshot shows the Microsoft DevOps Test Plans interface. At the top, there's a navigation bar with links for 'Fabrikam Fiber', 'Dashboards', 'Code', 'Work', 'Build & Release', 'Test', 'Wiki*', and a gear icon. Below the navigation is a secondary menu with tabs: 'Test Plans' (which is selected and underlined), 'Parameters', 'Configurations', 'Runs', 'Machines', and 'Load test'. A dropdown menu shows 'Fabrikam Fiber: Fabrikam Fiber Team_Sto...' with a dropdown arrow. On the left, there's a toolbar with icons for creating new items, deleting, copying, and printing. Below the toolbar is a section titled 'Fabrikam Fiber Team_Stories_Fabrikam Fiber' with a link to '379 : Phone sign in (2)'. The main area displays a table titled 'Test suite: 379 : Phone sign in (Suite ID: 477)'. The table has columns for 'Tests', 'Charts', 'Outcome All', 'Tester All', and 'Configuration All'. Under 'Tests', there are buttons for '+ New', 'Add existing', 'Delete', 'Edit', 'Run', and 'Copy'. The 'Tests' table contains two rows:

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

With test features, you gain access to the following features:

- 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 creation of test cases
- 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

The following services work across the previously mentioned services to support:

- Team dashboards
- Project wiki
- Discussion within work item forms
- Linking of work items, commits, pull requests, and other artifacts to support traceability
- Alerts and change notifications managed per user, team, project, or organization
- Ability to request and manage feedback
- Analytics service, analytic views, and Power BI reporting
- Dashboards
- Project wiki
- Discussion within work item forms
- Linking of work items, commits, pull requests, and other artifacts to support traceability
- Alerts and change notifications managed per user, team, project, or project collection
- Ability to request and manage feedback
- SQL Server Reporting
- Dashboards
- Discussion within work item forms
- Linking of work items, commits, pull requests and other artifacts to support traceability
- Alerts and change notifications managed per user, team, project, or project collection
- Ability to request and manage feedback

- Team (chat) rooms
- SQL Server Reporting

NOTE

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

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

Service hooks

Service hooks enable you to perform tasks on other services when events happen within your project hosted on Azure DevOps Services 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 other apps and services that integrate with Azure DevOps Services or TFS, visit the [Visual Studio Marketplace](#), Azure DevOps tab.

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

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

Azure cloud-hosted services

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

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

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

Administrative services

There are features and tasks associated with administering a collaborative software development environment. You perform most of these tasks through the web portal. To learn more, see [About user, team, project, and organization-level settings](#).

The screenshot shows the 'Project Settings > Overview' page for the 'FabrikamFiberTest' project in Azure DevOps. The left sidebar lists project management areas: Overview, Boards, Repos, Pipelines, Test Plans, and Artifacts. The 'Project settings' option at the bottom is highlighted with a red box. The main content area is titled 'Project details' and includes fields for Name (FabrikamFiberTest), Description (Fabrikam Fiber test project), Process (Scrum), and Visibility (Private). A 'Save' button is located below the visibility settings. To the right, under 'Azure DevOps services', there are links to Boards, Repos, Pipelines, and Packages.

Project Settings > Overview

Project details

Name
FabrikamFiberTest

Description
Fabrikam Fiber test project

Process
Scrum

Visibility
Private

Save

Azure DevOps services

- Boards
- Flexible agile planning v
- Repos
- Repos, pull requests, ad
- Pipelines
- Build, manage, and scale
- Packages

Project settings

Screenshot of the Azure DevOps Services interface showing the 'Fabrikam Fiber' project profile and team management.

Project profile

Teams

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

Name: Fabrikam Fiber

Process: Scrum

Description: Web, voice, and phone apps

Related articles

- [Understand differences between Azure DevOps Services and TFS](#)
- [Key concepts](#)
- [Client-server tools](#)
- [Software development roles](#)
- [Pricing](#)
- [Azure DevOps data protection overview](#)

Visual Studio Team Services is now Azure DevOps Services

1/25/2019 • 2 minutes to read • [Edit Online](#)

[Azure DevOps Services](#) | [Azure DevOps Server 2019](#) | [TFS 2018](#) | [TFS 2017](#) | [TFS 2015](#) | [TFS 2013](#)

On September 10, 2018, Microsoft renamed Visual Studio Team Services (VSTS) to Azure DevOps Services. For more information about this change, see [Introducing Azure DevOps](#).

VSTS features are now separate services:

VSTS FEATURE NAME	AZURE DEVOPS SERVICE NAME	DESCRIPTION
Build & release	Azure Pipelines	Continuous integration and continuous delivery (CI/CD) that works with any language, platform, and cloud.
Code	Azure Repos	Unlimited cloud-hosted private Git and Team Foundation Version Control (TFVC) repos for your project.
Work	Azure Boards	Work tracking with Kanban boards, backlogs, team dashboards, and custom reporting.
Test	Azure Test Plans	All-in-one planned and exploratory testing solution.
Packages (extension)	Azure Artifacts	Maven, npm, and NuGet package feeds from public and private sources.

Currently, you can acquire only Azure Pipelines as a separate service. In the future, you'll be able to acquire each service separately or all together as Azure DevOps Services. If you are already a VSTS subscriber, you have access to all of the services now.

NOTE

You can [disable select services](#) from the user interface.

Follow the [Azure DevOps release notes](#) to get news on the latest updates.

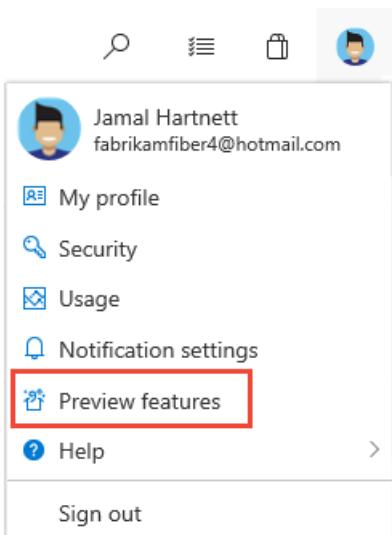
Can I still use visualstudio.com?

Yes. We've moved to the new `dev.azure.com` domain name as the primary URL for new organizations. (Specifically, it's `https://dev.azure.com/{your organization}/{your project}`.) If you want to change your URL to be based on `dev.azure.com` as the primary, an organization administrator can change this from the organization settings page.

We will continue to post news about this transition on the [Microsoft DevOps blog](#) and in the [Azure DevOps release notes](#).

Can I still use the old interface?

Yes. Although Azure DevOps Services features [redesigned navigation](#), you can still use the previous user interface by choosing your profile icon and selecting **Preview features** from the drop-down menu.



Then, switch the **New Navigation** option to **Off**.

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

for me [Jamal Hartnett] ▾

New build result page On
Lights up new build results page.

New builds hub On
Lights up new builds hub.

New Navigation Off
Turns on the new global navigation experience. [Learn more](#)

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

New Releases Hub On
New experience to create folders and manage release pipelines.

Turning off **New Navigation** also changes the Azure DevOps Services names to the corresponding old VSTS feature names, such as **Work** instead of **Boards**.

To return to the Azure DevOps service-oriented UI, choose your profile icon, select **Preview features**, and re-enable **New Navigation**.

Team Foundation Server (TFS) is now called Azure DevOps Server

On November 19, 2018, Microsoft released the first release candidate (RC) of Azure DevOps Server 2019. Azure DevOps Server is the new name for the on-premises DevOps server product previously called Team Foundation Server. For more information about this change, see [Introducing Azure DevOps Server](#).

Azure DevOps Server 2019 uses the new navigation user interface, with a vertical sidebar to navigate to the main service areas: **Boards**, **Repos**, **Pipelines**, and more. To learn more, see [Web portal navigation](#).

Azure DevOps Services vs. Azure DevOps Server

1/25/2019 • 10 minutes to read • [Edit Online](#)

Azure DevOps Services | Azure DevOps Server 2019 | TFS 2018 | TFS 2017 | TFS 2015 | TFS 2013

Azure DevOps Services and Azure DevOps Server were formerly named Visual Studio Team Services (VSTS) and Visual Studio Team Foundation Server (TFS). Both provide an integrated, collaborative environment that supports Git, continuous integration, and Agile tools for planning and tracking work.

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

Azure DevOps Server is the on-premises offering that's built on a SQL Server back end. Companies usually choose this when they need their data to stay within their network or when they want access to SQL Server reporting services that integrate with Azure DevOps data and tools.

Although both offerings provide the same [essential services](#), compared with Azure DevOps Server, Azure DevOps Services offers the following 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).

To determine which offering—cloud or on-premises—meets your needs, consider the following key differences.

Fundamental differences between Azure DevOps Services and Azure DevOps Server

Consider the differences in these areas when contemplating a move from Azure DevOps Server to Azure DevOps Services:

- [Scope and scale data](#)
- [Authentication](#)
- [Users and groups](#)
- [Manage user access](#)
- [Security and data protection](#)

Differences in specific feature areas

Although Azure DevOps Services is a hosted version of Azure DevOps Server, there are some differences between the features that are available in the two products. Some Azure DevOps Server features aren't supported in Azure DevOps Services at all. For example, Azure DevOps Services doesn't support integration with SQL Server Analysis Services to support reporting.

Two additional areas differ in their support:

- [Process customization](#)
- [Reporting](#)

Are you on TFS or Azure DevOps Server and considering moving? Read [Migrate data from TFS to Azure DevOps Services](#) to understand your options.

Scope and scale data

Azure DevOps Server scales by using deployments, project collections, and projects

Azure DevOps Server offers the following three options for scoping and scaling data: deployments, project collections, and projects. In the simplest case, deployments are just servers.

Deployments can be more complicated, however, which could include the following:

- Two-server deployment where SQL is split out on a separate machine
- High-availability farms comprising lots of servers

Project collections serve as containers for security and administration, as well as physical database boundaries. They're also used to group related projects.

Finally, projects are used to encapsulate the assets of individual software projects, including source code, work items, and so on.

Learn more: [Manage project collections](#).

Azure DevOps Services scales by using organizations and projects

Azure DevOps Services differs slightly from Azure DevOps Server. There are currently only two options for scoping and scaling data: organizations and projects. Organizations in Azure DevOps Services get their own URLs (for example, <https://dev.azure.com/fabrikamfiber>), and they always have exactly one project collection.

Organizations can have many projects, such as project collections.

We recommend that you create organizations in Azure DevOps Services wherever you would have created collections in Azure DevOps Server. The following scenarios apply:

- You can purchase Azure DevOps Services users per organization - Paid users can access only the organization in which the payment is made. If you have users who need access to many organizations, Visual Studio subscriptions can be an attractive option. Visual Studio subscribers can be added to any amount of organizations at no charge. We're also considering other ways to make access available to many organizations that are grouped into a single organization.
- You currently have to administer organizations one at a time. This process can be cumbersome when you have many organizations.

Learn more: [Plan your organizational structure in Azure DevOps](#).

Authentication

With Azure DevOps Server, you 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. This process is transparent and you never see any kind of sign in experience.

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

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

Learn more: [Access Azure DevOps Services with Azure Active Directory](#).

Manage users and groups

In Azure DevOps Server, you provide users access to deployments by adding Active Directory (AD) groups to

various Azure DevOps groups (for example, the Contributors group for an individual project). The AD group memberships are kept in sync. As users are added and removed in AD, they also gain and lose access to Azure DevOps Server.

In Azure DevOps Services, you can use a similar mechanism to [provide access to groups of users](#). You can add Azure AD groups to Azure DevOps Services groups. If you use Microsoft Accounts instead of Azure AD, you have to [add users](#) one at a time.

Manage user access

In both Azure DevOps Services and Azure DevOps Server, you manage access to features by assigning users to an [access level](#). All users must be assigned to a single access level. In both the cloud and on-premises offerings, you can give free access to work item features to an unlimited number of stakeholders. Also, an unlimited number of Visual Studio subscribers can have access to all Basic features at no additional charge. You pay only for other users who need access.

In Azure DevOps Server, all use is on the honor system. To set access levels for users based on their licenses, specify their [access levels](#) on the administration page. For example, assign unlicensed users Stakeholder access only.

Users with an Azure DevOps Server/TFS Client Access License (CAL) can have Basic access. Visual Studio subscribers can have either Basic or Advanced access, depending on their subscriptions. Azure DevOps Server doesn't attempt to verify these licenses or enforce compliance.

In Azure DevOps Services, you must [assign an access level](#) to each user in your organization. Azure DevOps Services 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 need to [set up billing](#) for your organization and [pay for more users](#). Otherwise, all other users get Stakeholder access.

If you use Azure AD groups to give access to groups of users, Azure DevOps Services assigns the appropriate access levels automatically at first sign-in. For organizations that are configured to use Microsoft accounts for signing in, you have to assign access levels to each user explicitly.

Security and data protection

Many entities want to know more about data protection when they consider moving to the cloud. We are committed to ensuring that Azure DevOps Services projects stay safe and secure. We have technical features and business processes in place to deliver on this commitment. You can also take steps to secure your data. Learn more in our [Data Protection Overview white paper](#).

Process customization

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

- For Azure DevOps Services, you use the **Inheritance** process model, which supports WYSIWYG customization.
- For Azure DevOps Server, you can choose the **Inheritance** process model or the **On-premises XML** process model, which supports customization through import or export of XML definition files for work-tracking objects.
- For TFS 2018 and earlier versions, you only have access to the **On-premises XML** process model.

Although the **On-premises XML** process model option is powerful, it can cause various issues. The main issue is that processes for existing projects aren't automatically updated.

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

To help you avoid these issues in Azure DevOps Services, custom process templates and the **witadmin.exe** tool have always been disabled. This approach has enabled us to automatically update all projects with each Azure DevOps Services upgrade. Meanwhile, the product team is working hard to make customizing processes possible in ways that we can support easily and continuously. We recently introduced the first of these changes and more changes are on the way.

With the new process-customization capability, you can make changes directly within the web user interface (UI). If you want to customize your processes programmatically, you can do so through REST endpoints. When you customize projects this way, they're automatically updated when we release new versions of their base processes with Azure DevOps Services upgrades.

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

Reporting

Azure DevOps Services and Azure DevOps Server offer a many tools that give you insight into the progress and quality of your software projects. Included are the following tools:

- [Dashboards](#) and lightweight [charts](#) that are available in both the cloud and on-premises platforms. These tools are easy to set up and use.

Azure DevOps Services and Azure DevOps Server 2019 also provide access to the following services:

- [The Analytics service](#) and [Analytics widgets](#). The Analytics service is optimized for fast read-access and server-based aggregations.
- [Microsoft Power BI integration](#), which supports getting Analytics data into Power BI reports and provides a 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 want. You can generate queries that span many projects or your entire organization.

To learn more about the Analytics service and future releases, see our [Reporting roadmap](#).

[SQL Server Reporting Services \(SSRS\) reports](#) are available from Azure DevOps Server or TFS when configured with SQL Server Analysis Services.

Related articles

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

Quickstart: Code with Git

2/15/2019 • 3 minutes to read • [Edit Online](#)

[Azure DevOps Services](#) | [Azure DevOps Server 2019](#) | [TFS 2018](#) | [TFS 2017](#) | [TFS 2015](#) | [TFS 2013](#)

In this quickstart, you learn how to share your code with others. After you create a new organization and project in Azure DevOps, you can begin coding with Git.

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. Cloning also 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.

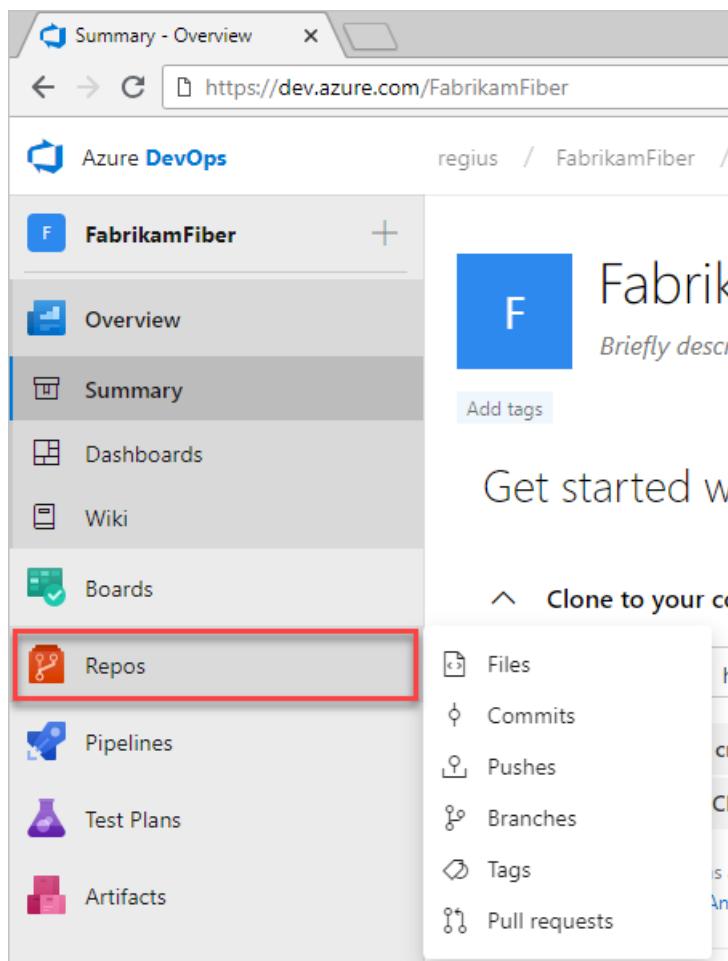
Install Git command-line tools

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

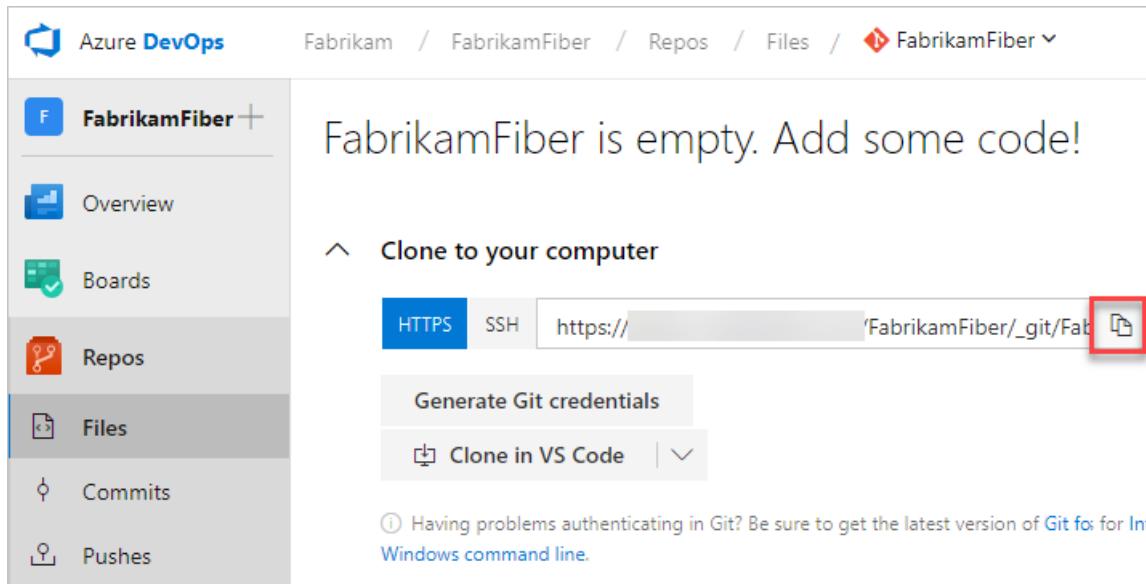
- To install Git for Windows, including Git Credential Manager, see [Install the Git Credential Manager - Windows](#).
- To install Git for macOS and Linux, see [Install the Git Credential Manager - macOS and Linux](#).

Clone the repo to your computer

1. From your web browser, open the project for your organization, and select **Repos**. If you don't have a project, [create one now](#).



2. Select **Clone** in the upper-right corner of the Code window, and copy the URL.



The screenshot shows the Azure DevOps interface for the 'FabrikamFiber' repository. On the left, there's a sidebar with links like Overview, Boards, Repos, Files (which is selected), Commits, and Pushes. The main area displays the message 'FabrikamFiber is empty. Add some code!'. Below this, under 'Clone to your computer', there are two tabs: 'HTTPS' (selected) and 'SSH'. The URL 'https://.../FabrikamFiber/_git/FabrikamFiber' is shown in the input field, with a red box highlighting the copy icon (a clipboard with a plus sign) to its right. There are also buttons for 'Generate Git credentials' and 'Clone in VS Code'.

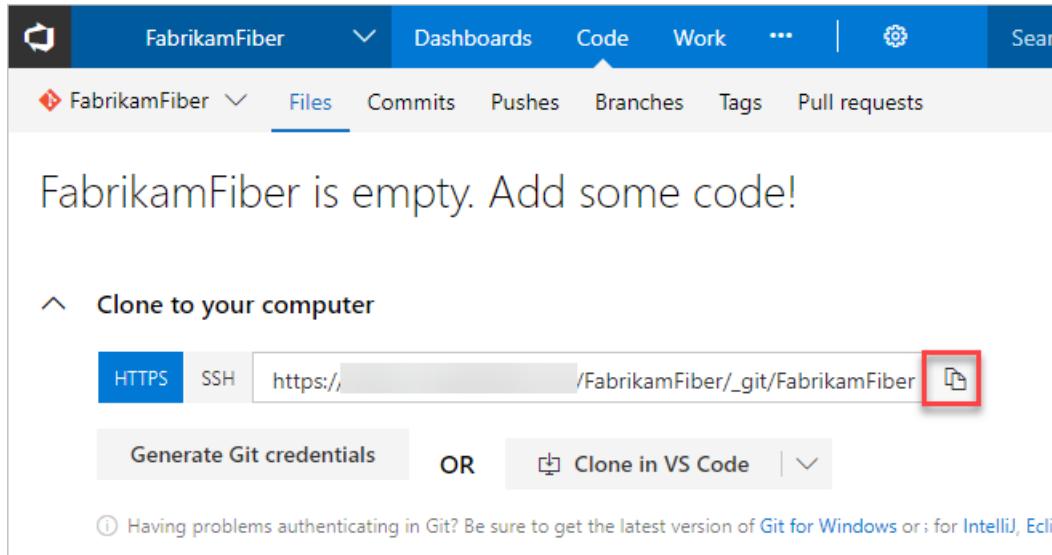
3. Open the Git command window (Git Bash on Git for Windows). Go to the folder where you want the code from the repo stored on your computer, and run `git clone`, followed by the path copied from **Clone URL** in the previous step. See the following example:

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

A copy of the code is downloaded in Git, including all [commits](#) and [branches](#) from the repo. This copy is put into a new folder for you to work with.

Keep this command window open (you'll use it in the following steps).

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



The screenshot shows the Azure DevOps interface for the 'FabrikamFiber' repository. The top navigation bar includes 'Dashboards', 'Code' (selected), 'Work', and other options. The main area displays the message 'FabrikamFiber is empty. Add some code!'. Below this, under 'Clone to your computer', there are two tabs: 'HTTPS' (selected) and 'SSH'. The URL 'https://.../FabrikamFiber/_git/FabrikamFiber' is shown in the input field, with a red box highlighting the copy icon to its right. There are also buttons for 'Generate Git credentials' and 'Clone in VS Code'.

3. Open the Git command window (Git Bash on Git for Windows). Go 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 **Clone URL** in the previous step. The following example shows this:

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

A copy of the code is downloaded in Git, including all [commits](#) and [branches](#) from the repo, into a new folder for you to work with.

Keep this command window open (you'll use it in the following steps).

Work with the code

In the following steps, we make a change to the files on your computer, commit the changes locally, and push the commit to the repo that is stored on the server. We can then view the changes.

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

```
cd contoso-demo
```

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

```
git add .
git commit -m "My first commit"
```

The `git add .` command stages any new or changed files, and `git commit -m` creates a commit with the specified commit message.

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

```
git push
```

View history

1. Switch back to the web portal, and select **History** from the Code page to view your new commit.

The screenshot shows the Azure DevOps Code History page for the \$/FabrikamFiber repository. The 'History' tab is highlighted with a red box. The page displays two commit entries:

- Wednesday, August 8, 2018 1 changeset**
Added file README
Jamal Hartnett created #1528, 8/8/2018
- Tuesday, October 13, 2015 8 changesets**
NO_CI
Elastic Build (FabrikamFiber) created #15
NO_CI
Elastic Build (FabrikamFiber) created #15
NO_CI

2. Switch to the **Files** tab, and select the README file to view your changes.

① Checked in changeset 1529: Updated README

Contents History Compare Annotate

1 My first edit to README file.

1. Switch back to the web portal, and select **History** from the **Code** tab 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.

MyFirstProject Dashboards Code 1
contoso-demo Files History Branches Tags Pull Requests 2

master contoso-demo / Type to find a file or folder...

Commits Branch Updates

Simple history (...) Author From date To date

Graph Commit Message

4b38f92b My first commit
fefb3a74 Added README.md, .gitignore (VisualStudio) files

2. Switch to the **Files** tab, and select the README file to view your changes.

MyFirstProject Dashboards Code 1
contoso-demo Files History Branches Tags Pull Requests 1

master contoso-demo / README.md

contoso-demo .gitignore README.md 2

Contents Preview History Compare Blame

Introduction
This is my first edit.

TODO: Give a short introduction of your project. Let the world know what your project does, who it's for, and how to get started.

Getting Started
TODO: Guide users through getting your code up and running.

Next steps

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

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

Use the visual designer

2/14/2019 • 17 minutes to read • [Edit Online](#)

Azure Pipelines | TFS 2018 | TFS 2017

NOTE

In Microsoft Team Foundation Server (TFS) 2018 and previous versions, build and release *pipelines* are called *definitions*, *service connections* are called *service endpoints*, *stages* are called *environments*, and *jobs* are called *phases*.

NOTE

This guidance applies to TFS version 2017.3 and newer.

TIP

For build pipelines, we recommend that you use YAML instead of the visual designer that is explained below. YAML allows you to use the same branching and code review practices for your pipeline as you would for your application code. See [Create your first pipeline](#).

We'll show you how to use the visual designer in Azure Pipelines to create a build and release that prints "Hello world". If you plan to use a YAML file instead of the visual designer, then see [Create your first pipeline](#) instead.

We'll show you how to use TFS to create a build and a release that prints "Hello world".

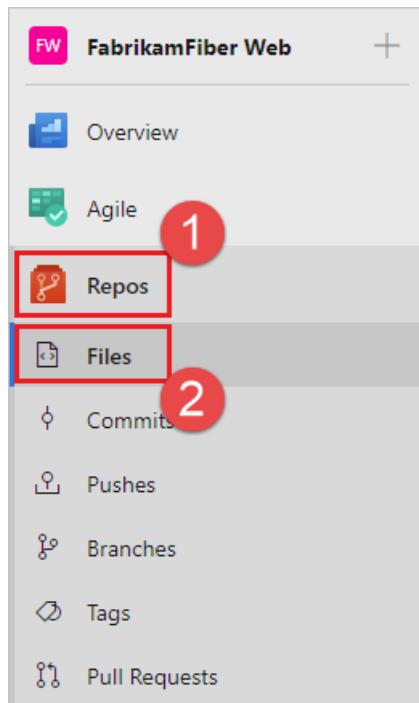
Prerequisites

- You need an Azure DevOps organization. If you don't have one, you can [create one for free](#). If your team already has one, then make sure you're an administrator of the Azure DevOps project that you want to use. (An Azure DevOps organization is different from your GitHub organization. Give them the same name if you want alignment between them.)
- A [self-hosted Windows agent](#).

Initialize your repository

If you already have a repository in your project, you can skip to the next step: [Add a script to your repository](#)

1. Go to **Azure Repos**. (The **Code** hub in the previous navigation)



2. If your project is empty, you will be greeted with a screen to help you add code to your repository. Choose the bottom choice to **initialize** your repo with a `readme` file:

FabrikamFiber Pipelines is empty. Add some code!

Clone to your computer

HTTPS SSH https://regius.visualstudio.com/FabrikamFiber%20Pipelines/_git/Fabrika... OR [Clone in VS Code](#)

Generate Git credentials

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

HTTPS SSH

```
git remote add origin https://regius.visualstudio.com/FabrikamFiber%20Pipelines/_git/FabrikamFiber%20Pipelines
git push -u origin --all
```

or import a repository

Import

or initialize with a README or gitignore

Add a README Initialize

1. Navigate to your repository by clicking **Code** in the top navigation.
2. If your project is empty, you will be greeted with a screen to help you add code to your repository. Choose the bottom choice to **initialize** your repo with a `readme` file:

FabrikamFiber Pipelines is empty. Add some code!

Clone to your computer

HTTPS SSH https://regius.visualstudio.com/FabrikamFiber%20Pipelines/_git/Fabrika... OR [Clone in VS Code](#) | ▾

[Generate Git credentials](#)

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

HTTPS SSH

```
git remote add origin https://regius.visualstudio.com/FabrikamFiber%20Pipelines/_git/FabrikamFiber%20Pipelines
git push -u origin --all
```

or import a repository

[Import](#)

or initialize with a README or gitignore

Add a README

Add a .gitignore: None

Initialize

Add a script to your repository

Create a PowerShell script that prints `Hello world`.

1. Go to **Azure Repos**.

2. Add a file.

- [New navigation](#)
- [Previous navigation](#)

The screenshot shows the Azure DevOps interface for a repository named 'SmartHotel360'. The left sidebar has 'FabrikamFiber Web' selected under 'Repos'. The main area shows a list of files including 'AzureEndpoint.png', 'gear.png', 'README.md', 'SmartHotel360.png', and 'SmartHotel360Logo.png'. A context menu is open over the 'New' option in the 'File' section of the menu bar. The menu items are: 'New' (highlighted with a red box), 'File' (highlighted with a red box), 'Upload file(s)', and 'Download as Zip'.

3. In the dialog box, name your new file and create it.

HelloWorld.ps1

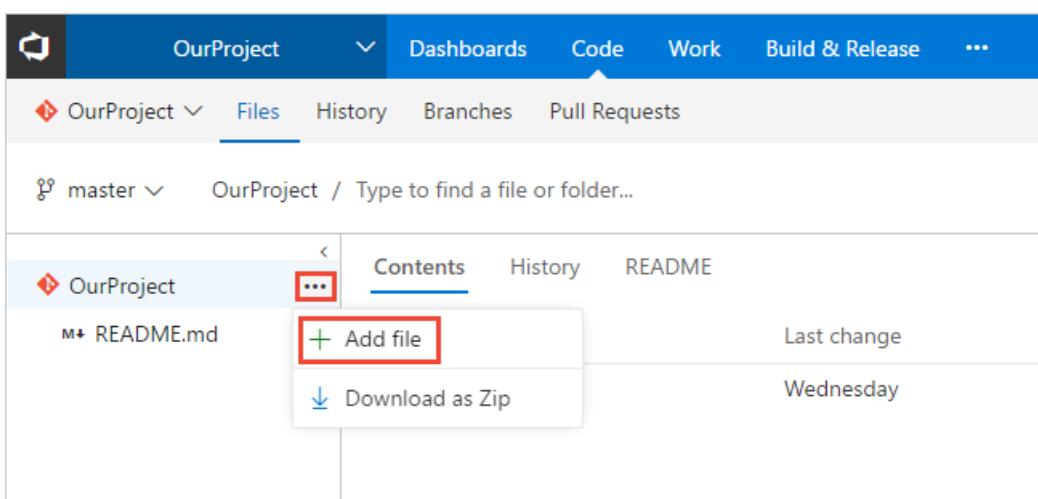
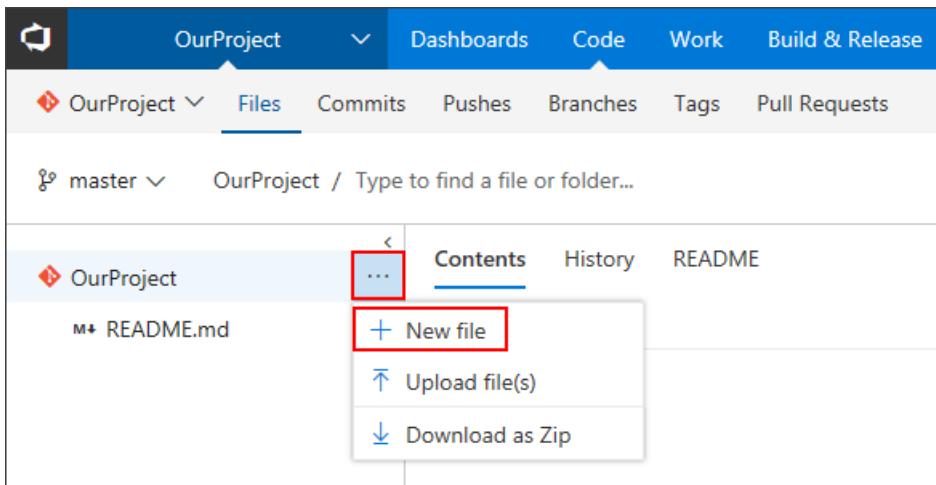
4. Copy and paste this script.

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

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

1. Go to the **Code** hub.

2. Add a file.



1. In the dialog box, name your new file and create it.

```
HelloWorld.ps1
```

2. Copy and paste this script.

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

3. **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 an Azure Repos 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 Azure Pipelines CI builds. [Learn more](#).

Create a build pipeline

Create a build pipeline that prints "Hello world."

1. Select **Azure Pipelines**, it should automatically take you to the **Builds** page.

- New navigation

- Previous navigation

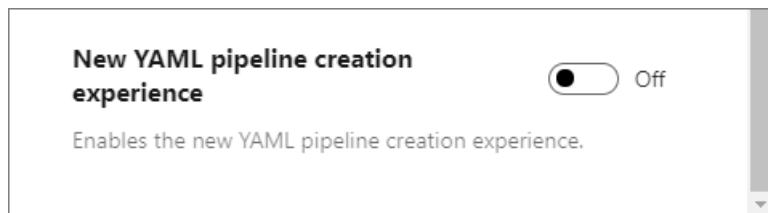
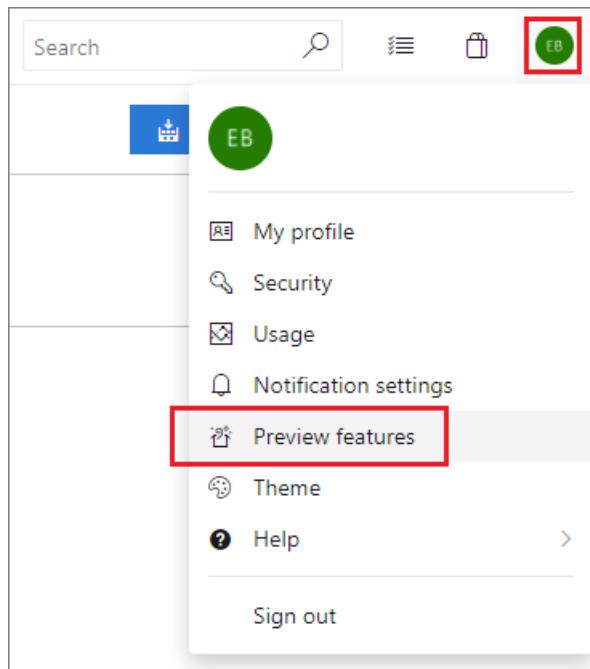
The screenshot shows the Azure DevOps interface for the 'FabrikamFiber Web' project. The left sidebar has a red box around the 'Pipelines' and 'Builds' items. The main area displays a pipeline named 'PublicWebCI' which ran on the 'master' branch 8 hours ago. There is a search bar at the top labeled 'Search all pipelines'.

2. Create a new pipeline.

- New navigation
- Previous navigation

The screenshot shows the same Azure DevOps interface as the previous one, but the '+ New' button in the top right of the Pipelines section is highlighted with a red box. A dropdown menu appears, showing 'New build pipeline' as the first option.

For new Azure DevOps accounts, this will automatically take you to the *YAML pipeline creation experience*. To get to the visual designer and complete this guide, you must turn off the **preview feature** for the *New YAML pipeline creation experience*:



3. Make sure that the **source**, **project**, **repository**, and default **branch** match the location in which you created the script.
4. Start with an **Empty job**.
5. On the left side, select **Pipeline** and specify whatever **Name** you want to use. For the **Agent pool**, select **Hosted VS2017**.
6. On the left side, select the plus sign (+) to add a task to **Job 1**. On the right side, select the **Utility** category, select the **PowerShell** task from the list, and then choose **Add**.

A screenshot of the Azure Pipeline editor. The pipeline is named 'Build pipeline'. Under 'Agent job 1', there is a task named 'Get sources' configured for 'SmartHotel360' and 'master'. In the bottom right corner of the pipeline editor, there is a red box highlighting a button labeled 'Add a task to Agent job 1'.

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.

Pipeline
Build pipeline

Get sources
SmartHotel360 master

Agent job 1
Run on agent

PowerShell Script
PowerShell

PowerShell Version 2.*

Display name * PowerShell Script

Type File Path

Script Path * HelloWorld.ps1

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

1. Select **Build and Release**, and then choose **Builds**.

OurProject Dashboards Code Work ... | ⚙ Search wiki in this project

OurProject Files Commits Pushes Branches Tags Build and Release Builds

master OurProject / Type to find a file or folder... Test Releases Wiki Library Task Groups Deployment Groups

OurProject ... Contents History README Name ↑ Last change

HelloWorld.ps1 9 minutes ago

README.md 17 minutes ago

2. Create a new pipeline.

OurProject Dashboards Build and Release ... | ⚙ Search wiki in this project

Builds Releases Library Task Groups Deployment Groups

Build Definitions Build ID or build number + New + Import

Mine Definitions Queued

3. Start with an **empty pipeline**

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

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

Tasks Variables Triggers Options Retention History

Process Build process

Get sources OurProject master

+ Add Task

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.

The screenshot shows the 'Tasks' tab of the pipeline editor. On the left, there's a list of tasks: 'Process' (Build process), 'Get sources' (OurProject, master), and a selected 'PowerShell Script' task. The 'PowerShell Script' task has its 'File Path' set to 'HelloWorld.ps1'. A red box highlights the '...' button next to the script path field.

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

1. Select **Azure Pipelines**, and then the **Builds** tab.

The screenshot shows the Azure DevOps navigation bar. The 'Code' tab is selected, indicated by a red box. A dropdown menu for 'Build & Release' is open, with 'Builds' highlighted by a red box. Other options in the dropdown include 'Releases', 'Packages', 'Library', 'Task Groups', 'Deployment Groups*', and 'Explorer'.

2. Create a new pipeline.

The screenshot shows the 'Build & Release' page. The 'Builds' tab is selected. A red box highlights the '+ New' button, which is used to start a new pipeline definition.

3. Start with an **empty pipeline**.

4. Select **Pipeline** and specify whatever **Name** you want to use.

5. On the **Options** tab, select **Default** for the **Agent pool**, or select whichever pool 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 selected in the build pipeline editor. On the left, a list of tasks includes 'Get sources', 'PowerShell Script' (which is currently selected and highlighted in blue), and '+ Add Task'. The right side shows the configuration for the selected 'PowerShell Script' task. It has a 'Display name' of 'PowerShell Script', a 'Type' of 'File Path', and a 'Script Path' set to 'HelloWorld.ps1'. The 'HelloWorld.ps1' entry in the dropdown has a red box around its three-dot ellipsis button.

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

A build pipeline is the entity through which you define your automated build pipeline. In the build pipeline, 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 pipeline.

Publish an artifact from your build

A typical build produces an artifact that can then be deployed to various stages 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 (+) to add a task to **Job 1**.
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 pipeline editor. On the left, a list of tasks includes 'Get sources', 'PowerShell Script', and 'Publish Artifact: drop' (which is currently selected and highlighted in blue). The right side shows the configuration for the selected 'Publish Artifact: drop' task. It has a 'Display name' of 'Publish Artifact: drop', a 'Path to publish' of 'HelloWorld.ps1', an 'Artifact name' of 'drop', and an 'Artifact publish location' of 'Visual Studio Team Services/TFS'. All these configuration fields are enclosed in a large red rectangular box.

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

Artifact name: Enter **drop**.

Artifact publish location: Select **Azure Artifacts/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 of an Azure Pipelines build pipeline. The pipeline consists of three tasks: 'Get sources', 'PowerShell Script', and 'Publish Artifact: drop'. The 'Publish Artifact: drop' task is currently selected. On the right, there are options for publishing artifacts, including a 'Display name' field set to 'Publish Artifact: drop', and configuration fields for 'Path to Publish' (containing 'HelloWorld.ps1'), 'Artifact Name' (containing 'drop'), and 'Artifact Type' (set to 'Server'). A red box highlights the 'Path to Publish' field.

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

Artifact Name: Enter `drop`.

Artifact Type: Select **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 Azure Pipelines](#).

Enable continuous integration (CI)

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

A continuous integration trigger on a build pipeline 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 pipeline.

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.

- [New navigation](#)

- Previous navigation

The screenshot shows the Azure DevOps Pipelines interface. At the top, there's a breadcrumb navigation: regius / FabrikamFiber Web / Pipelines. Below it, a pipeline card for 'FabrikamFiber Web-Cl' is displayed, showing a green status icon with a checkmark and the text 'Build #116 has been queued.' A large green button with a plus sign is visible on the left.

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.

- New navigation
- Previous navigation

The screenshot shows the Azure DevOps Pipeline summary page for 'FabrikamFiber Web-Cl'. On the left, there's a summary card for 'Agent job 1 Job' with a green checkmark icon. The main area shows the build log for a 'PowerShell Script' task. The log output is as follows:

```

1 2018-08-27T17:30:29.8976103Z ##[section]Starting: PowerShell Script
2 2018-08-27T17:30:29.8988064Z ====
3 2018-08-27T17:30:29.8988307Z Task : PowerShell
4 2018-08-27T17:30:29.8988513Z Description : Run a PowerShell script on Windows, macOS, or Linux.
5 2018-08-27T17:30:29.8988736Z Version : 2.136.0
6 2018-08-27T17:30:29.8988923Z Author : Microsoft Corporation
7 2018-08-27T17:30:29.8989137Z Help : [More Information](https://go.microsoft.com/fwlink/?LinkID=857000)
8 2018-08-27T17:30:29.8989380Z ====
9 2018-08-27T17:30:32.6103326Z Generating script.
10 2018-08-27T17:30:32.6193947Z Formatted command: . 'D:\a\1\s\HelloWorld.ps1'
11 2018-08-27T17:30:32.8474601Z ##[command]"C:\Windows\System32\WindowsPowerShell\v1.0\powershell.exe" -
12 2018-08-27T17:30:33.0990683Z Hello world
13 2018-08-27T17:30:33.2699756Z ##[section]Finishing: PowerShell Script
14

```

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

- New navigation
- Previous navigation

The screenshot shows the Microsoft DevOps Pipelines interface for a project named "FabrikamFiber Web". The pipeline has completed successfully, indicated by a green checkmark icon. The pipeline ID is 162. The pipeline details show it was triggered by a manual build from the "master" branch of the "SmartHotel360" repository, with commit hash 68131ea and the file "Updated HelloWorld.ps1". The pipeline summary tab is selected, while other tabs like Logs, Code coverage*, Tests, Artifacts, Release, Edit, and Queue are also present. The "Queue" tab has a red box around it. Below the tabs, the "Progression" section is shown, featuring a timeline with two items: "Deployments" (0 items) and "Build artifacts published" (1 item). The "File container" artifact is highlighted with a red box.

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.

The screenshot shows the Microsoft DevOps Builds dashboard. The navigation bar includes "Builds", "Releases", "Library", "Task Groups", and "Deployment Groups". Below the navigation, there's a breadcrumb trail: "... > OurProject-Cl". A green notification box at the bottom states "Build #7 has been queued." with a checkmark icon. The number "7" is highlighted with a red box.

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.

The screenshot shows the Azure Pipelines interface. On the left, a sidebar lists build steps: Initialize Agent, Initialize Job, Get Sources, PowerShell Script, Publish Artifact: drop, Post Job Cleanup, Finalize build, and Report build status. The main area displays a green banner stating "Build succeeded". Below it, a summary indicates the build ran for 4 seconds on a Hosted Agent and completed 1 second ago. The "Console" tab is selected, showing the command-line output of the PowerShell script:

```
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
```

4. Go to the build summary.

This screenshot shows the build summary for build 1722. The "Initialize Agent" step is highlighted with a red box. The main summary area shows a green "Build succeeded" banner and a duration of 31 seconds. The "Console" tab is selected, displaying the same PowerShell log output as the previous screenshot.

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

This screenshot shows the build summary for build 1722 with the "Artifacts" tab selected. A red box highlights the "Explore" button. An "Artifacts Explorer" modal window is open, listing artifacts: "drop" and "HelloWorld.ps1".

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 **Azure Pipelines**. 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.

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 Azure DevOps interface for a build named 'Build 1722'. The 'Build' tab is selected. The build status is 'Build succeeded'. The log output shows the PowerShell script running and printing '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 Azure DevOps interface for a build named 'Build 1722'. The 'Build' tab is selected. The build status is 'Build succeeded'. The log output shows the PowerShell script running and printing 'Hello world' to the console. The URL 'Hello world / Build 1722 / Build' is highlighted with a red box.

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

Hello world / Build 1722 Build not retained

Edit build definition Queue new build... Download all logs as zip Release

Build succeeded

Build 1722
Ran for 31 seconds (Hosted), completed 15.4 minutes ago

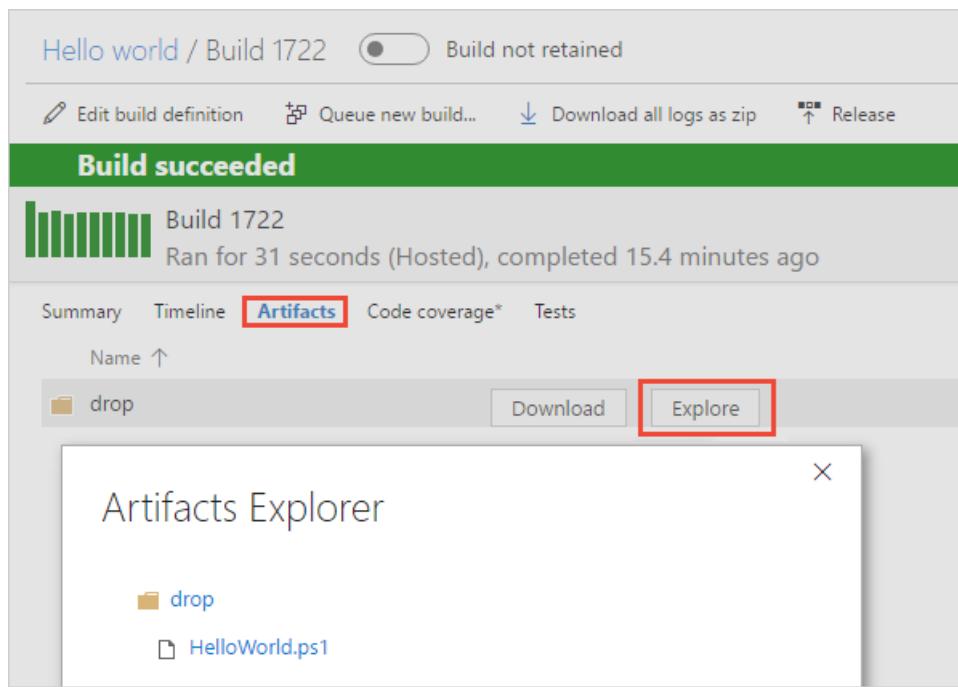
Summary Timeline **Artifacts** Code coverage* Tests

Name ↑

drop

Artifacts Explorer

drop
HelloWorld.ps1



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 **Build and Release**. 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 pipeline a bit more interesting. Then we'll commit a change to a script and watch the CI pipeline run automatically to validate the change.

1. Edit your build pipeline.
2. On the **Tasks** tab, select the PowerShell script task.
3. Add these arguments.
 - New navigation
 - Previous navigation

regius / FabrikamFiber Web / Pipelines

FW ... > FabrikamFiber Web-Cl

Tasks Variables Triggers Options Retention History Save & queue Discard Summary Queue ...

Pipeline Build pipeline

Get sources SmartHotel360 master

Agent job 1 Run on agent

PowerShell Script PowerShell

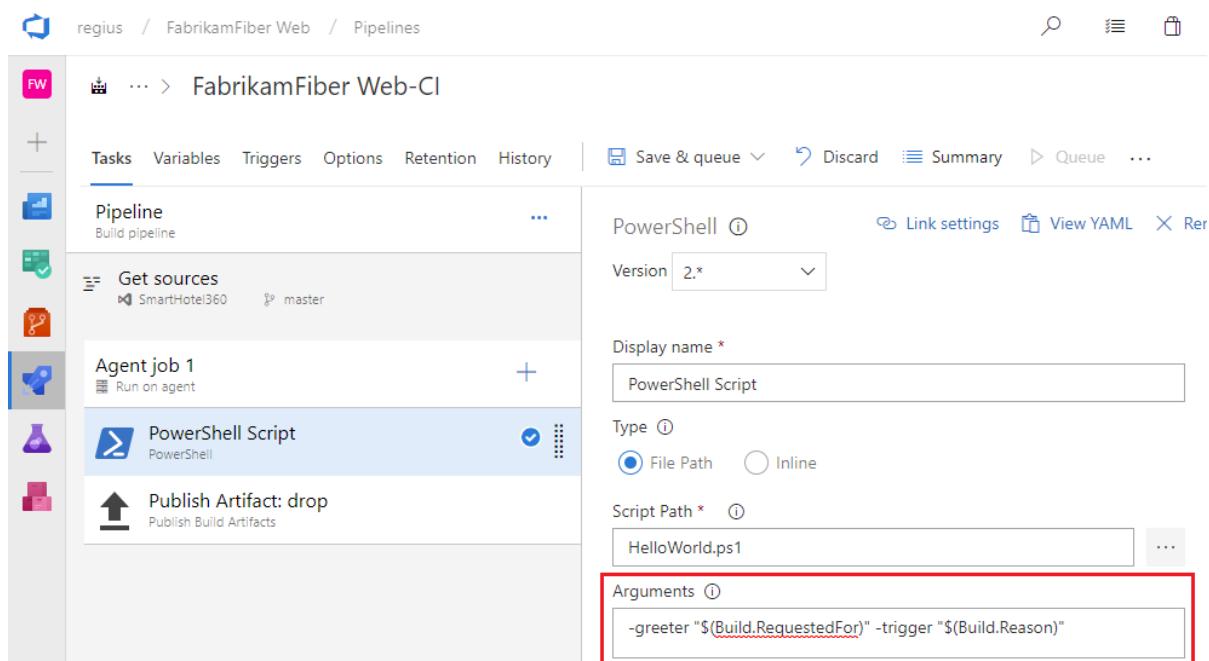
Published Artifacts: drop Publish Build Artifacts

Display name * PowerShell Script

Type File Path

Script Path * HelloWorld.ps1

Arguments -greeter "\$(Build.RequestedFor)" -trigger "\$(Build.Reason)"



The screenshot shows the Azure DevOps build pipeline editor. On the left, under the 'Tasks' tab, there is a list of steps: 'Get sources' (with 'OurProject' and 'master' selected), 'PowerShell Script' (selected, with a checkmark icon), and 'Publish Artifact: drop' (with 'Publish Build Artifacts' selected). Below these is a '+ Add Task' button. On the right, the configuration for the selected 'PowerShell Script' task is shown. It includes fields for 'Display name' (set to 'PowerShell Script'), 'Type' (set to 'File Path'), 'Script Path' (set to 'HelloWorld.ps1'), and 'Arguments' (containing the command '-greeter "\$(Build.RequestedFor)" -trigger "\$(Build.Reason)"'). The 'Arguments' field is highlighted with a red border.

Arguments

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

4. Save the build pipeline.
 5. Go to your **Files in Azure Repos** (the **Code** hub in the previous navigation and TFS).
 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.
  1. Go to **Azure Pipelines** and select **Queued**. Notice under the **Queued or running** section that a build is automatically triggered by the change that you committed.
  1. Go to the **Build and Release** page and select **Queued**. Notice under the **Queued or running** section that a build is automatically triggered by the change that you committed.
  1. Select the new build that was created and view its log.
  2. 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.
- [New navigation](#)
  - [Previous navigation](#)

```

1 2018-08-30T17:33:29.1723775Z ##[section]Starting: PowerShell Script
2 2018-08-30T17:33:29.1729508Z =====
3 2018-08-30T17:33:29.1729715Z Task : PowerShell
4 2018-08-30T17:33:29.1729878Z Description : Run a PowerShell script on Windows, macOS, or Linux.
5 2018-08-30T17:33:29.1730038Z Version : 2.136.0
6 2018-08-30T17:33:29.1730205Z Author : Microsoft Corporation
7 2018-08-30T17:33:29.1730372Z Help : [More Information](https://go.microsoft.com/fwlink/?LinkId=109141)
8 2018-08-30T17:33:29.1730567Z =====
9 2018-08-30T17:33:30.9668773Z Generating script.
10 2018-08-30T17:33:30.9756003Z Formatted command: . 'D:\a\1\s\HelloWorld.ps1' -greeter "Elijah Batkoski"
11 2018-08-30T17:33:31.0882200Z =====
12 2018-08-30T17:33:31.3101400Z Hello world from Elijah Batkoski
13 2018-08-30T17:33:31.3107687Z Trigger: Manual
14 2018-08-30T17:33:31.3145161Z ##[section]Finishing: PowerShell Script
15

```

**Hello world / Build 1723 / Build / PowerShell Script**

**Build succeeded**

PowerShell Script  
Ran for 1 seconds (Hosted Agent), completed 74 seconds

**Logs**

```

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 pipeline. What's next?

You've just created a build pipeline 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 pipelines. Or, if you prefer, you can [skip ahead](#) to create a build pipeline for your app.

## Create a release pipeline

Define the process for running the script in two stages.

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

- New navigation
- Previous navigation

All pipelines > + New release pipeline Save

Pipeline Tasks Variables Retention Options History

**Artifacts** | + Add

\_FabrikamFiber Web-Cl

Schedule not set

**Stages** | + Add

QA  
1 job, 0 task

**Continuous deployment trigger**  
Build: \_FabrikamFiber Web-Cl

Enabled  
Creates a release every time a new build is available.

Build branch filters ⓘ  
No filters added.  
+ Add | ↴

**Pull request trigger**  
Build: \_FabrikamFiber Web-Cl

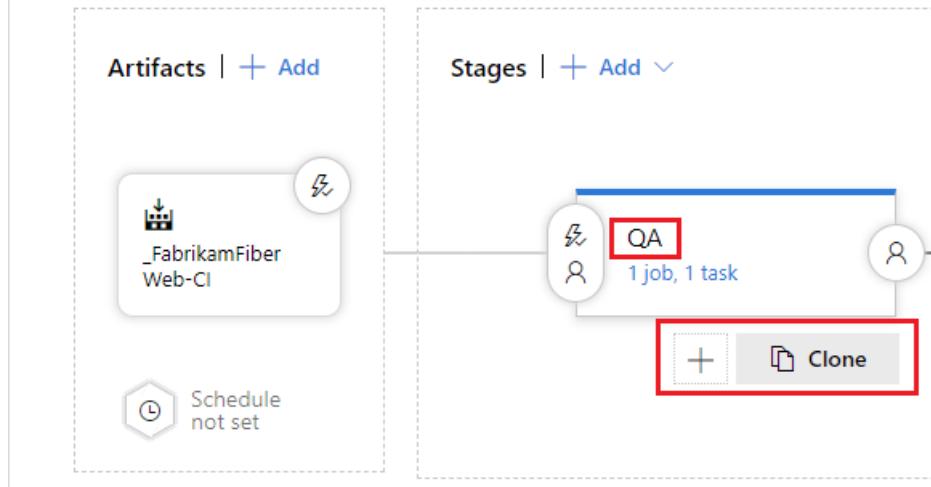
Disabled

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

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

- On the **Pipeline** tab, select the **QA** stage and select **Clone**.

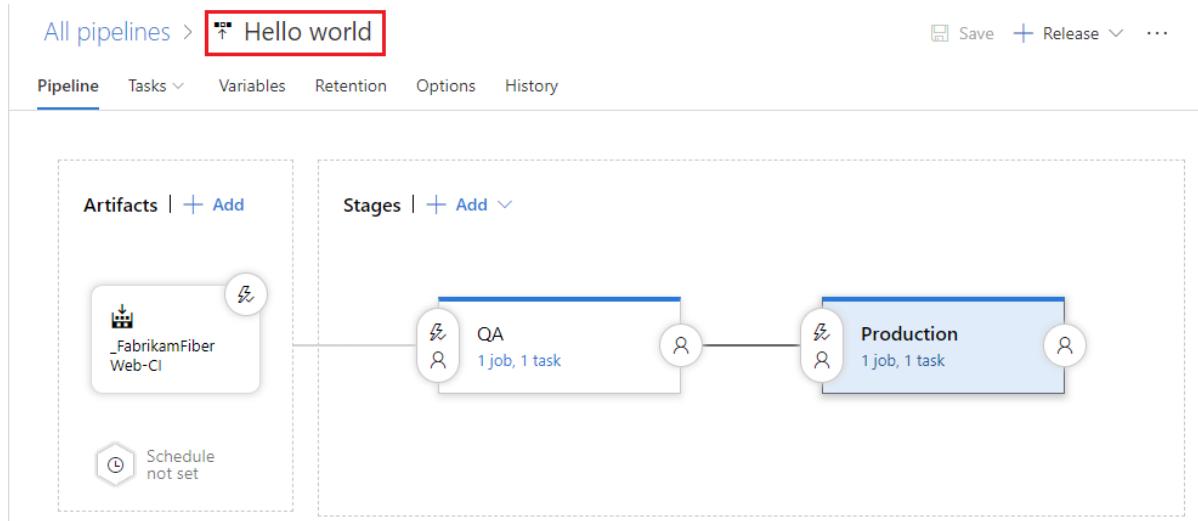
- New navigation
- Previous navigation



14. Rename the cloned stage **Production**.

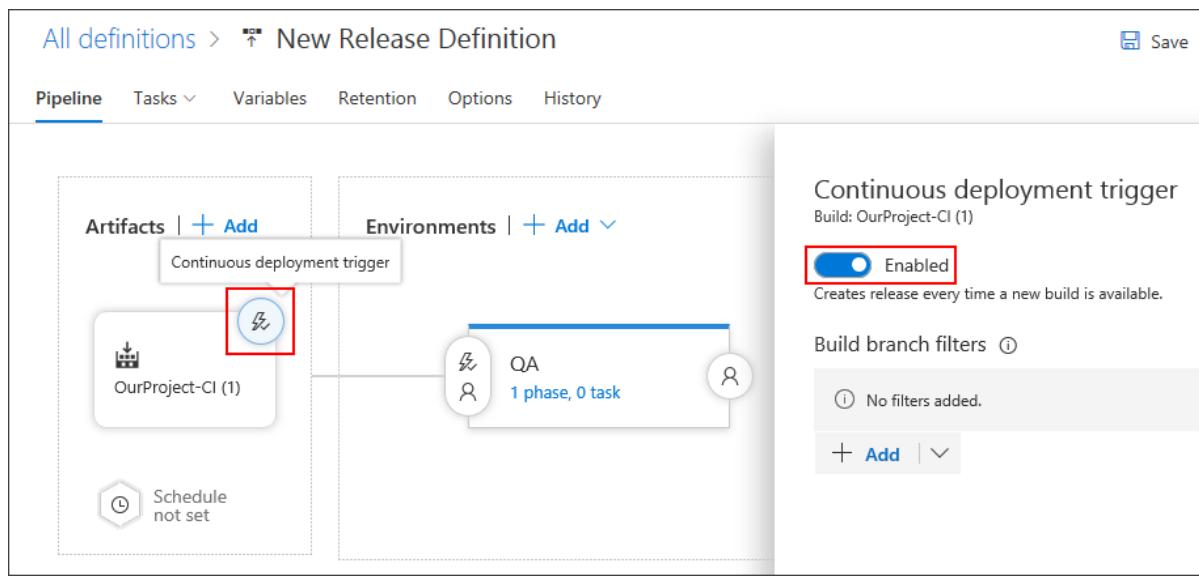
15. Rename the release pipeline **Hello world**.

- New navigation
- Previous navigation



16. Save the release pipeline.

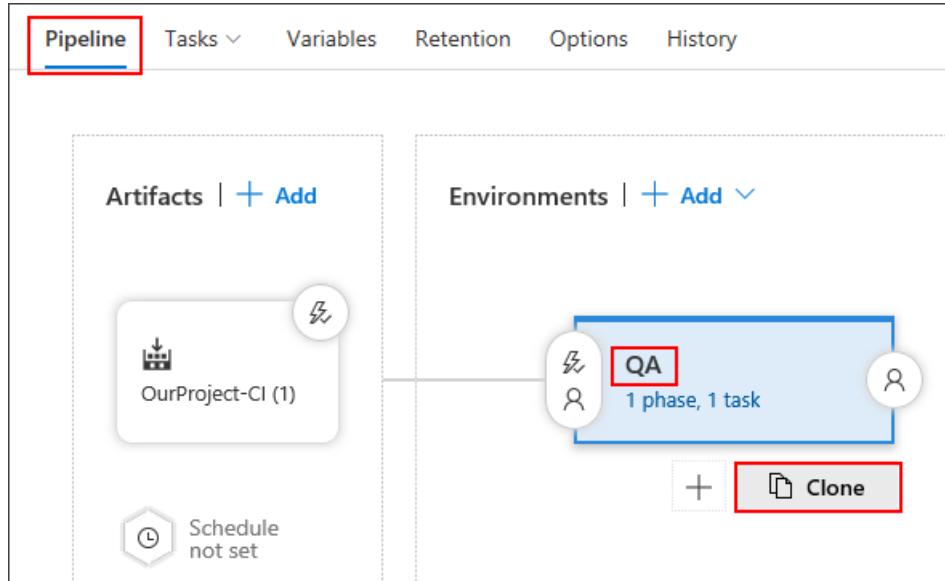
1. Go to the **Build and Release** tab, and then select **Releases**.
2. Select the action to create a **New pipeline**. If a release pipeline is already created, select the plus sign (+) and then select **Create a release definition**.
3. Select the action to start with an **Empty definition**.
4. Name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



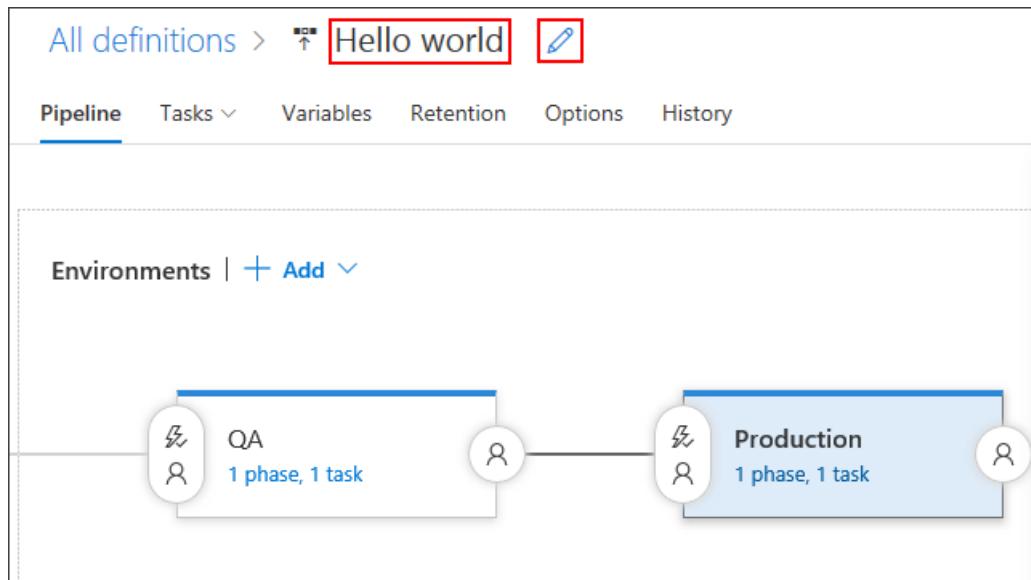
7. Select the **Tasks** tab and select your **QA** stage.
8. Select the plus sign (+) for the job to add a task to the job.
9. On the **Add tasks** dialog box, select **Utility**, locate the **PowerShell** task, and then select its **Add** button.
10. On the left side, select your new **PowerShell** 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** stage and select **Clone**.



14. Rename the cloned stage **Production**.
15. Rename the release pipeline **Hello world**.



16. Save the release pipeline.

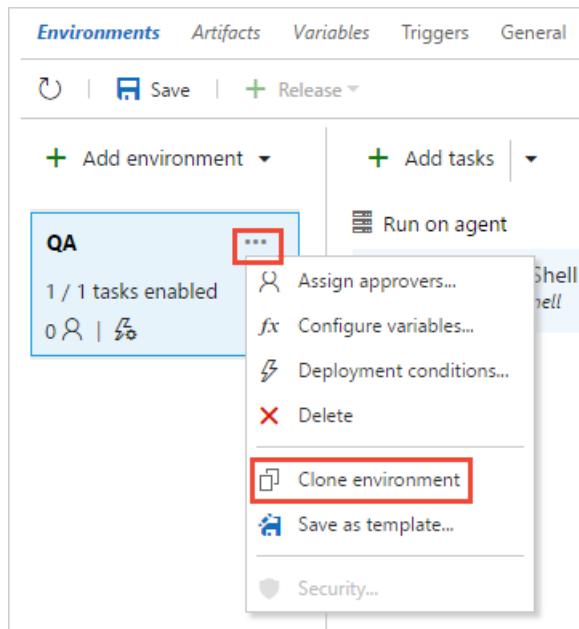
1. Go to **Azure Pipelines**, and then to the **Releases** tab.
2. Select the action to create a **New pipeline**.
3. On the dialog box, select the **Empty** template and select **Next**.
4. Make sure that your **Hello world** build pipeline that you created above is selected. Select **Continuous deployment**, and then select **Create**.
5. Select **Add tasks** in the stage.
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 stage **QA**.

The screenshot shows the configuration screen for a new release definition. The top navigation bar includes tabs for Environments, Artifacts, Variables, Triggers, General, Retention, and History. Below the tabs, there are buttons for Refresh, Save, and Release. The left sidebar shows an 'Environments' section with a 'QA' environment selected, indicated by a red box. The main area shows a 'Run on agent' task named 'PowerShell Script' with the command 'PowerShell'. To the right, there is a panel for the 'PowerShell' task with fields for Type, Script Path, and Arguments.

10. **Clone** the **QA** stage.



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

11. Rename the new stage **Production**.
12. Rename the release pipeline **Hello world**.

Definition\*: Hello world

Environments Artifacts Variables Triggers General Retention

QA ...  
1 / 1 tasks enabled  
0 R | ↗

Production ...  
1 / 1 tasks enabled  
0 R | ↗

Run on agent  
PowerShell Script PowerShell

13. Save the release pipeline.

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

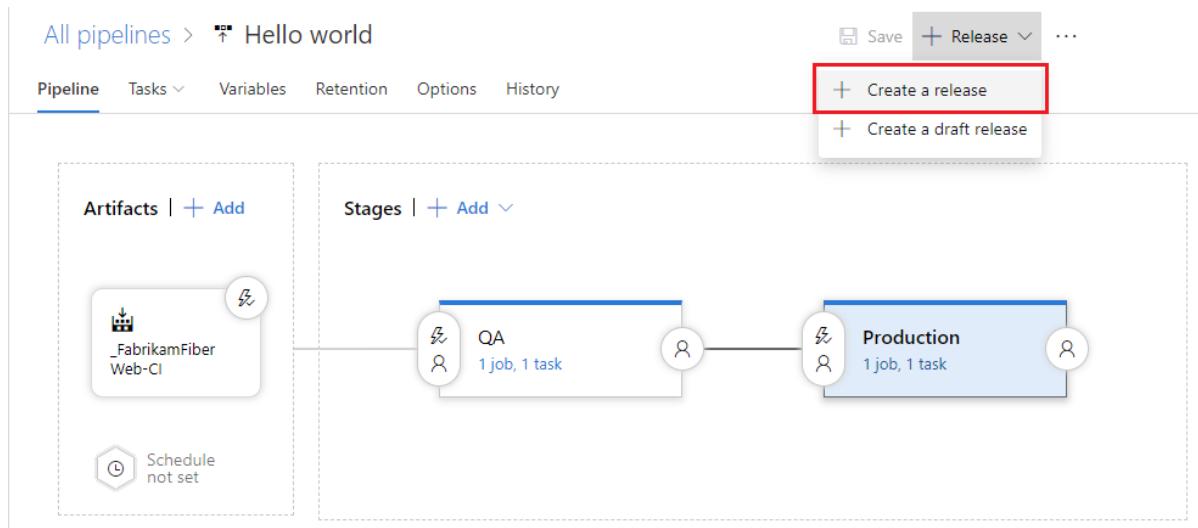
Also, notice that we used some variables in our script arguments. In this case, we used **release variables** instead of the build variables we used for the build pipeline.

## Deploy a release

Run the script in each stage.

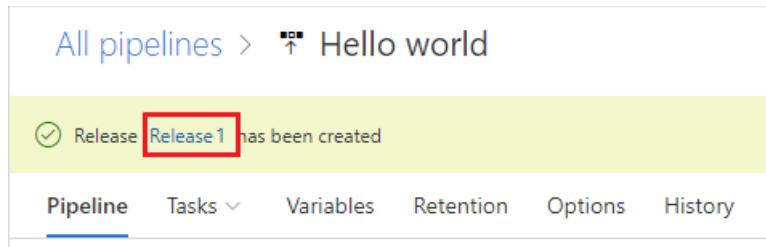
1. Create a new release.

- New navigation
- Previous navigation



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

- New navigation
- Previous navigation



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

- New navigation
- Previous navigation

↑ Hello world > Release-1

Pipeline Variables History | + Deploy | ⏺ Cancel | ⏴ Refresh | → Release (old view)

The screenshot shows the Azure DevOps Release interface. On the left, under 'Release', there is a summary of a manually triggered release by Elijah Batkoski on 8/27/2018 at 6:16 PM. It lists artifacts from 'FabrikamFiber Web-Cl' (118) and 'master'. On the right, under 'Stages', there are two stages: 'QA' (Succeeded) and 'Production' (Not deployed). A red box highlights the 'Logs' button for the QA stage.

1. Create a new release.

All definitions > ↑ Hello World

Save + Release ...

+ Create release (highlighted with a red box)

+ Create draft release

Pipeline Tasks Variables Retention Options History

The screenshot shows the Azure DevOps Pipeline interface. It displays 'Artifacts' (OurProject-Cl (2)) and 'Environments' (QA and Production). The QA environment is shown as '1 phase, 1 task'. A red box highlights the '+ Create release' button in the top right corner.

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

All definitions > ↑ Hello World

Release **Release-2** has been created

Pipeline Tasks Variables Retention Options History

The screenshot shows the Azure DevOps Pipeline interface with a green banner indicating 'Release Release-2 has been created'. The pipeline tabs (Pipeline, Tasks, Variables, Retention, Options, History) are visible at the bottom.

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

Hello World / Release-2

Summary Environments Artifacts Variables General Commits Work items Tests **Logs**

↻ | + | Deploy | Save | Abandon | Download all logs as zip |

| Step                    | Action | Log                                                                                                                                                                                                |
|-------------------------|--------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| QA                      | ...    | Agent queue: Hosted VS2017  <br>Starting: Initialize Job<br>*****<br>Prepare release directory.<br>ReleaseId=1, TeamProjectId=eb7<br>Release folder: d:\a\r1\qa<br>Environment variables available |
| Pre-deployment approval | ...    |                                                                                                                                                                                                    |
| Agent phase             | ...    |                                                                                                                                                                                                    |
| Production              | ...    |                                                                                                                                                                                                    |

1. Create a new release.

Definition: Hello world | Releases

Environments Artifacts Variables Triggers General Retention

↻ | Save | + Release | **Create Release**

+ Add environment QA

QA 1 / 1 tasks enabled 0 8 | 5

Create Draft Release Agent PowerShell Script PowerShell

2. Open the release that you just created.

Hello world | Edit

Overview Releases Deleted

↻ | + Release |

Release **Release-2** has been created.

| Lock      | Title | Environments |
|-----------|-------|--------------|
| Release-2 | ...   |              |

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

Hello world / Release-1

Summary Environments Artifacts Variables General Commits Work items Tests **Logs**

↻ | + | Deploy | Save | Abandon | Download all logs as zip |

| Step                    | Action | Log                                                                                                                                                                                       |
|-------------------------|--------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| QA                      | ...    | Agent: Hosted Agent<br>Starting: Initialize Job<br>*****<br>Prepare release directory.<br>ReleaseId=1, TeamProjectId=eb7<br>Release folder: d:\a\r1\qa<br>Environment variables available |
| Pre-deployment approval | ...    |                                                                                                                                                                                           |
| Run on agent            | ...    |                                                                                                                                                                                           |

You can track the progress of each release to see if it has been deployed to all the stages. 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 pipeline.

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 stage.

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** stage, and then in the **Production** stage.

- New navigation
  - Previous navigation

✓ PowerShell Script

```
1 2018-08-27T18:31:42.7222014Z ##[section]Starting: PowerShell Script
2 2018-08-27T18:31:42.7228660Z =====
3 2018-08-27T18:31:42.7228871Z Task : PowerShell
4 2018-08-27T18:31:42.7229057Z Description : Run a PowerShell script on Windows, macOS, or Linux.
5 2018-08-27T18:31:42.7229253Z Version : 2.136.0
6 2018-08-27T18:31:42.7229424Z Author : Microsoft Corporation
7 2018-08-27T18:31:42.7229609Z Help : [More Information](https://go.microsoft.com/fwlink/?LinkId=613736)
8 2018-08-27T18:31:42.7229827Z =====
9 2018-08-27T18:31:45.5150962Z Generating script.
10 2018-08-27T18:31:45.5196754Z Formatted command: . 'D:\a\r1\a\FabrikamFiber Web-CI\drop\HelloWorld.ps1' -greeter "Elijah Batkoski"
11 2018-08-27T18:31:45.6901750Z ##[command]"C:\Windows\System32\WindowsPowerShell\v1.0\powershell.exe" -NoLogo -NoProfile -NonInteractive
12 2018-08-27T18:31:45.9197804Z Hello world from Elijah Batkoski
13 2018-08-27T18:31:45.9203491Z Trigger: FabrikamFiber Web-CI
14 2018-08-27T18:31:45.9208413Z Now that you've got CI/CD, you can automatically deploy your app every time your team checks in code.
15 2018-08-27T18:31:46.0566737Z ##[section]Finishing: PowerShell Script
16
```

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                             |
| v  Production                           | ...    | 2 2018-04-25T14:53:54.9746441Z =====                                                              |
| ✓ Pre-deployment approval               |        | 3 2018-04-25T14:53:54.9746591Z Task : PowerShell                                                  |
| v ✓ 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\scripts\HelloWorld.ps1' -g 1 |
|                                         |        | 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                                |
|                                         |        | 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 d 13 2017-04-11T12:54:59.4641245Z ##[section]Finishing: PowerShell Script |
|                          |        | 14                                                                                                                                                                                                                                                                                                                                                                   |

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

## Next steps

You've just learned the basics of using the visual designer to create and run a pipeline. Now you're ready to configure your build pipeline 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 | Node.js         |
| 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 Azure Repos 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
  - [Azure Pipelines](#)
  - Git service providers such as GitHub and Bitbucket
  - Subversion

### **How do I replicate a pipeline?**

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

- [New navigation](#)
- [Previous navigation](#)

Builds Releases Packages Library Task Groups Deployment Groups\*

Build Definitions

Search all definitions + New

Mine All Definitions Queued XAML

↑ Folder / Name Default branch summary Queued

HelloWorld-CI

OurProject-CI

OurProject-Nightly

OurProject-PreDeployment

...

Queue new build...

Move definition

View definition summary

Edit...

Add to my favorites

Add to team favorites

Clone...

Export

Rename...

Save as a template...

Delete definition

Security...

Add to dashboard >

The screenshot shows the 'Build Definitions' section of the Azure DevOps interface. A context menu is open over a definition named 'HelloWorld-CI'. The menu includes options like 'Queue new build...', 'Move definition', 'Edit...', and several 'Clone...' variants. Three specific items are highlighted with red boxes: 'Clone...', 'Export', and 'Save as a template...'. The 'Save as a template...' option is at the bottom of the visible list.

The screenshot shows the 'Build Definitions' section of the Azure DevOps interface. At the top, there are tabs for 'Builds', 'Releases', 'Packages', 'Library', 'Task Groups', and 'Deployment Groups\*'. Below these, a search bar and a '+ New' button are visible. The main area shows a list of definitions under 'All Definitions': 'HelloWorld-CI', 'OurProject-CI', 'OurProject-Nightly', and 'OurProject-PreDeployment'. A context menu is open over the 'HelloWorld-CI' definition, listing options such as '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), 'Rename...', 'Save as a template...' (which is highlighted with a red box), 'Delete definition', 'Security...', and 'Add to dashboard'.

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

After you export a pipeline, you can import it from the **All pipelines** tab.

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

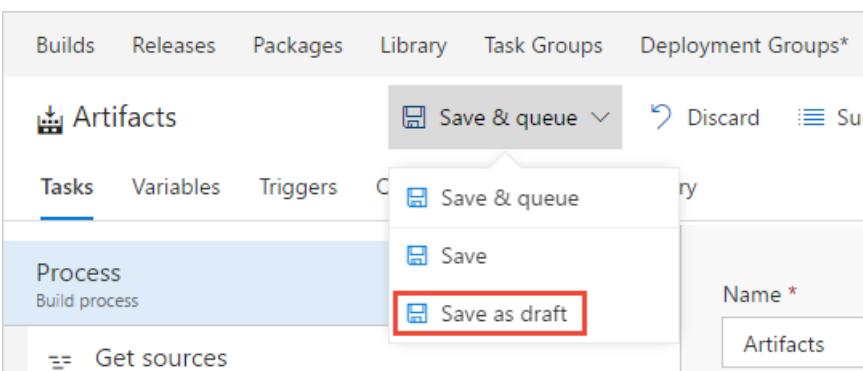
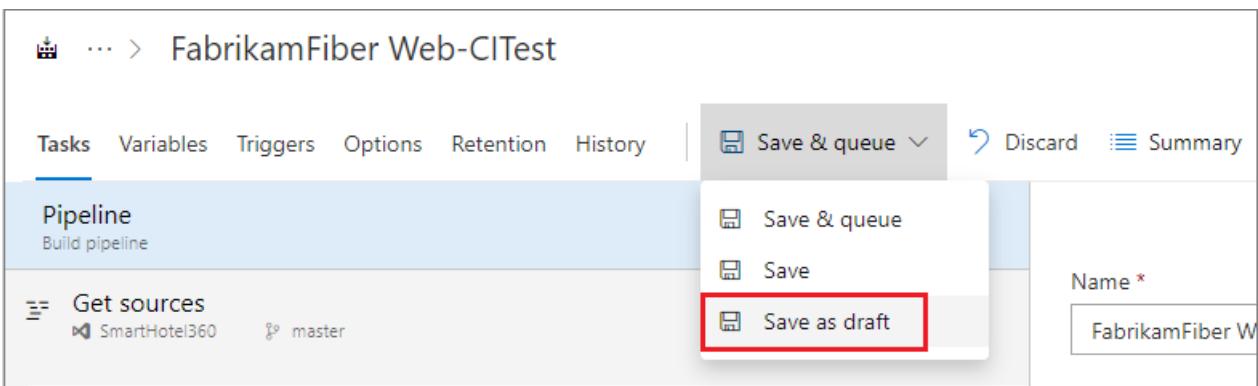
#### TIP

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 pipeline and you want to test some changes that are not yet ready for production, you can save it as a draft.

- [New navigation](#)
- [Previous navigation](#)



You can edit and test your draft as needed.

- [New navigation](#)
- [Previous navigation](#)

The screenshot shows the 'FabrikamFiber Web-CITest' pipeline in the list. On the left, there's a search bar and a 'New' button. Below it, a list of pipelines includes 'All build pipelines': 'FabrikamFiber Web-Cl' (highlighted with a red box), 'FabrikamFiber Web-CITest' (also highlighted with a red box), and 'PublicWebCl'. On the right, the pipeline details page is shown with tabs for 'History', 'Analytics', 'Edit' (highlighted with a red box), 'Queue', and more.

The screenshot shows the 'Build Definitions' list. The 'All Definitions' tab is selected. The list includes 'Artifacts' (selected and highlighted with a red box) and other definitions like 'Build.ArtifactStagingDirectory test', 'Build.BinariesDirectory test', and 'Build.BuildNumber\_Test'. A context menu is open over the 'Artifacts' definition, showing options: 'Queue new build...', 'Move definition', 'View definition summary', and 'Edit...' (highlighted with a red box).

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

- [New navigation](#)
- [Previous navigation](#)

The screenshot shows the Azure DevOps Pipeline editor interface. At the top, there's a breadcrumb trail: 'FabrikamFiber Web-CITest'. Below it is a toolbar with 'Tasks', 'Variables', 'Options', 'History', 'Save draft & queue', 'Discard', 'Summary', 'Queue', and a red-bordered 'Publish draft' button. A 'Pipeline' section shows a 'Get sources' task for 'SmartHotel360' on the 'master' branch. To the right, a 'Name \*' field is filled with 'FabrikamFiber Web-CITest'. Below this, another toolbar has 'Builds', 'Releases', 'Packages', 'Library', 'Task Groups', 'Deployment Groups\*', 'Explorer', 'Artifacts', 'Save draft & queue', and the red-bordered 'Publish draft' button.

Or, if you decide to discard the draft, you can delete it from the **All Pipeline** 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 [pool](#) 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 pipeline settings?

To learn more about build pipeline settings, see:

- [Getting sources](#)
- [Tasks](#)
- [Variables](#)
- [Triggers](#)
- [Options](#)
- [Retention](#)
- [History](#)

## How do I programmatically create a build pipeline?

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

### NOTE

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

# Track user stories, tasks, and features

1/26/2019 • 12 minutes to read • [Edit Online](#)

**Azure Boards | Azure DevOps Server 2019 | TFS 2018 | TFS 2017 | TFS 2015 | TFS 2013**

This article walks you through creating user stories and tasks using a Kanban board for the Agile process.

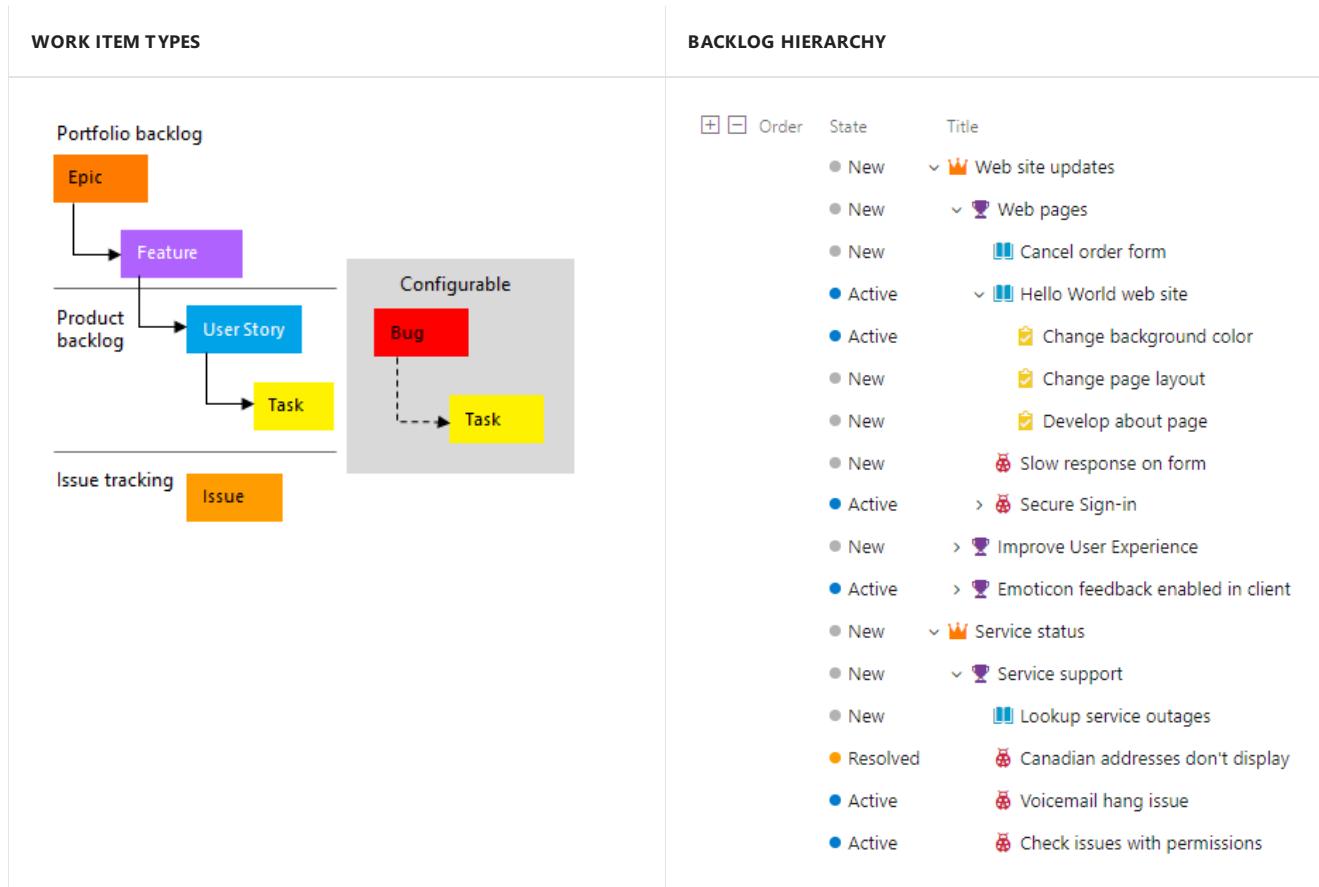
## IMPORTANT

**Select the version that meets your location and process:** We are experimenting with a new acquisition model which is currently available for users located in the United States and that sign up through [azure.com/boards](#). This model supports a new Basic process.

For International users and others who sign up through another method, the Agile process is used. Select your version of this article based on your location and process used.

- [Basic process](#)
- [Agile process](#)

Your first project uses the default Agile process which provides several work item types—for example, user stories, tasks, bugs, features, and epics among others—to plan and track work. We recommend you start by adding user stories. If you need to group them into a hierarchy, you can define features. If you want to track additional details of work, you can add tasks to a user story.



Within each work item form, you can describe the work to be done, assign work to project contributors, track status, and collaborate with others through the Discussion section.

Here we show how to add issues and child tasks from the web portal and add details to those work items .

# Open the User Stories board

The User Stories Kanban board is the best tool for quickly adding user stories and child tasks. To open, choose **Boards>Boards**.

This screenshot shows the Azure DevOps Boards interface. On the left, a sidebar lists options: Fabrikam (selected), Overview, Boards (highlighted with a red box and number 2), Backlogs, and Sprints. At the top, the project name is "fabrikam / Fabrikam Fiber" (highlighted with a red box and number 1). Below it, the team is set to "Fabrikam Fiber Team" (highlighted with a red box and number 3). The main area displays a Kanban board with columns: Backlog, Active, and Resolved. The Active column shows three items: "Hello World web site" by Jamal Hartnett (Priority 2, 0/4 done), "Secure sign-in" by Raisa Pokrovskaya (Priority 1, 0/4 done), and "Cancel form" by Christie Church (Priority 3, 0/4 done).

The Features Kanban board is the best tool for quickly adding features and user stories that are children of those features. To open the Features board from the User Stories board, choose **Features** from the board selector.

This screenshot shows the User Stories board with the board selector open. The selector shows three options: Epics, Features (highlighted with a red box and arrow), and Stories. The main board area shows the same three items as the previous screenshot: "Hello World web site", "Secure sign-in", and "Cancel form".

## Add user stories

1. From the User Stories board, choose **New item** and start adding those stories you want to track.

This screenshot shows the User Stories board with the "New item" button highlighted with a red box. The board has columns: New, Active (0/10), Resolved (0/10), and Closed. A tooltip "Change initial view" is visible over the first item in the backlog.

2. Enter return and the system assigns a work item ID to the user story.

[View as backlog](#)
[Stories](#) [Filter](#) [Settings](#) [Copy](#)

New

Active

0/10

Resolved

0/10

Closed

&lt;

[New item](#)

1 Change initial view

State

New

- To track the work you want to manage, add as many user stories that you need.

## Add details to a user story

- Choose the user story title to open it. Change one or more field values, add a description, or make a note in the **Discussion** section. You can also choose the [Attachments](#) tab and drag-and-drop a file to share the file with others.

For example, here we assign the story to Raisa Pokrovskaya and we add a discussion note, at-mentioning Raisa.

**USER STORY 1\***

**1 Change initial view**

Raisa Pokrovskaya 0 comments Add tag [Save & Close](#) Follow ...

|        |     |           |                |
|--------|-----|-----------|----------------|
| State  | New | Area      | Fabrikam Fiber |
| Reason | New | Iteration | Fabrikam Fiber |

[Details](#) [Related Work items](#) [Link](#) [Unlink](#)

|                                                                 |                       |
|-----------------------------------------------------------------|-----------------------|
| <b>Description</b>                                              | <b>Planning</b>       |
| Switch initial view to the updated design.                      | Story Points          |
|                                                                 | Priority              |
|                                                                 | 2                     |
|                                                                 | Risk                  |
| <b>Acceptance Criteria</b>                                      | <b>Classification</b> |
| Click to add Acceptance Criteria                                | Value area            |
|                                                                 | Business              |
| <b>Discussion</b>                                               | <b>Development</b>    |
| @Raisa Pokrovskaya - Can you make this happen in the next week? | Related Work          |

B / U = A ab A ↪ ↩ ...

### NOTE

You can only assign work to a user who has been added to the project.

- Choose **Save & Close** when done.

## Field descriptions

| FIELD               | DEFINITION                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
|---------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Title               | Enter a description of 255 characters or less. You can always modify the title later.                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| Assigned To         | Assign the work item to the team member responsible for performing the work. Depending on the context you are working in, the drop-down menu will list only team members or contributors to the project.                                                                                                                                                                                                                                                                                                                                                  |
| State               | When the work item is created, the State defaults to the first state in the workflow. As work progresses, update it to reflect the current state.                                                                                                                                                                                                                                                                                                                                                                                                         |
| Reason              | Use the default first. Update it when you change state as need. Each State is associated with a default reason.                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| Area                | Choose the area path associated with the product or team, or leave blank until assigned during a planning meeting. To change the dropdown list of areas, see <a href="#">Define area paths and assign to a team</a> .                                                                                                                                                                                                                                                                                                                                     |
| Iteration           | Choose the sprint or iteration in which the work is to be completed, or leave it blank and assign it later during a planning meeting. To change the drop-down list of iterations, see <a href="#">Define iteration paths (aka sprints) and configure team iterations</a> .                                                                                                                                                                                                                                                                                |
| Description         | Provide enough detail to create shared understanding of scope and support estimation efforts. Focus on the user, what they want to accomplish, and why. Don't describe how to develop the product. Do provide sufficient details so that your team can write tasks and test cases to implement the item.                                                                                                                                                                                                                                                  |
| Acceptance Criteria | Provide the criteria to be met before the user story can be closed. Before work begins, describe the customer acceptance criteria as clearly as possible. Conversations between the team and customers to define the acceptance criteria will help ensure that your team understands your customers' expectations. The acceptance criteria can be used as the basis for acceptance tests so that you can more effectively evaluate whether an item has been satisfactorily completed.                                                                     |
| Priority            | A subjective rating of the issue or task it relates to the business. You can specify the following values:<br><br><b>1:</b> Product cannot ship without the successful resolution of the work item, and it should be addressed as soon as possible.<br><br><b>2:</b> Product cannot ship without the successful resolution of the work item, but it does not need to be addressed immediately.<br><br><b>3:</b> Resolution of the work item is optional based on resources, time, and risk.<br><br><b>4:</b> Resolution of the work item is not required. |
| Value Area          | The area of customer value addressed by the epic, feature, requirement, or backlog item. Values include: <ul style="list-style-type: none"><li>● <b>Architectural</b> : Technical services to implement business features that deliver solution</li><li>● <b>Business</b>: Services that fulfill customers or stakeholder needs that directly deliver customer value to support the business (Default)</li></ul>                                                                                                                                          |

|                            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
|----------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p><b>Story Points</b></p> | <p>Provide a relative estimate of the amount of work required to complete an issue.</p> <p>Most Agile methods recommend that you set estimates for backlog items based on relative size of work. Such methods include powers of 2 (1, 2, 4, 8) and the Fibonacci sequence (1, 2, 3, 5, 8, etc.). Use any numeric unit of measurement your team prefers.</p> <p>The estimates you set are used to calculate <a href="#">velocity</a> and <a href="#">forecast sprints</a>.</p> |
|----------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

## Update user story status

As work starts, drag the user story card from the **Backlog** column to the **Active** column. Once work is ready for review, move to the **Resolved** column. After it is reviewed and accepted, move to the **Closed** column.

| Backlog                                                                                                                                                                                                                                                                              | Active                                                                                                                                                                                                                                         | 9/5                                                                                                                                                                                                                                                                                           | Resolved                                                                                                                                                                                                                                          | 9/5                                                                                                                                                                                                                                                                     | Closed |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------|
| <div style="border: 1px solid #ccc; padding: 5px; display: flex; align-items: center;"> <span style="font-size: 2em; margin-right: 10px;">+</span> <span style="border: 1px solid #0078d4; padding: 2px 10px; border-radius: 5px; color: #0078d4;">New item</span> </div>            | <div style="display: flex; align-items: center;"> <span style="font-size: 1.5em; margin-right: 10px;">🔍</span> <span style="border: 1px solid #0078d4; padding: 2px 10px; border-radius: 5px; color: #0078d4;">Raisa Pokrovskaya</span> </div> | <span style="color: #0078d4;">Change initial view</span><br><span style="border: 1px solid #0078d4; border-radius: 50%; width: 20px; height: 20px; display: flex; align-items: center; justify-content: center; margin-right: 10px;"></span> <span>Raisa Pokrovskaya</span><br><span>5</span> | <div style="display: flex; align-items: center;"> <span style="font-size: 1.5em; margin-right: 10px;">🔍</span> <span style="border: 1px solid #0078d4; padding: 2px 10px; border-radius: 5px; color: #0078d4;">Hello World web site</span> </div> | <span style="color: #0078d4;">Cancel order form</span><br><span style="border: 1px solid #0078d4; border-radius: 50%; width: 20px; height: 20px; display: flex; align-items: center; justify-content: center; margin-right: 10px;"></span> <span>Christie Church</span> |        |
| <div style="border: 1px solid #ccc; padding: 5px; display: flex; align-items: center;"> <span style="font-size: 1.5em; margin-right: 10px;">🔍</span> <span style="border: 1px solid #0078d4; padding: 2px 10px; border-radius: 5px; color: #0078d4;">Welcome back page</span> </div> | <div style="display: flex; align-items: center;"> <span style="font-size: 1.5em; margin-right: 10px;">🔍</span> <span style="border: 1px solid #0078d4; padding: 2px 10px; border-radius: 5px; color: #0078d4;">Jamal Hartnett</span> </div>    | <span style="color: #0078d4;">GPS locator</span><br><span style="border: 1px solid #0078d4; border-radius: 50%; width: 20px; height: 20px; display: flex; align-items: center; justify-content: center; margin-right: 10px;"></span> <span>Jamal Hartnett</span><br><span>8</span>            | <div style="display: flex; align-items: center;"> <span style="font-size: 1.5em; margin-right: 10px;">🔍</span> <span style="border: 1px solid #0078d4; padding: 2px 10px; border-radius: 5px; color: #0078d4;">Jamal Hartnett</span> </div>       | <span style="color: #0078d4;">0/4</span>                                                                                                                                                                                                                                |        |

You can add or rename columns as needed, see [Customize your board](#).

## Add tasks to a user story

Task checklists provide a quick and easy way to track elements of work which are important to support completing a user story. In addition, you can assign individual tasks to different team members.

1. To start adding tasks, choose the \*\*\* actions icon for the story and select the **+ Add Task** option.

**New**

Active      0/10      Resolved

+
New item

**1 Change initial view**

Raisa Pokrovskaya

State      • New

...

- Open
- Edit title
- Move to iteration >
- + Add Task
- Delete

Enter a title for the task and type Enter when done.

**1 Change initial view**

Raisa Pokrovskaya

State      • New

**+ Add Task**

Prep images

2. If you have a number of tasks to add, simply keep typing your task titles and type Enter.

1 Change initial view  
Raisa Pokrovskaya  
State • New  
0/4  
+ Add Task  
Prep images (checked)  
Change colors (checked)  
Standard form factors (checked)  
About screen (checked)

3. You can mark a task as done, expand or collapse the task checklist, or reorder and reparent tasks.

| MARK A TASK AS DONE                                                                                                                                                                                                                                                                                                | REORDER AND REPARENT TASKS                                                                                                                                                                                                                                                                                                              | EXPAND OR COLLAPSE THE CHECKLIST                                                                                                                                                                                                                                                                       |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| To mark a task as complete, check the task checkbox. The task State changes to <b>Done</b> .<br><br><p>1 Change initial view<br/>Raisa Pokrovskaya<br/>State • New<br/>2/4<br/>+ Add Task<br/>Prep images (checked)<br/>Change colors (checked)<br/>Standard form factors (checked)<br/>About screen (checked)</p> | To reorder a task, drag it within the checklist. To reparent a task, drag it to another issue on the board.<br><br><p>1 Change initial view<br/>Raisa Pokrovskaya<br/>State • New<br/>0/4<br/>+ Add Task<br/>Prep images (checked)<br/>Change colors (unchecked)<br/>Standard form factors (unchecked)<br/>About screen (unchecked)</p> | To expand or collapse a task checklist, simply choose the task annotation.<br><br><p>1 Change initial view<br/>Raisa Pokrovskaya<br/>State • New<br/>2/4<br/>+ Add Task<br/>Prep images (checked)<br/>Change colors (unchecked)<br/>Standard form factors (unchecked)<br/>About screen (unchecked)</p> |

## Add details to a task

1. If you have details you want to add about a task, choose the title, to open it. Change one or more field values, add a description, or make a note in the **Discussion** section.

Here we assign the task to Christie Church.

**Description**

Prep new images for use on web site.

**Planning**

Priority  
2

Activity  
Design

**Effort (Hours)**

Original Estimate  
8

Remaining  
8

Completed  
0

**Development**

**Related Work**

2. Choose **Save & Close** when done.

### Field descriptions

In addition to the fields you can define for a user story, you can specify the following fields for a task to support capacity and time tracking.

| FIELD                             | DEFINITION                                                                                                                                                                                                                                                                                                                                   |
|-----------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <a href="#">Activity</a>          | The type of activity that is required to perform a task. To learn more about how this field is used, see <a href="#">Capacity planning</a> . Allowed values are: <ul style="list-style-type: none"> <li>• Deployment</li> <li>• Design</li> <li>• Development</li> <li>• Documentation</li> <li>• Requirements</li> <li>• Testing</li> </ul> |
| <a href="#">Original Estimate</a> | The amount of estimated work required to complete a task. Typically, this field doesn't change after it is assigned.<br><br>You can specify work in hours or in days. There are no inherent time units associated with this field.                                                                                                           |
| <a href="#">Completed Work</a>    | The amount of work spent implementing a task.                                                                                                                                                                                                                                                                                                |

|                       |                                                                                                                                                                                                                                                                                                                                               |
|-----------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Remaining Work</b> | <p>The amount of work remaining to complete a task. As work progresses, update this field. It's used to calculate <a href="#">capacity charts</a>, the <a href="#">sprint burndown chart</a>. If you divide a task into subtasks, specify hours for the subtasks only. You can specify work in any unit of measurement your team chooses.</p> |
|-----------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

## Capture comments in the Discussion section

Use the **Discussion** section within a form to add and review comments about the work under development.

### Discussion

 Add a comment. Use # to link a work item, ! to link a pull request, or @ to mention a person.

-  **Jamal Hartnett** commented just now  
@Christie Church - Assigning this to you
-  **Christie Church** commented less than a minute ago  
I've updated the storyboard per our discussions yesterday.
-  **Helena Petersen** commented 9 minutes ago  
@Christie Church, @Jamal Hartnett - Let's do an A/B test on the colors used in the form.
-  **Jamal Hartnett** commented 21 hours ago  
Make sure the standards guidelines are written in a similar manner to those done for account setup.

Use the **@mention** control to notify another team member about the discussion. Simply type @ and their name. Or, bring a group into the discussion by typing @ and the group name, such as a team or security group. To reference another issue, task, or work item, use the **#ID** control. Type # and a list of work items that you've recently referenced will appear from which you can select.

The rich text editor tool bar displays below the text entry area when you click your cursor within the each text box that can be formatted.

### Discussion

 [@Jamal Hartnett](#) note that this work item is dependent on [Product Backlog Item 358: Research architecture changes](#)

B / U               

Use the icons—@ at-mention, # #-work-item-ID, and  pull-request ID—to facilitate bringing others into the discussion or linking to work items or pull requests. Choose one of these icons and a menu displays with the most recent options that you've previously selected.

## Try this next

[Customize your board](#)

## Related articles

- [Index to field descriptions](#)
- [Add tags to issues or tasks](#)
- [Use @mentions in work items](#)

- Use #ID to link to work items

# Quickstart: Add, run, and update inline tests

2/15/2019 • 4 minutes to read • [Edit Online](#)

**Azure DevOps Services | Azure DevOps Server 2019 | TFS 2018 | TFS 2017 | TFS 2015 | TFS 2013**

In this quickstart, you learn how to add, run, and update inline tests in Azure DevOps Services.

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 also 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.

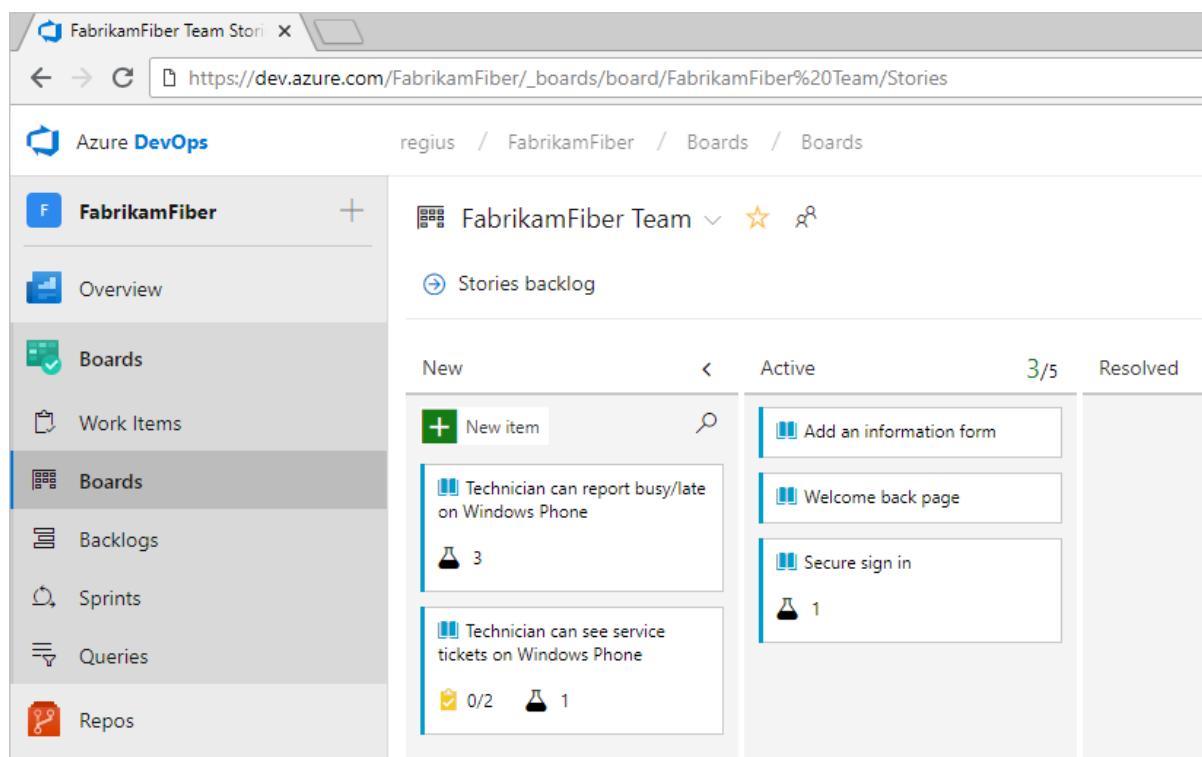
## Open your Kanban board

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

The URL follows this pattern: `https://dev.azure.com/fabrikamfiber/_boards/board`

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

2. Select **Boards** to open the Kanban board.



The screenshot shows the Azure DevOps Boards interface. The left sidebar has a 'FabrikamFiber' project selected. The main area shows a 'Stories backlog' Kanban board for the 'FabrikamFiber Team'. The board has three columns: 'New', 'Active', and 'Resolved'. There are three backlog items in the 'New' column:

- 1. 'Technician can report busy/late on Windows Phone' (3 tests)
- 2. 'Technician can see service tickets on Windows Phone' (0/2 tests, 1 bug)
- 3. 'Add an information form'
- 4. 'Welcome back page'
- 5. 'Secure sign in'

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

The URL follows this pattern: `https://dev.azure.com/fabrikamfiber/_backlogs/board`

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

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

The screenshot shows the Azure DevOps interface for the 'FabrikamFiber' project. The top navigation bar includes the 'Backlogs - Azure DevOps' tab, a back arrow, forward arrow, refresh icon, and a URL bar displaying 'https://dev.azure.com/FabrikamFiber/\_backlogs/board/Stories'. Below the bar are tabs for 'Work Items', 'Backlogs' (which is selected), and 'Queries'. On the left, a sidebar lists 'Features' and 'Stories' under 'Backlogs'. The main area is titled 'Stories' and shows a 'Board' view. It has two columns: 'New' and 'Active'. The 'New' column contains a 'New item' button and a card for 'Technician can report busy/late on Windows Phone' with status '3'. The 'Active' column contains cards for 'Add an information form', 'Welcome back page', and 'Secure sign in', with statuses '3/5' and '1' respectively. A search bar at the top right says 'Search work items in this project'.

## Add tests

1. To add tests, open the menu for a work item.

The screenshot shows the Azure DevOps interface for the 'FabrikamFiber' project. The top navigation bar includes the 'FabrikamFiber Team Stories' tab, a back arrow, forward arrow, refresh icon, and a URL bar displaying 'https://dev.azure.com/FabrikamFiber/\_boards/board/FabrikamFiber%20Team/Stories'. Below the bar are tabs for 'Azure DevOps', 'Fabrikam', 'FabrikamFiber', 'Boards', and 'Boards'. The left sidebar lists 'Overview', 'Boards' (selected), 'Work Items', 'Boards', 'Backlogs', 'Sprints', 'Queries', 'Repos', 'Pipelines', and 'Test Plans'. The main area shows the 'FabrikamFiber Team' board with a 'Stories backlog' section. It has two columns: 'New' and 'Active'. The 'New' column contains a 'New item' button and a card for 'Technician can report busy/late on Windows Phone'. A context menu is open over this card, with the 'Add Test' option highlighted by a red box. Other options in the menu include 'Open', 'Edit title', 'Move to iteration', 'Add Task', 'Delete', 'New branch...', and 'Add to dashboard'.

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 the following user story, and inline tests are added to that suite. User story 314 is highlighted. It has two manual tests defined with the IDs 337 and 341.

The screenshot shows the 'Test Plans' interface in a web browser. The URL is 'FabrikamFiber / FabrikamFiber / Test / Test Plans\*'. The main navigation bar shows 'Test Plans > FabrikamFiber-tfvc Team\_Stories\_Sprint 3'. Below this, there's a tree view with 'FabrikamFiber-tfvc Team\_Stories\_Sprint 3' expanded, and '314 : Technician can see service tickets on...' selected. To the right, a table titled 'Test suite: 314 : Technician can see service tickets on...' displays two test cases:

| Outcome | Order | ID ↑ | Title                         |
|---------|-------|------|-------------------------------|
| Active  | 1     | 337  | Change colors on initial view |
| Active  | 2     | 341  | Change initial page size      |

2. If you have a number of tests to add, enter each title and select **Enter**.

The screenshot shows a 'New item' dialog box. At the top, it says 'New' and has a 'New item' button. Below that is a search bar. The main area contains a list of items:

- Technician can see service tickets on Windows Phone
- 2

Underneath the list are buttons for '+ Add Test' and a context menu icon. The list also includes two items with blue circular icons and the text 'Change colors on initial view' and 'Change initial page size'. There is also an empty rectangular box at the bottom.

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

**TEST CASE 337**

337 Change colors on initial view

Jamal Hartnett 0 comments Add tag Save & Close Follow ...

State Design Area FabrikamFiber  
Reason New Iteration FabrikamFiber\Release 1\Sprint 3

Steps Summary Associated Automation ⏪ ⏴ (1) ⏵

**Steps**

Click or type here to add a step

**Development**

+ Add link  
Development hasn't started on this item.

**Related Work**

+ Add link Tests  
314 Technician can see serv... Updated 2/28/2013, New

**Details**

Priority 2  
Automation status Not Automated

Parameter values

This screenshot shows a Microsoft Test Case management interface. At the top, there's a header with the title 'TEST CASE 337' and a subtitle '337 Change colors on initial view'. Below the header, there are sections for 'Jamal Hartnett' (0 comments, Add tag, Save & Close, Follow, ...), 'State' (Design), 'Reason' (New), 'Area' (FabrikamFiber), and 'Iteration' (FabrikamFiber\Release 1\Sprint 3). A navigation bar at the top right includes 'Steps' (selected), 'Summary', 'Associated Automation', and buttons for ⏪, ⏴, (1), and ⏵. The main area is divided into 'Steps' (with a placeholder 'Click or type here to add a step') and 'Development' (with a note 'Development hasn't started on this item.' and a '+ Add link' button). To the right, there's a 'Related Work' section listing a single item (Technician can see serv...) and a 'Details' section showing priority 2 and automation status 'Not Automated'. At the bottom, there's a 'Parameter values' section.

To learn more about how to define tests, see [Create manual tests](#).

Prior to running the test, you must add details.

1. To add tests, open the menu for the work item.

Analyze 1/5 Code 1/5 Test 1/5

New 168 Hello World Web Site 169 Slow response on form

Jamal Hartnett 1/4

... Open Edit title Add Task + Add Test Delete Do exploratory testing New branch

This screenshot shows a Microsoft Test Plan interface. It displays three columns: 'Analyze' (1/5), 'Code' (1/5), and 'Test' (1/5). In the 'Analyze' column, there are two items: '168 Hello World Web Site' and '169 Slow response on form'. The '168' item has a context menu open, with the '+ Add Test' option highlighted and circled in orange. Other options in the menu include 'Open', 'Edit title', 'Add Task', 'Delete', 'Do exploratory testing', and 'New branch'. The '169' item is also visible in the background of the menu.

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. The

following user story 152 is highlighted. It has three manual tests defined with the IDs 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 the tabs, there's a navigation bar with links for Test plan, Parameters, Runs, and Machines\*. The main area is titled "FabrikamFiber: FabrikamFiber Team\_Stories\_FabrikamFiber (Id: 157)". On the left, a tree view shows "FabrikamFiber Team\_Stories\_FabrikamFiber" expanded, with "151 : Customer log in (2)" and "152 : Customer welcome page (3)" under it. "152 : Customer welcome page (3)" is selected and highlighted in blue. Underneath it is "169 : Slow response on form (1)". On the right, a table lists "Tests" for the selected test suite. The table has columns for Outcome (Active), ID, and Title. There are three rows:

| 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, enter each title and select **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. Below the title, there are two progress bars: one yellow and one orange, both showing "0/3". A "Add Test" button is present. A list of three test cases is shown, each with a blue circular icon and a link:

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

To add details to the test case, open it. You can select 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](#)

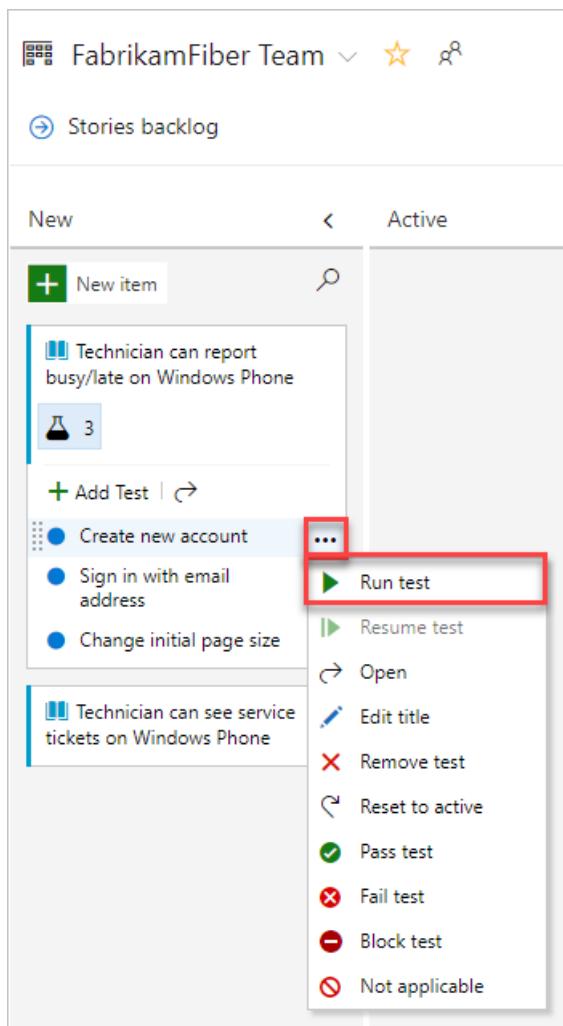
The screenshot shows a test case named '153 Change colors on initial view' under the 'Design' category. It's assigned to 'Raisa Pokrovskaya' and has 0 comments. The 'Area' is 'Fabrikam Fiber' and the 'Iteration' is 'Fabrikam Fiber\Iteration 1'. A 'Steps' tab is selected, showing a placeholder 'Click or type here to add a step'. To the right, there's a 'Development' section indicating no development has started yet, with a link to 'Create a new branch'. Below it is a 'Status' section with priority set to 2 and automation status as 'Not Automated'. At the bottom, there's a 'Parameter values' section with links to add a shared parameter set or convert to shared parameters.

To learn more about how to define tests, see [Create manual tests](#).

Prior to running the test, you must add details.

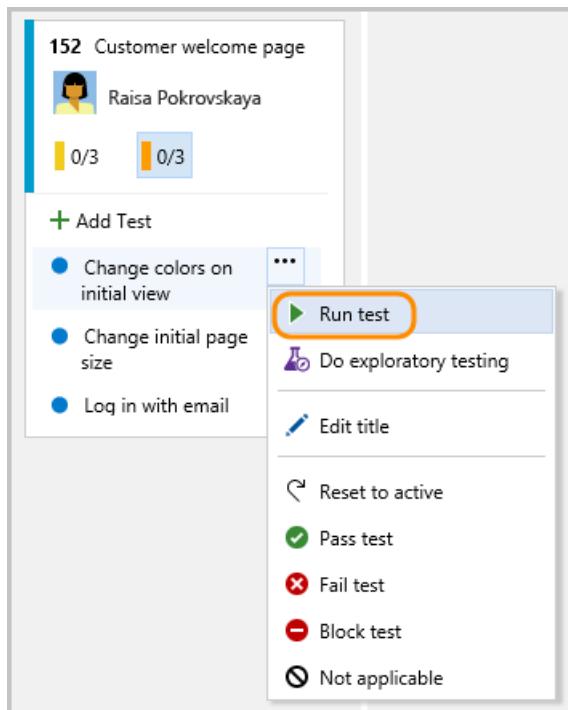
## Run a test

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 information on how to run a test, see [Run manual tests](#).

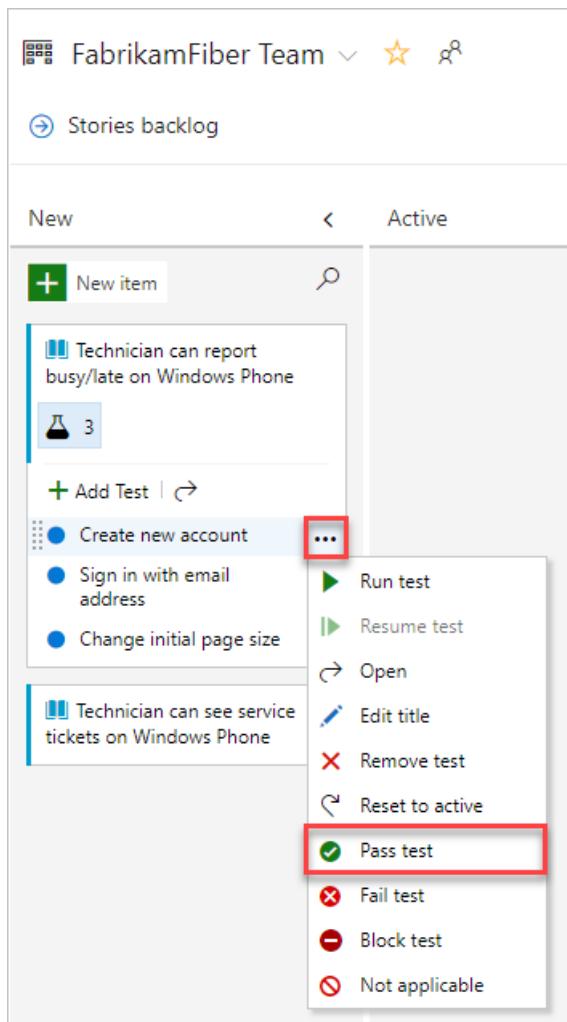
Run the test by selecting **▶ Run test** from the **...** actions menu for the inline test.



Microsoft Test Runner starts in a new browser instance. For information on how to run a test, see [Run manual tests](#).

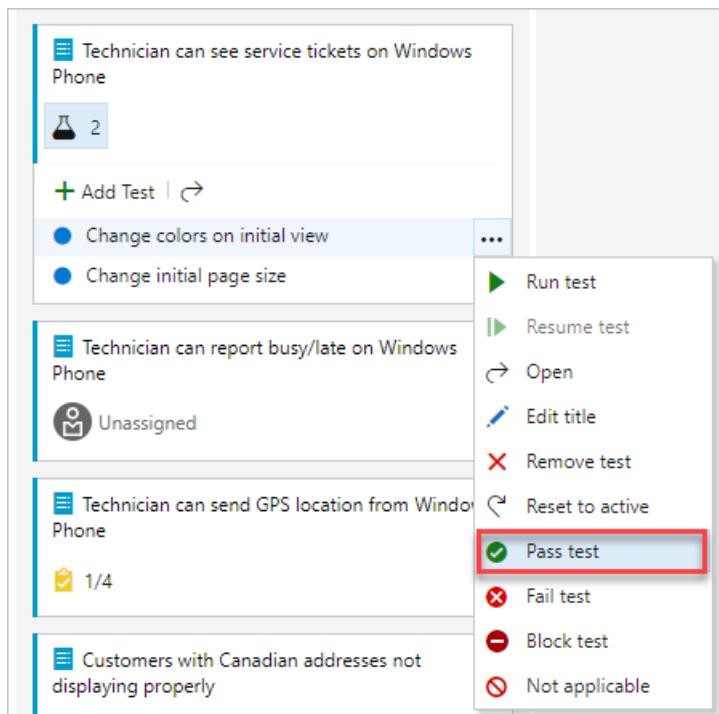
## Update the status of a test

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



When you update the status of tests, you can [track test results](#).

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



When you update the status of tests, you can [track test results](#).

## Expand or collapse inline tests

When you first open the Kanban board, you'll see an un-expanded view of checklists and tests.

The screenshot shows the Azure DevOps interface for the 'FabrikamFiber' team. The left sidebar has 'Boards' selected. The main area displays a 'Stories backlog' with three items:

- Technician can report busy/late on Windows Phone**: 3 tests
- Technician can see service tickets on Windows Phone**: 0/2 tests
- Secure sign in**: 1 test

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

The image shows two screenshots of the Azure DevOps interface. The left screenshot shows a checklist item with a '2' test count, which is highlighted with a red box. A red arrow points from this item to the right screenshot, where the same item is shown but the '2' test count is no longer visible. Instead, there is a 'Change colors on initial view' option highlighted with a blue box.

When you first open the Kanban board, you'll see an un-expanded view of checklists.

Backlog   **Board**

|     | Analyze                                                                                                                                                                                                            | Code                                                                                                                                                                   | Test                                                                                                                                                                           |
|-----|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| New | <b>168</b> Hello World Web Site<br> Jamal Hartnett<br><span style="width: 25%;">1/4</span>                                        | <b>151</b> Customer log in<br> Christie Church<br><span style="width: 0%;">0/3</span> | <b>169</b> Slow response on form<br> Raisa Pokrovskaya<br><span style="width: 0%;">0/1</span> |
|     | <b>152</b> Customer welcome page<br> Raisa Pokrovskaya<br><span style="width: 0%;">0/3</span> <span style="width: 0%;">0/3</span> |                                                                                                                                                                        |                                                                                                                                                                                |

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

Code   **1/5**

|                                                                                                                                                                                                     |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>151</b> Customer log in<br> Christie Church<br><span style="border: 2px solid orange; padding: 2px;">0/3</span> |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|



Code   **1/5**

|                                                                                                                                                                                                   |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>151</b> Customer log in<br> Christie Church<br><span style="border: 2px solid blue; padding: 2px;">0/3</span> |
| <span style="color: green;">+</span> Add Test<br><ul style="list-style-type: none"> <li>● Log in with email</li> <li>● Create new account</li> <li>● Change initial page size</li> </ul>          |

## Next steps

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 must install the Exploratory testing. For more information, see how to [Exploratory test your web app directly in your browser](#).

# Quickstart: View permissions for yourself or others

2/5/2019 • 4 minutes to read • [Edit Online](#)

[Azure DevOps Services](#) | [Azure DevOps Server 2019](#) | [TFS 2018](#) | [TFS 2017](#) | [TFS 2015](#) | [TFS 2013](#)

In this quickstart, you learn how to view your permissions or those defined for another which have been set in Azure DevOps or Team Foundation Server (TFS). That way, if you don't have a permission to access a feature or function, you can request it from the right resource.

Permissions are set at the collection, 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 project to connect to. If you don't have a project yet, [create one](#).
- You must be a member of the Project Valid Users Group or Project Collection Valid Users Group to view permissions.

### NOTE

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

## View project-level permissions

### NOTE

Your web portal uses either the **New navigation** or **Previous navigation** user interface. Choose the **New navigation** tab if the **New Navigation** feature is enabled. You'll see a vertical sidebar along with other navigational features when **New Navigation** has been enabled for the signed-in user or the organization. Choose **Previous navigation** when you see a top-level, blue-bar—indicating that **New navigation** isn't enabled. For more information, see [Web portal navigation](#).

### NOTE

Choose the **New navigation** tab for guidance. Azure DevOps Server 2019 supports the **New Navigation** user interface. For more information, see [Web portal navigation](#).

### NOTE

Choose the **Previous navigation** tab for guidance. TFS 2018 and earlier versions only support the previous navigation user interface. For more information, see [Web portal navigation](#).

- [New navigation](#)
- [Previous navigation](#)

### 1. Choose **Project Settings** and then **Security**.

*To see the full image, click to expand.*

The screenshot shows the 'Project Settings' page for the 'Fabrikam Fiber' project. On the left, there's a sidebar with icons for Overview, Work, Code, Build and release, and Packages. Below that is a 'Project settings' button with a gear icon, which has a red box around it and a red circle with '1' on it. The main area is titled 'Project Settings' and has a 'General' section with sub-options like Overview, Services, Teams, Security (which is highlighted with a red box and has a red circle with '2' on it), Notifications, Service hooks, and Dashboards. Under 'Security', there's a 'Create group' dialog box with a 'Filter users and groups' input field. The 'Teams' section lists 'Customer Service', 'Email', 'Fabrikam Fiber Team', 'Management team', 'Phone', 'Voice', and 'Web'. The 'Azure DevOps Groups' section lists 'Build Administrators', 'Contributors', 'Deployment Group Administrators', 'Disallow access group', 'Endpoint Administrators', 'Endpoint Creators', 'Project Administrators', 'Project Collection Valid Users', and 'Security Service Group'.

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 'Create group' dialog box with 'Fabrikam Fiber > Customer Service' selected. In the top-left, there's a search bar with 'Jamal' typed into it, which has a red box around it. Below the search bar, it says 'Showing 1 result'. The result is 'Jamal Hartnett' with the email 'fabrikamfiber4@hotmail.com'. To the right of the result are 'Members' and 'Member of' buttons. Below the result, there's a list of permissions:

| Action                | Description                     | Setting           |
|-----------------------|---------------------------------|-------------------|
| > Email               | Change process of team project. | Not set           |
| > Fabrikam Fiber Team | Create tag definition           | Allow (inherited) |
| > Management team     | Create test runs                | Allow (inherited) |
|                       | Delete and restore work items   | Not set           |

A purple circular icon with three people is on the right.

3. Choose 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.

Create group

Jamal

 Jamal Hartnett

fabrikam > Jamal Hartnett | Edit... ▾

Permissions Member of

|                                              |                   |
|----------------------------------------------|-------------------|
| Bypass rules on work item updates            | Not set           |
| Change process of team project.              | Not set           |
| Create tag definition                        | Allow (inherited) |
| Create test runs                             | Allow (inherited) |
| Delete and restore work items                | Not set           |
| Delete shared Analytics views                | Allow (inherited) |
| Delete team project                          | Not set           |
| Delete test runs                             | Allow (inherited) |
| Edit project-level information               | Not set           |
| Edit shared Analytics views                  | Allow (inherited) |
| Manage project properties                    | Not set           |
| Manage test configurations                   | Allow (inherited) |
| Manage test environments                     | Allow (inherited) |
| Move work items out of this project          | Not set           |
| Permanently delete work items                | Not set           |
| Rename team project                          | Not set           |
| Suppress notifications for work item updates | Not set           |
| Update project visibility                    | Not set           |
| View analytics                               | Allow (inherited) |
| View project-level information               | Allow (inherited) |
| View test runs                               | Allow (inherited) |

[Clear explicit permissions](#)

[Save changes](#) [Undo changes](#)



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

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

Create group

Jamal

 Jamal Hartnett

fabrikam > Jamal Hartnett | Edit... ▾

Permissions **Member of**

[+ Add...](#) | [⟳](#) | [Search](#)

|                                                                                                                       |                   |
|-----------------------------------------------------------------------------------------------------------------------|-------------------|
| Display Name                                                                                                          | Username Or Scope |
|  Customer Service                  | [Fabrikam Fiber]  |
|  Fabrikam Fiber Team               | [Fabrikam Fiber]  |
|  Web                               | [Fabrikam Fiber]  |
|  Project Collection Administrators | [fabrikam]        |
|  Project Administrators            | [MyFirstProject]  |



Choose the **Previous navigation** tab for guidance. **New navigation** isn't supported for TFS 2018 and earlier versions.

# View organization or collection-level permissions

Open admin settings for the organization or a project collection.

- [New navigation](#)
- [Previous navigation](#)

1. Choose the Azure DevOps logo to open **Projects**. Then choose **Admin settings**.



2. Choose **Security**, the **Project Collection Administrators** group, and then **Members**.

The screenshot shows the 'Create group' interface. On the left, there's a sidebar with 'Create group' and a 'Filter users and groups' input field. Below it is a list of 'Azure DevOps Groups' with 'Project Collection Administrators' highlighted and surrounded by a red box. To the right, the main area shows the 'fabrikam > Project Collection Administrators' path. Below this, there are tabs for 'Permissions', 'Members' (which is highlighted with a red box), and 'Member of'. Under the 'Members' tab, there are buttons for '+ Add...', a refresh icon, and 'Search'. The table lists three members:

| Display Name                   | Username Or Scope          |
|--------------------------------|----------------------------|
| Project Collection Service ... | [REDACTED]                 |
| Christie Church                | fabrikamfiber1@hotmail.com |
| Jamal Hartnett                 | fabrikamfiber4@hotmail.com |
| Raisa Pokrovskaya              | fabrikamfiber5@hotmail.com |

3. Follow steps 2 through 4 in the procedure outlined previously for view project-level permissions.

Choose the **Previous navigation** tab for guidance. **New navigation** isn't supported for TFS 2018 and earlier versions.

## View object-level permissions

You can define the security or permissions for a number of objects. 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 the following articles:

| AREA                                            | TASK                                                                                                                                                                                                                                                                                        |
|-------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Wiki & Dashboard permissions                    | <ul style="list-style-type: none"><li>• <a href="#">README &amp; Wiki</a></li><li>• <a href="#">Dashboards</a></li></ul>                                                                                                                                                                    |
| DevOps (code, build, test, release) permissions | <ul style="list-style-type: none"><li>• <a href="#">Git branch</a></li><li>• <a href="#">Git repository</a></li><li>• <a href="#">TFVC</a></li><li>• <a href="#">Builds</a></li><li>• <a href="#">Release pipeline security</a></li><li>• <a href="#">Approvals and approvers</a></li></ul> |

Work tracking permissions

- [Area and iteration paths](#)
- [Work item query and folder](#)
- [Plan permissions](#)

## Next steps

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

# Quickstart: Sign up for a free organization

1/31/2019 • 3 minutes to read • [Edit Online](#)

## Azure DevOps Services

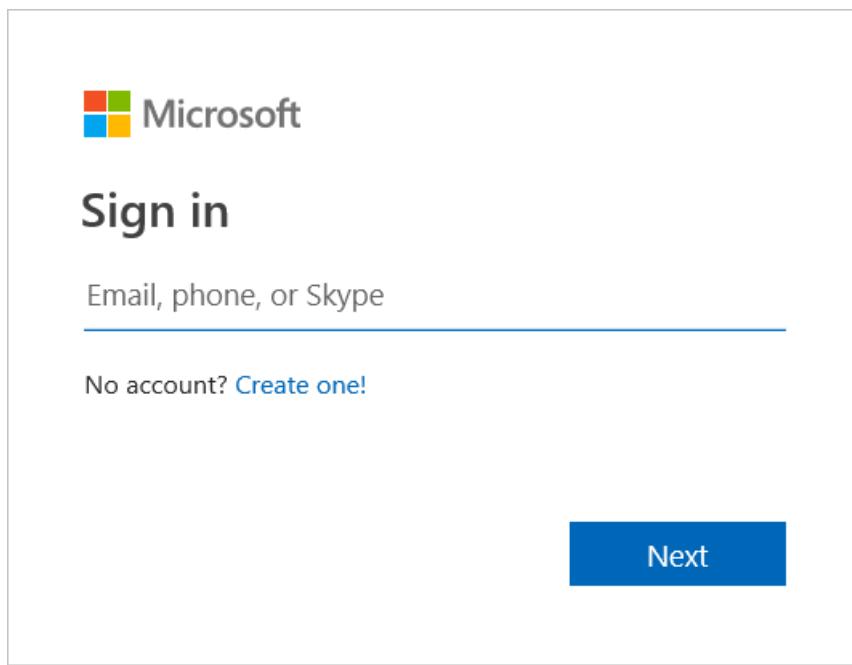
In this quickstart, you learn how to sign up for a free organization with a Microsoft account. You also learn how to invite your teammates.

Sign up for Azure DevOps to upload and share code in free, unlimited private Git repositories.

Then, connect to your favorite development tool like Eclipse, Xcode, Visual Studio, IntelliJ, or Android Studio to work on apps anytime, anywhere.

## Sign up for Azure DevOps with a personal Microsoft account

1. Select the sign-up link for [Azure DevOps](#).
2. Enter your email address, phone number, or Skype ID for your Microsoft account. If you're a Visual Studio subscriber and you get Azure DevOps as a benefit, use the Microsoft account associated with your subscription. Select **Next**.



3. Enter your password and select **Sign in**.

If you don't have a Microsoft account, you can [create a Microsoft account](#) at this time.



fabrikamfiber4@hotmail.com

## Enter password

.....

Keep me signed in

[Forgot my password](#)

[Sign in with a different Microsoft account](#)

**Sign in**

4. To get started with Azure DevOps, select **Continue**.



fabrikamfiber4@hotmail.com

## Get started with Azure DevOps

Choosing **Continue** means that you agree to our [Terms of Service](#), [Privacy Statement](#), and [Code of Conduct](#).

**Continue**

5. Enter a name for your organization. The name can't contain spaces or special characters (such as /\[]:|<>+=;? or \*), can't end in a period or comma, must be less than 256 characters, and must be unique within the DevOps namespace. You can also choose between several locations for where you want your data hosted. Select **Continue**.



Almost done...

Name your Azure DevOps organization \*

FabrikamFiberOrg1

We'll host your projects in \*

North Central US

**Continue**

You see the following dialog box as your organization is created.



Congratulations, you're now an organization owner!

To sign in to your organization at any time, go to <https://dev.azure.com/{yourorganization}>.

6. Enter a name for your project and select the visibility. The name can't contain spaces or special characters (such as / :\ ~ & % ; @ ' " ? < > | # \$ \* } { , + = [ ]), can't begin with an underscore, can't begin or end with a period, and must be 64 characters or less. Visibility can be either public or private. With public visibility, anyone on the internet can view your project. With private visibility, only people who you give access to can view your project. Select **Create project**.



## Welcome to your project

When your project has been created, the welcome page appears.



### NOTE

Your first project was created by using a Git repository and the [Agile process](#). If you want a project that uses the Team Foundation Version Control (TFVC) repository or the Scrum or CMMI process, see [Choose a process](#) for a comparison of processes. Then, you can choose a process by [adding another project](#).

Select one of the following tasks to get started:

- **Boards** to begin [adding work items](#).
- **Repos** to open the [Repos > Files](#) page. There, you can clone or import a repository or [initialize a README file](#) for your project summary page.
- **Pipelines** to start [defining a pipeline](#).
- **Test Plans** to start [defining test plans and test suites](#).
- **Manage your services** to disable the visibility of one or more services.

To get started managing your project, see [Get started as an administrator](#).

For more information about organizations and projects, see these articles:

- [Define organizations and projects](#)
- [About projects and scaling your organization](#)
- [Manage projects](#)

## Invite team members

Give a team member access to your organization by adding their email address to your organization.

1. Sign in to your organization (<https://dev.azure.com/{yourorganization}>).

2. Select  **Organization settings**.



3. Select **Users > Add new users**.



4. Complete the form by entering or selecting the following information:

- **Users:** Enter the email addresses (Microsoft account) for the users. You can add several email addresses by separating them with a semicolon (;). An email address appears in red when it's accepted.
- **Access level:** Leave the access level as **Basic** for users who will contribute to the code base. To learn more, see [About access levels](#).
- **Add to project:** Select the project you named in the preceding procedure.
- **DevOps Groups:** Leave as **Project Contributors**, the default security group for users who will contribute to your project. To learn more, see [Default permissions and access assignments](#).

**NOTE**

You must add email addresses for [personal Microsoft accounts](#) unless you plan to use [Azure Active Directory \(Azure AD\)](#) to authenticate users and control organization access. If a user doesn't have a Microsoft account, ask the user to [sign up](#) for a Microsoft account.

5. When you're done, select **Add** to complete your invitation.

For more information about managing users and organization access, see [Add organization users for Azure DevOps](#).

## Next steps

[Add code to your Git repository](#)

[Plan and track work](#)

# Quickstart: Create an organization

1/31/2019 • 2 minutes to read • [Edit Online](#)

## Azure DevOps Services

In this quickstart, you learn how to create an organization with a personal Microsoft account or a work or school account. Use your work or school account to *automatically connect* your organization to your Azure AD.

## Prerequisites

1. Read and understand how to [Plan your organizational structure](#).

2. Do either of the following:

- Complete the following steps to use only Microsoft accounts with your organization.

Without Azure AD, you're solely responsible for controlling organization access. And all users must sign in with their Microsoft account. [What are other differences?](#)

- If you don't have a Microsoft account, you can create one when you sign up for Azure DevOps.
- Use your Microsoft account if you don't need to authenticate users for an organization with [Azure AD](#). All users must sign in to your organization with a Microsoft account.

- Complete the following steps to authenticate users and control organization access through your Azure AD.

- You need a work or school account that's managed by your Azure AD. If you use Azure or Office 365, you might have one already. If you don't, learn how to [sign up for Azure as an organization](#).
- To use existing on-premises identities, see [use Azure AD Connect for integrating on-premises directories with Azure AD](#).
- All users must be members in that directory to access your organization. To add users from other organizations, use [Azure AD B2B collaboration capabilities](#).

## Create an organization

1. Go to [Azure DevOps](#), and use either a Microsoft or Azure AD account to sign in. Choose **Next**.

The screenshot shows the Microsoft sign-in interface. At the top left is the Microsoft logo. Below it, the word "Sign in" is displayed in a large, dark font. Underneath "Sign in" is a text input field with the placeholder "Email, phone, or Skype". Below the input field are two links: "Can't access your account?" and "No account? Create one!". At the bottom center of the screen is a blue rectangular button with the word "Next" in white text.

[Got browser problems?](#)

[Why am I asked to choose between my work or school account and my personal account?](#)

If you were previously signed up for Azure DevOps, select **New organization**.

The screenshot shows the Azure DevOps interface for managing organizations. On the left, there's a sidebar with 'My organizations' containing entries for 'fabrikam-fiber' (pink icon) and 'fabrikamfiber3' (green icon). Below this is a 'Related pages' section with links to 'What's new in DevOps', 'Documentation', and 'Get help'. At the bottom of the sidebar is a red-bordered button labeled '+ New organization' with a plus sign icon. To its right is another button labeled 'Organization settings' with a gear icon.

The main content area is titled 'Organization Settings >'. Under the 'General' section, the 'Overview' link is highlighted with a blue vertical bar. Other options include 'Projects', 'Policy', 'Users', 'Security', 'Notifications', 'Extensions', and 'Usage'. Under the 'Boards' section, there are links for 'Process', 'Pipelines' (which is expanded to show 'Agent pools', 'Deployment pools', 'Retention and parallel jobs', and 'OAuth configurations'), and 'Deployment pools'.

2. Enter the name of your organization and select the location to host your projects from the dropdown menu. Choose **Continue**.



**Almost done...**

Name your Azure DevOps organization \*

dev.azure.com/ fabrikam-fiber4

We'll host your projects in \*

Central US

**Continue**



**Taking you to your Azure DevOps organization...**



Congratulations, you're now an organization owner! You are prompted to [create a project](#) to get started.



My organizations



fabrikamfiber

## Create a project to get started

Project name \*

Visibility



Public

Anyone on the internet can view the project. Certain features like TFVC are not supported.



Private

Only people you give access to will be able to view this project.

[+ Create project](#)

Related pages

[What's new in DevOps](#)[Documentation](#)[Get help](#)[+ New organization](#) [Organization settings](#)

3. Select **Organization settings** and **Overview**. Confirm or change your organization settings.



My organizations



fabrikam-fiber



fabrikamfiber3

Related pages

[What's new in DevOps](#)[Documentation](#)[Get help](#)

New organization



Organization settings

## Organization Settings &gt;

## General

Overview

Projects

Policy

Users

Security

Notifications

Extensions

Usage

## Boards

Process

## Pipelines

Agent pools

Deployment pools

Retention and parallel jobs

OAuth configurations

## Organization information

Organization URL

<https://dev.azure.com/fabrikan/> / 

This organization is backed by the **FabrikamFiberAAD** Azure Active Directory.

Organization owner



Jamal Hartnett



Time zone

Server: (UTC) Coordinated Universal Time



Region

North Central US

Description

Privacy URL

If you're using an **Azure AD account**, confirm the directory that you're connected to. If you belong to multiple directories, ensure that you want to connect this directory to your organization. Changing the directory now is easier than [changing the directory later](#).

To sign in to your organization at any time, go to (<https://dev.azure.com/{yourorganization}>).

### NOTE

If you activated your Visual Studio subscription with a Microsoft account, and your subscription includes Azure DevOps as a benefit, learn [how to add your work or school account](#) to your subscription so that you can use your subscriber benefits in Azure DevOps.

## Next steps

[Manage users and access](#) or

[Create project](#)

## Related articles

- [Create your backlog](#)
- [Manage your process](#)
- [Customize your process](#)

- Add code to Git or Team Foundation Version Control:
  - Git: Use [Eclipse](#), [Xcode](#), [Android Studio](#), [IntelliJ](#), [Visual Studio](#), or [Visual Studio Code](#).
  - Team Foundation Version Control: Use [Eclipse](#), [Xcode](#), [Visual Studio](#), or [Visual Studio Code](#).

# Quickstart: Add users to a project or specific team

1/31/2019 • 9 minutes to read • [Edit Online](#)

[Azure DevOps Services](#) | [Azure DevOps Server 2019](#) | [TFS 2018](#) | [TFS 2017](#) | [TFS 2015](#) | [TFS 2013](#)

In this quickstart, you learn how to add users to a project or specific team. For anyone to access a project, they must be added to one of the default security groups or a custom group. Usually you add them to the Contributors group. For a quick look at what permissions are assigned to the default groups, see [Permissions and access](#).

The easiest way to add a number of users to a project is to add groups defined in [Azure Active Directory \(Azure AD\)](#) or [Active Directory \(AD\)](#).

## IMPORTANT

If you're adding users to an organization in Azure DevOps and you don't use Azure AD, then you need to [add their "personal" Microsoft accounts to your account or project](#). After you've added them to one project, you can add them to additional projects using the procedures provided in this article.

Once users have been added to a project, you can browse for that name by display name as well as their user name (email alias). Also, you can [add them to a specific team](#). To add a team, see [Add a team](#).

## Prerequisites

- You must have a project. If you don't have a project yet, [create one](#).
- To add users to a project, you must be a member of the [Project Administrators group](#) or have your [Edit project-level information](#) set to **Allow**. Note that you can add Stakeholders to the Project Administrators group and then they can add users to an organization or project.
- To add users to a team, you must have been [added as a team administrator for the team](#), or you must be a member of the Project Administrators Group or have your [Edit project-level information](#) set to Allow.

## Add users to a project

If you are adding a user to Azure DevOps for the first time, see [Add account users for Azure DevOps](#).

## NOTE

Your web portal uses either the **New navigation** or **Previous navigation** user interface. Choose the **New navigation** tab if the **New Navigation** feature is enabled. You'll see a vertical sidebar along with other navigational features when **New Navigation** has been enabled for the signed-in user or the organization. Choose **Previous navigation** when you see a top-level, blue-bar—indicating that **New navigation** isn't enabled. For more information, see [Web portal navigation](#).

## NOTE

Choose the **New navigation** tab for guidance. Azure DevOps Server 2019 supports the **New Navigation** user interface. For more information, see [Web portal navigation](#).

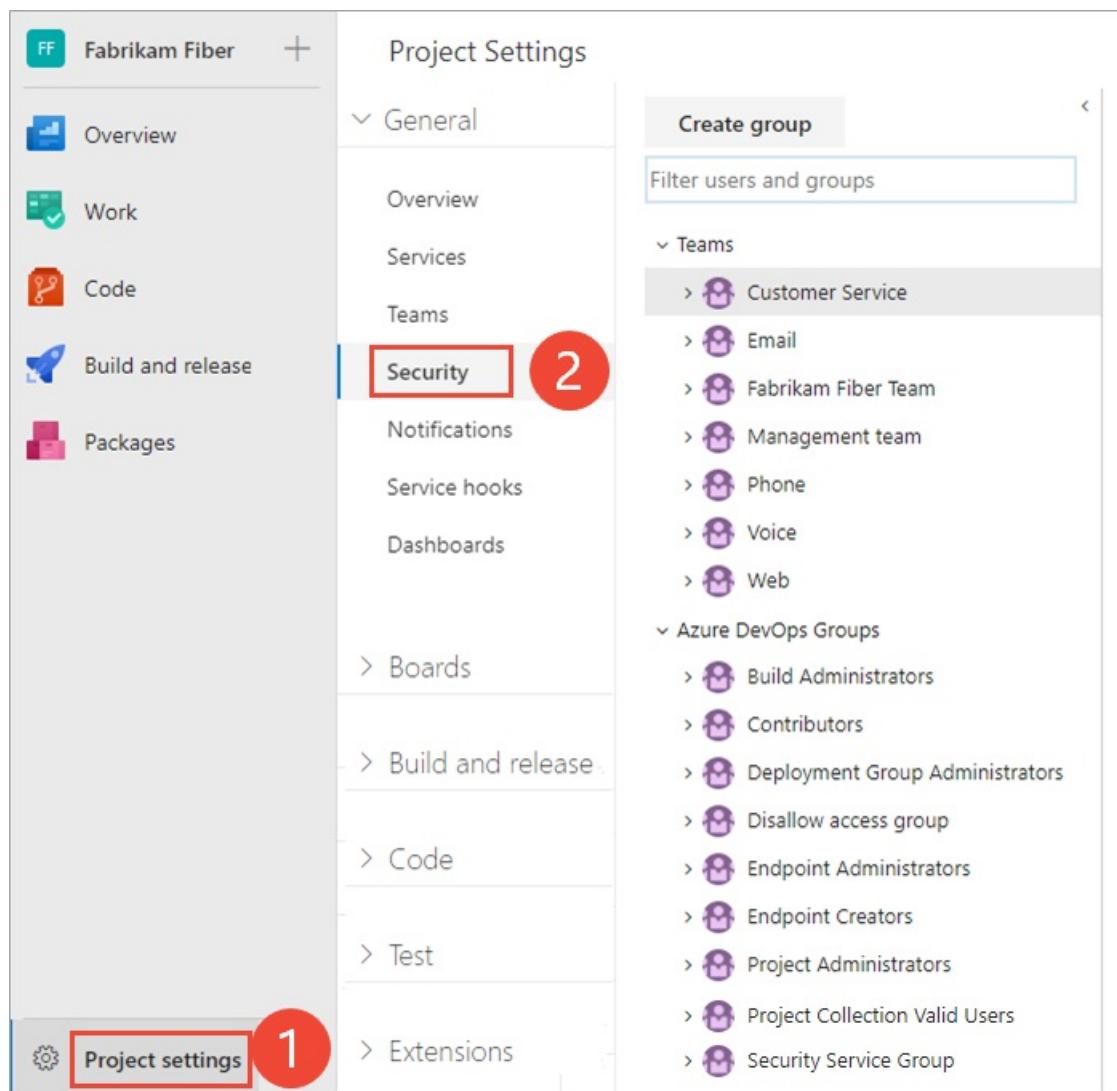
**NOTE**

Choose the **Previous navigation** tab for guidance. TFS 2018 and earlier versions only support the previous navigation user interface. For more information, see [Web portal navigation](#).

- [New navigation](#)
- [Previous navigation](#)

1. Open the web portal and choose the project where you want to add users or groups. To choose another project, see [Switch project, repository, team](#).
2. Choose **Project Settings** and then **Security**.

*To see the full image, click to expand.*



3. Under **Groups**, choose one of the following:
  - To add users who will require read-only access to the project, choose **Readers**.
  - To add users who will contribute fully to this project or who have been granted stakeholder access, choose **Contributors**.
  - For users who will need to administrate the project, choose **Project Administrators**. To learn more, see [Set permissions at the project-level or project collection-level](#).
4. Next, choose the **Members** tab.

Here we choose the **Contributors** group.

The screenshot shows the 'Contributors' group page in the Azure portal. On the left, there's a sidebar titled 'Create group' with sections for 'Teams' and 'Azure DevOps Groups'. Under 'Teams', 'Contributors' is highlighted with a red box. On the right, the main area has tabs for 'Permissions', 'Members' (which is selected and highlighted with a red box), and 'Member of'. Below these are buttons for '+ Add...', 'Search', and 'Edit...'. The 'Members' table lists users with columns for 'Display Name', 'Username Or Scope', and 'Remove'. The table contains the following data:

| Display Name        | Username Or Scope          |        |
|---------------------|----------------------------|--------|
| Customer Service    | [Fabrikam Fiber]           | Remove |
| Fabrikam Fiber Team | [Fabrikam Fiber]           |        |
| Management team     | [Fabrikam Fiber]           |        |
| Phone               | [Fabrikam Fiber]           |        |
| Voice               | [Fabrikam Fiber]           |        |
| Web                 | [Fabrikam Fiber]           |        |
| Jia-hao Tseng       | fabrikamfiber9@hotmail.com |        |

By default, the default team group and all other teams you add to the project are included as members of the **Contributors** group. So, you can choose to add a new user as a member of a team instead, and the user would automatically inherit Contributor permissions.

**TIP**

Managing users is much easier [using groups](#), not individual users.

5. Choose **+ Add** to add a user or a user group.
6. Type the name of the user account into the text box. You can type several identities into the text box, separated by commas. The system will automatically search for matches. choose the match(es) that meet your requirements.

The screenshot shows the 'Add users and groups' dialog box. At the top, it says 'Add users and groups'. Below that, a note says 'To add users or groups to this group, just type their sign-in addresses or group aliases'. A text input field labeled 'User or group' contains the text 'Chris'. Below the input field, a search result card shows a profile picture of a person named 'Christie Church' with the email 'fabrikamfiber1@hotmail.com'. At the bottom of the dialog, there are 'Save changes' and 'Cancel' buttons.

#### NOTE

The first time you add a user or group to Azure DevOps or TFS, you can't browse to it or check the friendly name. After the identity has been added, you can just type the friendly name.

7. In **Identities**, specify the name of the user or group you want to add.
8. Depending on the user, you might want to customize their permissions for other functionality in the project, such as [areas and iterations](#) or [shared queries](#).

#### NOTE

Users that have limited access, such as Stakeholders, won't be able to access select features even if granted permissions to those features. To learn more, see [Permissions and access](#).

Choose the **Previous navigation** tab for guidance. **New navigation** isn't supported for TFS 2018 and earlier versions.

## Add users to a team

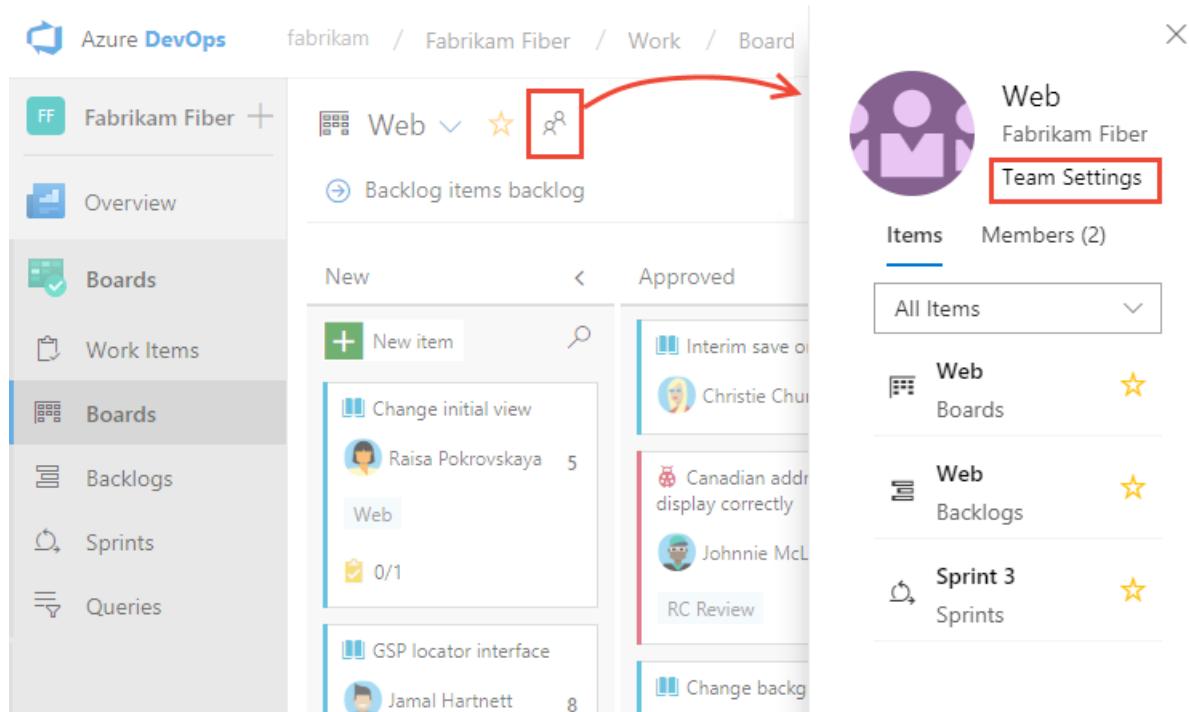
Several Agile tools, like capacity planning, team alerts, and dashboard widgets are team-scoped. That is, they automatically reference the user accounts added as members of a team to support planning activities or sending alerts. To learn more, see [About teams and Agile tools](#).

- [New navigation](#)
- [Previous navigation](#)

You add team members from **Project Settings>Work>Team configuration**. You can quickly navigate to it from a team work tracking backlog, board, or dashboard.

1. Open a backlog or board for a team and choose the  team profile icon. Then choose **Team Settings**.

Here we open the Board for the Web team and from there the team profile.



2. If you need to switch the team context, use the team selector within the breadcrumbs.

Project Settings > Team configuration > Web

General

Work General Iterations

Backlogs See only the backlog Backlog navigation

Epics  Features  Backlog i

More teams

Phone (Fabrikam Fiber) ★  
Voice (Fabrikam Fiber) ★  
**Web (Fabrikam Fiber)** ★  
Customer Service (Fabrikam Fiber)  
Fabrikam Fiber Team (Fabrikam F...)  
Management team (Fabrikam Fib...)  
Email (Fabrikam Fiber)

3. Choose **Add**.

Team Profile

Web

Members

+ Add...

| Display Name      | Username Or Scope          | Remove |
|-------------------|----------------------------|--------|
| Jamal Hartnett    | fabrikamfiber4@hotmail.com | Remove |
| Raisa Pokrovskaya | fabrikamfiber5@hotmail.com |        |

Name: Web

Description: Enter a description

Administrators:

Jamal Hartnett

Raisa Pokrovskaya

+ Add

4. Enter the sign-in addresses or display name for each account you want to add. Add them one at a time or all at the same time. You can type several identities into the text box, separated by commas.

Add users and groups

To add users or groups to this group, just type their sign-in addresses or group aliases

User or group: Chris

|                                               |  |
|-----------------------------------------------|--|
| Christie Church<br>fabrikamfiber1@hotmail.com |  |
|-----------------------------------------------|--|

Showing 1 result

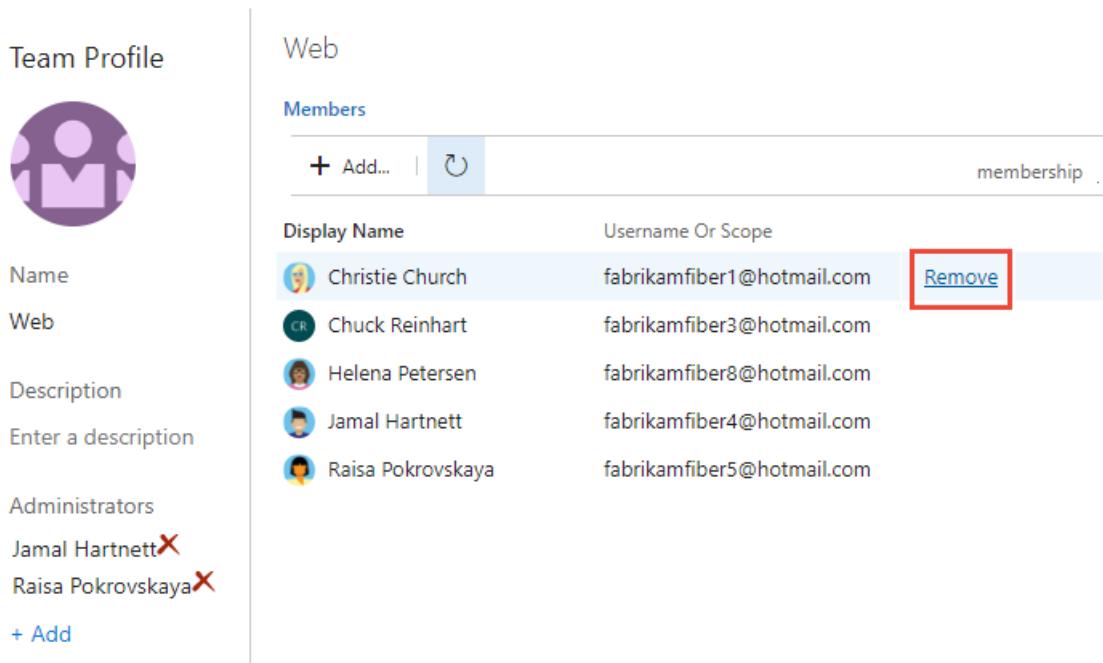
Save changes Cancel

#### TIP

You must enter user and group names one at a time. However, after entering a name, the account is added to the list, and you can type another name in the Identities text box before choosing to save your changes.

You may need to choose the  refresh icon to see your updates.

5. To remove members, return to this page, highlight the user name and choose **Remove**.



The screenshot shows the 'Team Profile' page for a 'Web' team. On the left, there's a sidebar with fields for 'Name' (Web), 'Description' (Enter a description), and 'Administrators' (Jamal Hartnett, Raisa Pokrovskaya, both with red X icons). The main area is titled 'Members' with a 'refresh' icon. It lists five users with their display names, email addresses, and a 'Remove' button next to each entry. The 'Remove' button for 'Christie Church' is highlighted with a red box.

| Display Name      | Username Or Scope          | Action                 |
|-------------------|----------------------------|------------------------|
| Christie Church   | fabrikamfiber1@hotmail.com | <a href="#">Remove</a> |
| Chuck Reinhart    | fabrikamfiber3@hotmail.com |                        |
| Helena Petersen   | fabrikamfiber8@hotmail.com |                        |
| Jamal Hartnett    | fabrikamfiber4@hotmail.com |                        |
| Raisa Pokrovskaya | fabrikamfiber5@hotmail.com |                        |

#### NOTE

To remove a team administrator as a team member, you must first remove them as an administrator.

6. To add an account as a team administrator, choose **Add** located in the Team Profile page. For details, see [Add a team administrator](#).

Choose the **Previous navigation** tab for guidance. **New navigation** isn't supported for TFS 2018 and earlier versions.

## Add users or groups to an access level

For on-premises deployments, you may need to set the access level for a user or group, particularly if those groups don't belong to the default access level. To learn more, see [Change access levels](#).

## Add users or groups to SQL Server Reports

If your on-premises deployment is integrated with SQL Server Reports, you'll need to manage membership for those products separately from their websites. See [Grant permissions to view or create SQL Server reports in TFS](#).

## Add users or groups to SharePoint or SQL Server Reports

If your on-premises deployment is integrated with a SharePoint product or SQL Server Reports, you'll need to manage membership for those products separately from their websites.

- [Set SharePoint site permissions](#)

- [Grant permissions to view or create SQL Server reports in TFS](#)

## Next steps

[Add administrators or set permissions at the project or collection level](#)

To view permissions for yourself or another user, see [View permissions](#).

## Related articles

You can also control access to projects, version control, build, and work items.

- [Set Git or TFVC repository permissions](#)
- [Set Git branch permissions](#)
- [Set build and release permissions](#)
- [Set permissions and access for work tracking](#)

# Manage and configure team tools

2/5/2019 • 6 minutes to read • [Edit Online](#)

**Azure DevOps Services | Azure DevOps Server 2019 | TFS 2018 | TFS 2017 | TFS 2015**

While most permissions are governed by belonging to a security group or defined at the object level, team settings are managed by the team administrator role. Users assigned as a team administrator, are able to configure and manage all team tools. Specifically, when a team is added to a project, a project admin should [add one or more team administrators](#).

Then, those team admins should look at performing these specific tasks:

- Add team members
- Configure area and iteration paths
- Configure backlogs and other common team settings
- Configure Kanban boards

Optional tasks to consider include:

- Configure and manage team dashboards
- Configure team notifications

## NOTE

In addition to team administrators, all members of the Project Administrators and Project Collection Administrators groups can manage settings for all teams. To add a team, see [Add teams](#).

## Add users to a team

Several tools, such as capacity planning, team alerts, and dashboard widgets are team-scoped. That is, they automatically reference the users that have been added as members of a team to support planning activities or sending alerts.

To add users to a team, see [Add users to a project or specific team](#).

All members of a team can favorite team artifacts and define work item templates. For details, see:

- [Set personal or team favorites](#)
- [Use templates to add and update work items](#).

If team members don't have access to all the features they want, check that they have [the permissions needed for those features](#).

## Configure team areas and iterations

A number of Agile tools depend on the area and iteration paths configured for the team as described in [About teams and Agile tools](#).

Once project administrators have [added Area Paths](#) and [Iteration Paths](#) for a project, team administrators can select the area and iteration paths associated with their team. These settings affect a number of Agile tools available to the team.

These include making the following associations for each team:

- **Select team area paths**

Can select the default area path(s) associated with the team. These settings affect a number of Agile tools available to the team.

- **Select team iteration paths or sprints** Can select the default area path(s) associated with the team. These settings affect a number of Agile tools available to the team.

For details, see [Define area paths and assign to a team](#) and [Define iteration paths \(aka sprints\) and configure team iterations](#).

## Configure team backlogs and other common settings

Team administrators can choose which backlog levels are active for a team. For example, a feature team may choose to show only the product backlog and a management team may choose to show only the feature and epic backlogs. Also, admins can choose whether bugs are treated similar to user stories and requirements or as tasks.

Team admins can also choose which days are non-working days for the team. Sprint planning and tracking tools automatically consider days off when calculating capacity and sprint burndown.

You can configure most of your team settings from the common configuration dialog.

**NOTE**

**Feature availability:** The common configuration dialog is available for TFS 2015.1 and later versions.

**NOTE**

Your web portal uses either the **New navigation** or **Previous navigation** user interface. Choose the **New navigation** tab if the **New Navigation** feature is enabled. You'll see a vertical sidebar along with other navigational features when **New Navigation** has been enabled for the signed-in user or the organization. Choose **Previous navigation** when you see a top-level, blue-bar—indicating that **New navigation** isn't enabled. For more information, see [Web portal navigation](#).

**NOTE**

Choose the **New navigation** tab for guidance. Azure DevOps Server 2019 supports the **New Navigation** user interface. For more information, see [Web portal navigation](#).

**NOTE**

Choose the **Previous navigation** tab for guidance. TFS 2018 and earlier versions only support the previous navigation user interface. For more information, see [Web portal navigation](#).

- [New navigation](#)
- [Previous navigation](#)

1. (1) Check that you have selected the right project, (2) choose Boards>Boards, and then (3) select the correct team from the team selector menu.

The screenshot shows the Azure DevOps interface. At the top left is the 'Azure DevOps' logo. In the top center, there's a breadcrumb navigation bar with 'fabrikam / Fabrikam Fiber'. To its right is a red circle with the number '1'. Below this, the main navigation menu includes 'Fabrikam Fiber' with a '+' sign, 'Overview', 'Boards' (which is selected and highlighted with a red box and the number '2'), 'Backlogs', and 'Sprints'. On the right side, there's a team selector dropdown set to 'Fabrikam Fiber Team' with a red box around it and the number '3'. Below the team selector are tabs for 'Backlog', 'Analyze', and 'Develop', with '5/10' items in the backlog. A 'New item' button is available. The backlog board displays several cards, such as 'Add an information form' by Raisa Pokrovskaya, 'Welcome back page' by Johnnie McLeod, and a 'Slow form' card. Each card includes iteration information (e.g., Sprint 3) and progress metrics (e.g., 0/4, 1). A sidebar on the right shows 'Iteration ... Sprint 3' and 'Slow form' status.

2. Make sure that you select the team backlog or board that you want to configure using the team selector. To learn more, see [Use breadcrumbs and selectors to navigate and open artifacts](#).
3. Choose the product or portfolio backlog from the board-selection menu.

This screenshot shows the same interface as above, but the 'Backlog items' tab in the board selection menu is highlighted with a red box. The menu also lists 'Epics', 'Features', and 'Backlog items'.

4. Choose the gear icon to configure the board and set general team settings.

This screenshot shows the interface again, but the gear icon in the top right corner of the board header is highlighted with a red box.

5. Choose a tab under any of the sections—**Cards**, **Board**, **Charts**, and **General**—to configure the cards or boards, the cumulative flow chart, or other team settings.

**Fields**

Show the important information to your team. Fields are editable directly on the card.

**User Story**    **Bug**

**Core fields**

Show ID

Show Assigned To as:

Avatar and full name (default) ▾

Show Story Points

Show Tags

**Additional fields**

Add up to 10 fields in the order that you want them to appear on the card.

+ Field

**Show empty fields**

Check if you want to display fields, even when they are empty.

**Save**    **Cancel**

Choose the **Previous navigation** tab for guidance. **New navigation** isn't supported for TFS 2018 and earlier versions.

For details on each configuration option, see one of these topics:

| AREA    | CONFIGURATION TASK                                                                                                                                                                                                                                                |
|---------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Cards   | <ul style="list-style-type: none"> <li>• <a href="#">Add fields</a></li> <li>• <a href="#">Define styles</a></li> <li>• <a href="#">Add tag colors</a></li> <li>• <a href="#">Enable annotations</a></li> <li>• <a href="#">Configure inline tests</a></li> </ul> |
| Boards  | <ul style="list-style-type: none"> <li>• <a href="#">Add columns</a></li> <li>• <a href="#">Add swimlanes</a></li> <li>• <a href="#">Card reordering</a></li> </ul>                                                                                               |
| Chart   | <ul style="list-style-type: none"> <li>• <a href="#">Configure cumulative flow chart</a></li> </ul>                                                                                                                                                               |
| General | <ul style="list-style-type: none"> <li>• <a href="#">Backlogs</a></li> <li>• <a href="#">Working days</a></li> <li>• <a href="#">Working with bugs</a></li> </ul>                                                                                                 |

For details on each configuration option, see one of these topics:

| AREA    | CONFIGURATION TASK                                                                                                                                                |
|---------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Cards   | <ul style="list-style-type: none"> <li>• <a href="#">Add fields</a></li> <li>• <a href="#">Define styles</a></li> <li>• <a href="#">Add tag colors</a></li> </ul> |
| Boards  | <ul style="list-style-type: none"> <li>• <a href="#">Add columns</a></li> </ul>                                                                                   |
| Chart   | <ul style="list-style-type: none"> <li>• <a href="#">Configure cumulative flow chart</a></li> </ul>                                                               |
| General | <ul style="list-style-type: none"> <li>• <a href="#">Backlogs</a></li> <li>• <a href="#">Working days</a></li> <li>• <a href="#">Working with bugs</a></li> </ul> |

## Configure Kanban boards

Team administrators can fully customize the team's Kanban boards associate with the product and portfolio backlogs. You configure a Kanban board by first defining the columns and WIP limits from the common configuration dialog. For guidance, see [Kanban basics](#).

- [Columns](#)
- [WIP limits](#)
- [Definition of Done](#)

Additional elements you can configure include:

- [Split columns](#)
- [Swimlanes](#)
- [Card fields, styles, tag colors, annotations, and card reordering](#)

## Add and manage team dashboards

By default, all team members can add and edit team dashboards. In addition, team administrators can manage permissions for team dashboards. For details, see [Add and manage dashboards](#).

Team administrators can add, configure, and manage permissions for team dashboards. For details, see [Add and manage dashboards](#).

## Update team description and picture

Team settings also include the team name, description, and team profile image. To add a team picture. Open the Team Profile and choose the picture icon. The maximum file size is 4 MB.

## Manage team notifications

Team administrators can add and modify alerts so that the team can receive email notifications as changes occur to work items, code reviews, source control files, and builds. A number of alerts are defined for each team. For details, see [Manage team alerts](#).

## Manage team rooms

Team administrators can add users and events to team rooms, and add team rooms. Team rooms are chat rooms limited to team members. For details, see [Collaborate in a team room](#).

**NOTE**

Team rooms are deprecated for TFS 2018 and later versions as described in [Deprecation of team rooms](#) blog post. Several good solutions are available that integrate well with TFS that support notifications and chat, such as [Microsoft Teams](#) and [Slack](#).

## Related articles

- [About projects and scaling your organization](#)
- [About teams and Agile tools](#)
- [Add teams](#)
- [Add a team administrator](#)

# Quickstart: Get started as an administrator in Azure DevOps

2/5/2019 • 6 minutes to read • [Edit Online](#)

[Azure DevOps Services](#) | [Azure DevOps Server 2019](#) | [TFS 2018](#) | [TFS 2017](#) | [TFS 2015](#) | [TFS 2013](#)

With most Azure DevOps Services or Microsoft Team Foundation Server (TFS) applications, you can start using any service and configure resources as you go. No up-front work is required. Most settings define defaults.

As an organization owner or a project admin, there are a few items you might want to attend to at the start, to ensure a smooth operational experience. If you own a large organization, you'll want to consider additional tasks to structure your projects to support multiple teams or software development apps.

## Add users to a project

The first task is to ensure that all members of your organization or group are added to your organization and projects. For small groups, using [Microsoft Accounts](#) to add users to your organization and projects works fine.

Larger enterprises may want to consider using Azure Active Directory to manage permissions and user access. To learn more, see the following articles:

- [Add organization users for Azure DevOps Services](#)
- [Manage user access through Azure Active Directory](#)

The first task is to ensure that all members of your organization or group are added to your organization and project. Larger organizations will want to consider using Azure Active Directory to keep the maintenance of managing permissions and user access. Typically, you should install Azure Active Directory prior to installing TFS.

To learn more, see these articles:

- [Install Azure Active Directory Domain Services \(Level 100\)](#)
- [Step-By-Step: Setting up Azure Active Directory in Windows Server 2016](#)

You can delegate the task to add users to an organization by adding a user with Stakeholder or Basic access to the [Project Collection Administrators group](#).

## Grant or restrict permissions

Access to features and functions is controlled by access-level assignments and permissions. We recommend that you review the following articles to understand the core concepts involved:

- [About security and identity](#)
- [About permissions and groups](#)
- [About security roles](#)
- [About access levels](#)
- [Default permissions and access](#)

If you decide that you want to delegate specific tasks to others, then you'll want to add them to a built-in or custom security group or add them to a specific role. To learn more, see these articles:

- [Grant or restrict access to select features and functions](#)
- [Set permissions at the project level or project collection level](#)

## Share your project vision and support collaboration

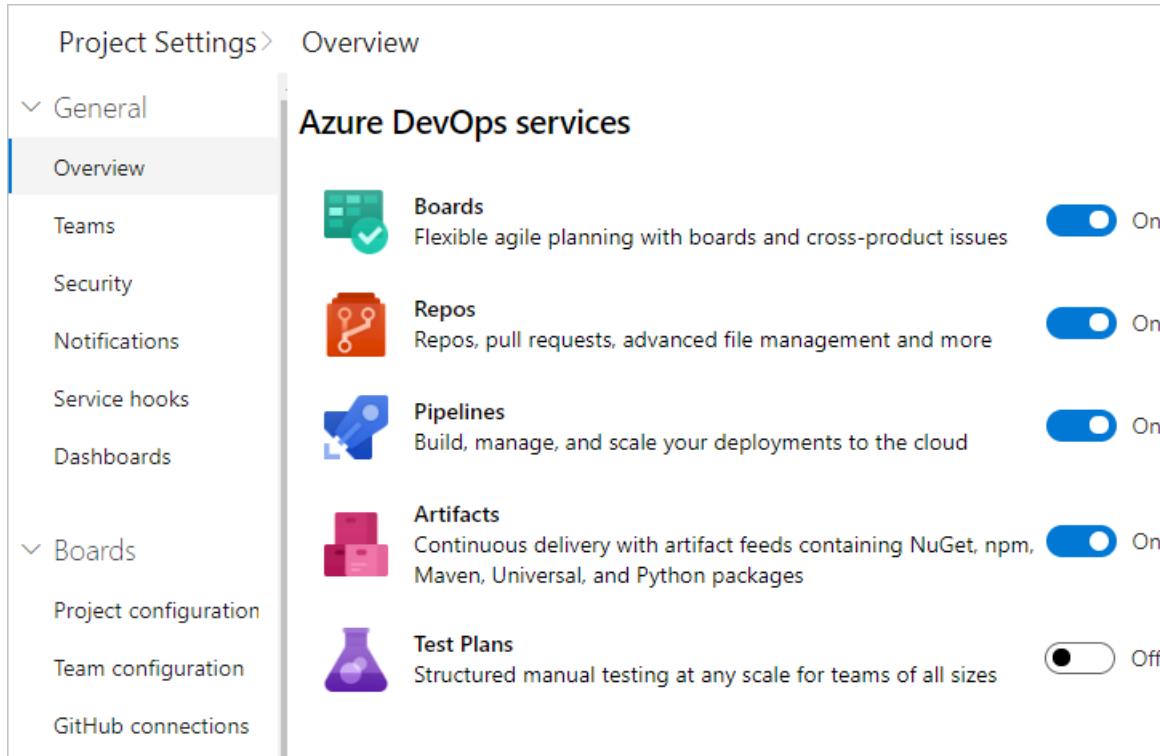
Each project has a summary page where you can share information through **README** files or by pointing to a project Wiki. To orient users who are new to your project and share established processes and procedures, we recommend that you [set up your project summary page](#) or [provision a Wiki](#).

Each project has a summary page where you can share information through **README files**. To orient users who are new to your project and share established processes and procedures, we recommend that you [set up your project summary page](#).

## Remove unused services from the user interface

To simplify the web portal user interface, you can disable select services. If you use a project only to log bugs, then you can remove all services except for **Boards**.

This example shows that **Test Plans** has been disabled:



The screenshot shows the 'Project Settings > Overview' page. On the left, a sidebar lists various settings categories like General, Boards, and Artifacts. The 'General' category is expanded, showing 'Overview' selected. The main area is titled 'Azure DevOps services' and lists six services with toggle switches:

| Service    | Description                                                                                          | Status |
|------------|------------------------------------------------------------------------------------------------------|--------|
| Boards     | Flexible agile planning with boards and cross-product issues                                         | On     |
| Repos      | Repos, pull requests, advanced file management and more                                              | On     |
| Pipelines  | Build, manage, and scale your deployments to the cloud                                               | On     |
| Artifacts  | Continuous delivery with artifact feeds containing NuGet, npm, Maven, Universal, and Python packages | On     |
| Test Plans | Structured manual testing at any scale for teams of all sizes                                        | Off    |

## Set code, test, and other policies

There are several policies you can set to support collaboration across your teams, secure your projects, and automatically remove files that are no longer needed. To set policies, review the following articles:

- [Change application access policies for your organization](#)
- [Manage branch policies](#)
- [Add Team Foundation Version Control \(TFVC\) check-in policies](#)
- [Set build and release pipeline retention policies](#)
- [Set test retention policies](#)
- [Manage branch policies](#)
- [Add TFVC check-in policies](#)
- [Set build and release pipeline retention policies](#)
- [Set test retention policies](#)

## Define area and iteration paths for work tracking

If you support several products or feature areas, you can assign work items by feature area by setting up [area paths](#). To assign work items to specific time intervals, also known as sprints, you'll want to configure [iteration paths](#). To use the Scrum tools—sprint backlogs, taskboards, and team capacity—you need to configure several sprints. For an overview, see [About areas and iteration paths](#).

| ITERATIONS                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | AREAS                      |            |          |                  |  |  |             |  |  |          |           |           |          |          |           |          |           |          |          |           |           |          |           |           |          |            |            |           |  |  |           |  |  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |       |       |                  |                     |                  |                       |       |                            |       |       |     |                          |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------|------------|----------|------------------|--|--|-------------|--|--|----------|-----------|-----------|----------|----------|-----------|----------|-----------|----------|----------|-----------|-----------|----------|-----------|-----------|----------|------------|------------|-----------|--|--|-----------|--|--|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------|-------|------------------|---------------------|------------------|-----------------------|-------|----------------------------|-------|-------|-----|--------------------------|
| <p><b>Iterations</b> Areas</p> <p>Create and manage the iterations for this project. These it for iteration planning (sprint planning).</p> <p>To access the default team's iteration settings, click here.</p> <p>New New child    </p> <table><thead><tr><th>Iterations</th><th>Start Date</th><th>End Date</th></tr></thead><tbody><tr><td>◀ Fabrikam Fiber</td><td></td><td></td></tr><tr><td>    ◀ Release 1</td><td></td><td></td></tr><tr><td>        Sprint 1</td><td>6/11/2018</td><td>6/29/2018</td></tr><tr><td>        Sprint 2</td><td>7/2/2018</td><td>7/20/2018</td></tr><tr><td>        Sprint 3</td><td>7/16/2018</td><td>8/3/2018</td></tr><tr><td>        Sprint 4</td><td>7/23/2018</td><td>8/10/2018</td></tr><tr><td>        Sprint 5</td><td>9/17/2018</td><td>10/5/2018</td></tr><tr><td>        Sprint 6</td><td>10/29/2018</td><td>11/16/2018</td></tr><tr><td>    Release 2</td><td></td><td></td></tr><tr><td>    Release 3</td><td></td><td></td></tr></tbody></table> | Iterations                 | Start Date | End Date | ◀ Fabrikam Fiber |  |  | ◀ Release 1 |  |  | Sprint 1 | 6/11/2018 | 6/29/2018 | Sprint 2 | 7/2/2018 | 7/20/2018 | Sprint 3 | 7/16/2018 | 8/3/2018 | Sprint 4 | 7/23/2018 | 8/10/2018 | Sprint 5 | 9/17/2018 | 10/5/2018 | Sprint 6 | 10/29/2018 | 11/16/2018 | Release 2 |  |  | Release 3 |  |  | <p><b>Iterations</b> Areas</p> <p>Create and manage the areas for this project. These a the team's backlog and what work items the team is r</p> <p>To access the default team's area settings, click here.</p> <p>New New child    </p> <table><thead><tr><th>Areas</th><th>Teams</th></tr></thead><tbody><tr><td>◀ Fabrikam Fiber</td><td>Fabrikam Fiber Team</td></tr><tr><td>    Customer Service</td><td>Customer Service Team</td></tr><tr><td>    Phone</td><td>Fabrikam Fiber Team, Phone</td></tr><tr><td>    Voice</td><td>Voice</td></tr><tr><td>    Web</td><td>Fabrikam Fiber Team, Web</td></tr></tbody></table> | Areas | Teams | ◀ Fabrikam Fiber | Fabrikam Fiber Team | Customer Service | Customer Service Team | Phone | Fabrikam Fiber Team, Phone | Voice | Voice | Web | Fabrikam Fiber Team, Web |
| Iterations                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | Start Date                 | End Date   |          |                  |  |  |             |  |  |          |           |           |          |          |           |          |           |          |          |           |           |          |           |           |          |            |            |           |  |  |           |  |  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |       |       |                  |                     |                  |                       |       |                            |       |       |     |                          |
| ◀ Fabrikam Fiber                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                            |            |          |                  |  |  |             |  |  |          |           |           |          |          |           |          |           |          |          |           |           |          |           |           |          |            |            |           |  |  |           |  |  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |       |       |                  |                     |                  |                       |       |                            |       |       |     |                          |
| ◀ Release 1                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                            |            |          |                  |  |  |             |  |  |          |           |           |          |          |           |          |           |          |          |           |           |          |           |           |          |            |            |           |  |  |           |  |  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |       |       |                  |                     |                  |                       |       |                            |       |       |     |                          |
| Sprint 1                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | 6/11/2018                  | 6/29/2018  |          |                  |  |  |             |  |  |          |           |           |          |          |           |          |           |          |          |           |           |          |           |           |          |            |            |           |  |  |           |  |  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |       |       |                  |                     |                  |                       |       |                            |       |       |     |                          |
| Sprint 2                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | 7/2/2018                   | 7/20/2018  |          |                  |  |  |             |  |  |          |           |           |          |          |           |          |           |          |          |           |           |          |           |           |          |            |            |           |  |  |           |  |  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |       |       |                  |                     |                  |                       |       |                            |       |       |     |                          |
| Sprint 3                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | 7/16/2018                  | 8/3/2018   |          |                  |  |  |             |  |  |          |           |           |          |          |           |          |           |          |          |           |           |          |           |           |          |            |            |           |  |  |           |  |  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |       |       |                  |                     |                  |                       |       |                            |       |       |     |                          |
| Sprint 4                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | 7/23/2018                  | 8/10/2018  |          |                  |  |  |             |  |  |          |           |           |          |          |           |          |           |          |          |           |           |          |           |           |          |            |            |           |  |  |           |  |  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |       |       |                  |                     |                  |                       |       |                            |       |       |     |                          |
| Sprint 5                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | 9/17/2018                  | 10/5/2018  |          |                  |  |  |             |  |  |          |           |           |          |          |           |          |           |          |          |           |           |          |           |           |          |            |            |           |  |  |           |  |  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |       |       |                  |                     |                  |                       |       |                            |       |       |     |                          |
| Sprint 6                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | 10/29/2018                 | 11/16/2018 |          |                  |  |  |             |  |  |          |           |           |          |          |           |          |           |          |          |           |           |          |           |           |          |            |            |           |  |  |           |  |  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |       |       |                  |                     |                  |                       |       |                            |       |       |     |                          |
| Release 2                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                            |            |          |                  |  |  |             |  |  |          |           |           |          |          |           |          |           |          |          |           |           |          |           |           |          |            |            |           |  |  |           |  |  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |       |       |                  |                     |                  |                       |       |                            |       |       |     |                          |
| Release 3                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                            |            |          |                  |  |  |             |  |  |          |           |           |          |          |           |          |           |          |          |           |           |          |           |           |          |            |            |           |  |  |           |  |  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |       |       |                  |                     |                  |                       |       |                            |       |       |     |                          |
| Areas                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | Teams                      |            |          |                  |  |  |             |  |  |          |           |           |          |          |           |          |           |          |          |           |           |          |           |           |          |            |            |           |  |  |           |  |  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |       |       |                  |                     |                  |                       |       |                            |       |       |     |                          |
| ◀ Fabrikam Fiber                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | Fabrikam Fiber Team        |            |          |                  |  |  |             |  |  |          |           |           |          |          |           |          |           |          |          |           |           |          |           |           |          |            |            |           |  |  |           |  |  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |       |       |                  |                     |                  |                       |       |                            |       |       |     |                          |
| Customer Service                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | Customer Service Team      |            |          |                  |  |  |             |  |  |          |           |           |          |          |           |          |           |          |          |           |           |          |           |           |          |            |            |           |  |  |           |  |  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |       |       |                  |                     |                  |                       |       |                            |       |       |     |                          |
| Phone                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | Fabrikam Fiber Team, Phone |            |          |                  |  |  |             |  |  |          |           |           |          |          |           |          |           |          |          |           |           |          |           |           |          |            |            |           |  |  |           |  |  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |       |       |                  |                     |                  |                       |       |                            |       |       |     |                          |
| Voice                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | Voice                      |            |          |                  |  |  |             |  |  |          |           |           |          |          |           |          |           |          |          |           |           |          |           |           |          |            |            |           |  |  |           |  |  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |       |       |                  |                     |                  |                       |       |                            |       |       |     |                          |
| Web                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | Fabrikam Fiber Team, Web   |            |          |                  |  |  |             |  |  |          |           |           |          |          |           |          |           |          |          |           |           |          |           |           |          |            |            |           |  |  |           |  |  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |       |       |                  |                     |                  |                       |       |                            |       |       |     |                          |

## Customize work-tracking processes

You and your teams can start using all work-tracking tools immediately after you create a project. But often, one or more users want to customize the experience to meet one or more business needs. Although you can customize the process easily through the user interface, you'll want to establish a methodology for who will manage the updates and evaluate requests.

### NOTE

By default, users granted Basic and Stakeholder access are granted permission to create, edit, and manage processes used to customize the work-tracking experience. If you want to lock down who is able to perform these tasks, you can set permissions at the organization level to **Deny**.

To learn more, see the following articles:

- [About process customization and inherited processes](#)
- [Customize a project](#)
- [Add and manage processes](#)

## Customize work-tracking processes

You and your teams can start using all work-tracking tools immediately after you create a project. But often, one or more users want to customize the experience to meet one or more business needs. You'll want to establish a methodology for who will manage the updates and evaluate requests.

To learn more, see [On-premises XML process model](#).

## Review and update notifications

A number of notifications are predefined for each project you add. Notifications are based on subscription rules.

Subscriptions arise from the following areas:

- [Out-of-the-box or default subscriptions](#).
- [Team notifications](#), managed by a team administrator.
- Project notifications, managed by a member of the Project Administrators group.
- [Organization and collection level notifications](#), managed by a member of the Project Collection Administrators group.

If users believe they're getting too many notifications, they can [opt out of a subscription](#).

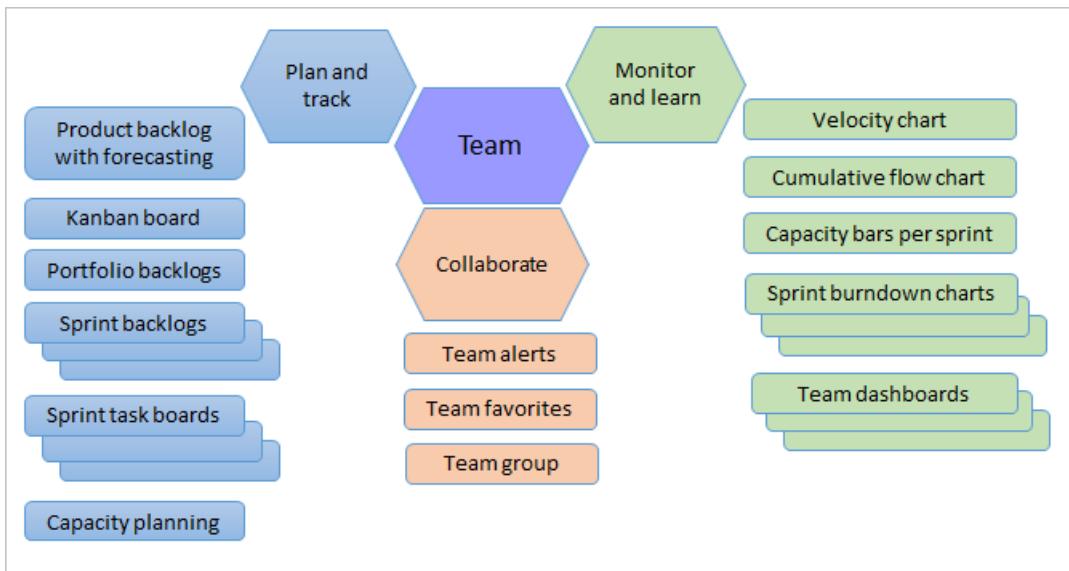
| Description                                                                                                                                                                                               | Type                               | Notifies                                                                                  | State                                                                                    |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------|-------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------|
| <b>Build</b>                                                                                                                                                                                              |                                    |                                                                                           |                                                                                          |
|  Build completes<br>Notifies you when a build you queued or that was queued for you compl...                            | Build completed (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 (any project)         |  You |  On |
|  Pull request completion failures<br>Notifies you when a pull request you created fails to complete                    | Pull request (any project)         |  You |  On |
|  Pull request changes<br>Notifies you when changes are made to a pull request you created or are...                    | Pull request (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 (any project) |  You |  On |

## Configure an SMTP server

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

## Add teams to scale your organization

We recommend that you add teams as your organization grows. Each team gets [access to their own set of Agile tools](#) that they can customize.



To learn more, see the following articles:

- [About projects and scaling your organization](#)
- [Add a team, move from one default team to several teams](#)
- [Add a team administrator](#)

## Install and manage extensions

An extension is an installable unit that adds new capabilities to your projects. You can find extensions in the [Visual Studio Marketplace](#), Azure DevOps tab to support the following functions:

- Planning and tracking of work items, sprints, scrums, etc.
- Build and release flows.
- Code testing and tracking.
- Collaboration among team members.

For example, to support [code search](#), install the [Code Search extension](#).

You want to tell your users about extensions and that they can [request an extension](#). To install and manage extensions, you must be an organization owner, a member of the Project Collection Administrators group, or added to the [Manager role for extensions](#).

## Set up billing

All organizations can add up to five users with Basic access and unlimited users with Stakeholder access. If you need to add more users or pay for additional services or extensions, [set up billing](#).

## Next steps

[Manage projects](#)

## Related articles

- [Security & identity](#)
- [Organization management](#)
- [About user, team, project, and organization-level settings](#)
- [Manage projects](#)
- [Security & identity](#)

- [Organization management](#)
- [About user, team, project, and organization-level settings](#)
- [TFS administration](#)

# Install free extensions for Azure DevOps

1/31/2019 • 2 minutes to read • [Edit Online](#)

## Azure DevOps Services

To add new features and capabilities to your organization in Azure DevOps, install extensions from the [Visual Studio Marketplace](#). You can install [free](#), [preview](#), or [paid](#). In this quickstart, you learn how to install a free extension.

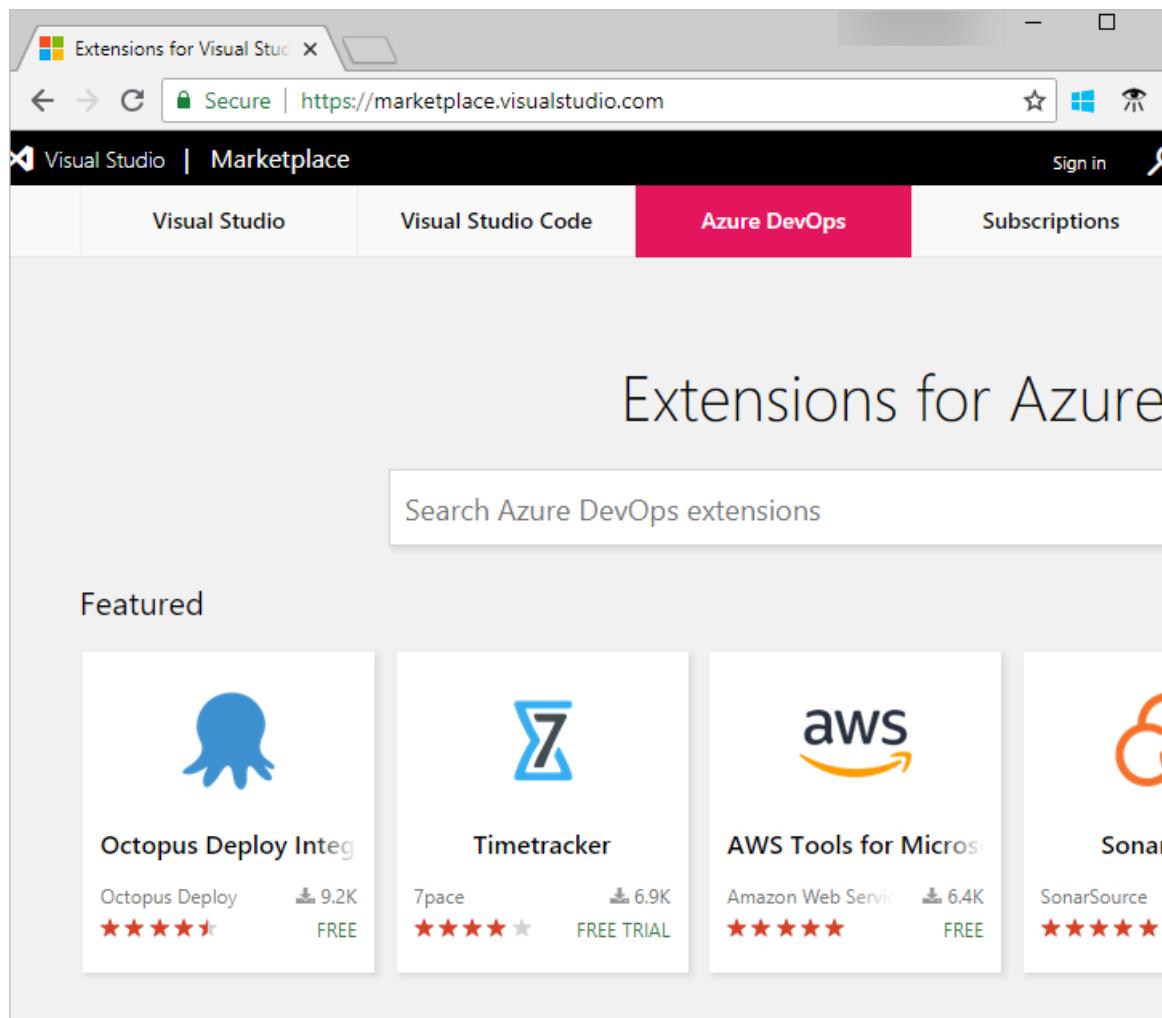
To learn about building your own Azure DevOps extensions, see [developing](#) and [publishing](#) extensions.

## Prerequisites

- Only Azure DevOps [project collection administrators or organization owners](#) can install extensions. If you don't have permissions, you can [request extensions](#) instead.
- Private extensions must be shared with your organization 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](#) > [Azure DevOps](#).



- Find and select the extension that you want to install. For this quickstart, we select [Code Search](#).

- Choose **Get it free**.

The screenshot shows the Visual Studio Marketplace interface. At the top, it says "Visual Studio | Marketplace". Below that, "Visual Studio Team Services > Code > Code Search". The main feature is "Code Search" by Microsoft, with 61,097 installs and a rating of 4.5 stars (63 reviews). It's labeled as "Free". A description states: "Code Search provides fast, flexible and accurate search across all your code". A green "Get it free" button is highlighted with a red border.

4. Select your organization and select **Install** to install the extension.

The screenshot shows the account selection step in the Visual Studio Marketplace. On the left, there's a sidebar with the "Code Search" extension icon. The main area shows "Account" selected with a blue circle and "Done" next to a checkmark. Below that, it says "Select a Visual Studio Team Services account" with a dropdown menu showing "FabrikamDev". A blue "Install" button is at the bottom.

- [Why don't I see any organizations?](#)
- [Why can't I install this extension?](#)

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

The screenshot shows the completion step in the Visual Studio Marketplace. It says "You are all set!" with a blue "Proceed to account" button and a grey "Go to Marketplace" button. Below that, it says "Additionally:" and has links to "Learn more about Code Search".

## Next steps

[Assign paid extensions](#)

## Related articles

Find answers to common problems on the [troubleshooting](#) page.

# Set personal or team favorites

1/31/2019 • 8 minutes to read • [Edit Online](#)

## Azure DevOps Services | Azure DevOps Server 2019 | TFS 2018 | TFS 2017

By favoriting an artifact or view, you can quickly access it. An artifact is a specific container, definition, or configuration of a feature or tool—such as a project, repository, build pipeline, or query. As your code base, work tracking efforts, developer operations, and organization grows, you'll want to be able to quickly navigate to those artifacts of interest to you and your team. Setting favorites allows you to do just that.

You can set favorites for yourself or your team. Team favorites are a quick way for members of your team to quickly access shared resources of interest. You favorite an item for yourself by clicking the  star icon. The favorited item will then show up easily from one or more directory lists. You set favorites for a team through the context menu for the artifact.

You can set favorites for the following artifacts from the indicated page.

### NOTE

Your web portal uses either the **New navigation** or **Previous navigation** user interface. Choose the **New navigation** tab if the **New Navigation** feature is enabled. You'll see a vertical sidebar along with other navigational features when **New Navigation** has been enabled for the signed-in user or the organization. Choose **Previous navigation** when you see a top-level, blue-bar—indicating that **New navigation** isn't enabled.

### NOTE

Choose the **New navigation** tab for guidance. Azure DevOps Server 2019 supports the **New Navigation** user interface.

### NOTE

Choose the **Previous navigation** tab for guidance. TFS 2018 and earlier versions only support the previous navigation user interface.

- [New navigation](#)
- [Previous navigation](#)

| SERVICE/AREA                 | ARTIFACTS                                            | PAGE                                                                     |
|------------------------------|------------------------------------------------------|--------------------------------------------------------------------------|
| Organization & projects      | Projects                                             | <a href="#">Projects</a> (personal favorites only)                       |
| Dashboard                    | Team dashboards                                      | <a href="#">Overview&gt;Dashboards</a>                                   |
| Code                         | Repositories                                         | <a href="#">Repos&gt;Branches</a> (personal favorites only)              |
| Work, Agile tools for a team | Backlogs, boards, sprint backlogs, sprint taskboards | <a href="#">Boards&gt;Boards</a> or <a href="#">Backlogs, or Sprints</a> |
| Work                         | Queries                                              | <a href="#">Boards&gt;Queries</a>                                        |

| Service/Area      | Artifacts            | Page                                                                                                                     |
|-------------------|----------------------|--------------------------------------------------------------------------------------------------------------------------|
| Work              | Delivery plans       | <b>Boards&gt;Plans</b> (personal favorites only, requires installation of the <a href="#">Delivery Plans extension</a> ) |
| Build and Release | Pipeline definitions | <b>Pipelines&gt;Builds or Releases</b>                                                                                   |
| Test              | Test plans           | <b>Test Plans&gt;Test Plans</b> (personal favorites only)                                                                |

Choose the **Previous navigation** tab for guidance. **New navigation** isn't supported for TFS 2018 and earlier versions.

## Favorite a project or team

- [New navigation](#)
- [Previous navigation](#)

1. To favorite a project, open the project **Summary** page and choose the star icon.

2. To favorite a team artifact, open **Boards>Boards** or **Boards>Backlogs**. Select the team you want to favorite from the team selector and choose the star icon.

3. To favorite other team artifacts, choose the team icon, and then choose the star icon next to one of the listed artifacts.

The screenshot shows the 'Favorites' section of the Azure DevOps interface. At the top, there's a purple circular icon with three stylized human figures, followed by the team name 'Phone', the project name 'Fabrikam Fiber', and a 'Team Settings' link. Below this, there are two tabs: 'Items' (which is selected) and 'Members (1)'. A dropdown menu labeled 'All Items' is open. The main area lists three favorite items under the 'Phone' service:

| Icon          | Name           | Star Icon   |
|---------------|----------------|-------------|
| Boards icon   | Phone Boards   | Yellow star |
| Backlogs icon | Phone Backlogs | Yellow star |
| Sprints icon  | Phone Sprints  | Yellow star |

Choose the **Previous navigation** tab for guidance. **New navigation** isn't supported for TFS 2018 and earlier versions.

## View personal favorites

### NOTE

Favorite groups specific to a service are disabled if the service they depend on has been disabled. For example, if **Boards** is disabled, then the favorite groups—Plans, Boards, Backlogs, Analytics views, Sprints, and Queries item and all Analytics widgets—are disabled. To re-enable a service, see [Turn an Azure DevOps service on or off](#).

- [New navigation](#)
- [Previous navigation](#)

Access your favorites by choosing the inbox icon, and then choosing **Favorites**.

The screenshot shows the Microsoft Teams navigation bar at the top. From left to right, there are icons for search, a red-bordered 'Favorites' icon, a clipboard, and a user profile. Below the navigation bar, the 'Favorites' tab is highlighted with a red border. The main content area lists various items under different categories, each with a star icon indicating it's a favorite:

- Projects:
  - Fabrikam Fiber
- Teams:
  - Phone
  - Voice
  - Web
- Dashboards:
  - Fabrikam Fiber Team Analytics
- Plans:
  - Backlog team plans
  - Fabrikam Fiber Feature plans
- Queries:
  - All items
  - All items on all projects
  - Assigned to me

Choose the **Previous navigation** tab for guidance. **New navigation** isn't supported for TFS 2018 and earlier versions.

## Favorite a team's backlog, Kanban board, or other artifact

- [New navigation](#)
- [Previous navigation](#)

You can favorite several Agile tools for a team from a **Boards** page.

1. Choose **Boards**, and then choose the page of interest, such as **Boards**, **Backlogs**, or **Sprints**.

For example, here we choose (1) **Work** and then (2) **Backlogs**.

The screenshot shows the Azure DevOps interface for the 'fabrikam / Fabrikam Fiber' project. On the left, a sidebar menu has 'Backlogs' selected and highlighted with a red box. The main area displays the 'Fabrikam Fiber Team' backlog with 7 items listed:

|   | Order             | Assigned To | State     | Title                    |
|---|-------------------|-------------|-----------|--------------------------|
| 1 | Jamal Hartnett    | ...         | Committed | Hello World Web Site     |
| 2 | Jamal Hartnett    | ...         | Committed | Slow response on informa |
| 3 | Raisa Pokrovskaya | ...         | New       | Add an information form  |
| 4 | Raisa Pokrovskaya | ...         | New       | Change initial view      |
| 5 | Christie Church   | ...         | Committed | Secure sign-in           |
| 6 | Johnnie McLeod    | ...         | Approved  | Welcome back page        |
| 7 | Christie Church   | ...         | Committed | Cancel order form        |

To choose a specific team backlog, open the selector and select a different team or choose the [Browse all team backlogs](#) option. Or, you can enter a keyword in the search box to filter the list of team backlogs for the project.

The screenshot shows a dropdown menu for selecting a team backlog. The top part of the menu is labeled 'Fabrikam Fiber Team' with a star icon. Below it is a search bar labeled 'Search team backlogs'. The main list is titled 'My Team Backlogs' and contains several items:

- Account Management
- Customer Profile
- Fabrikam Team
- Phone
- Service Delivery
- Service Status
- Shopping Cart

At the bottom of the menu, there is a link 'Browse all backlogs'.

- Choose the star icon to favorite a team backlog. Favorited artifacts ( favorited icon) appear on your **Favorites** page and towards the top of the team backlog selector menu.

Choose the **Previous navigation** tab for guidance. **New navigation** isn't supported for TFS 2018 and earlier versions.

## Favorite a dashboard

- [New navigation](#)
- [Previous navigation](#)

- From **Overview>Dashboards**, open the selector and choose the **Browse all dashboards** option.

Fabrikam Team Overview

Search dashboards

Favorites

- Fabrikam Team Analytics

Account Management

- Account Management Overview

Customer Profile

- Customer Profile Overview

Fabrikam Team

- Fabrikam Team Analytics

+ New dashboard

[Browse all dashboards](#)

6 items

0 Commits in last 7 days

11 items

23 - November 10

2. The **Mine** page shows your favorited dashboards, and all dashboards of teams that you belong to. The **All** page (shown below) lists all dashboards defined for the project in alphabetical order. You can filter the list by team or by keyword.

Dashboards

Mine All + New dashboard

Filter dashboards

Filter by team

Name ↑ Team

| Name             | Team               |
|------------------|--------------------|
| Analytics        | Fabrikam Team      |
| Bug status       | Fabrikam Team      |
| Bugs             | Internet           |
| Overview         | Account Management |
| Overview         | Customer Profile   |
| Overview         | Email              |
| Overview         | Fabrikam Team      |
| Overview         | Internet           |
| Overview         | Phone              |
| Overview         | Service Delivery   |
| Overview         | Service Status     |
| Team Guidance    | Fabrikam Team      |
| Work in Progress | Internet           |

Search

- Account Management
- Customer Profile
- Email
- Fabrikam Team
- Internet
- Phone
- Service Delivery
- Service Status

Clear

#### TIP

You can change the sort order of the list by choosing the column label.

3. To favorite a dashboard, hover over the dashboard and choose the star icon.



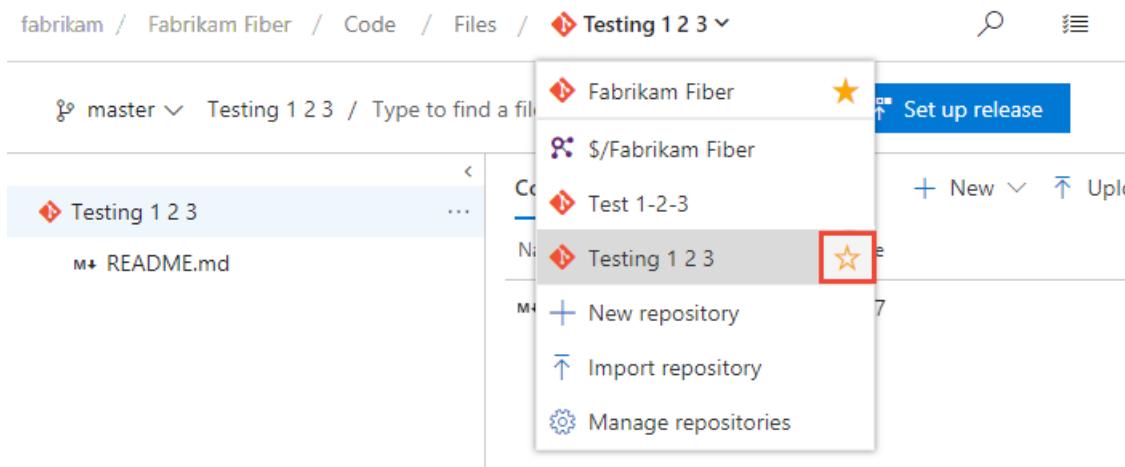
Favoriting a dashboard will cause it to appear on your **Favorites** page and towards the top in the **Dashboards** selection menu.

Choose the **Previous navigation** tab for guidance. **New navigation** isn't supported for TFS 2018 and earlier versions.

## Favorite a repository

- [New navigation](#)
- [Previous navigation](#)

From any **Repos** page, open the repository selector and choose the star icon for the repository you want to favorite.



Choose the **Previous navigation** tab for guidance. **New navigation** isn't supported for TFS 2018 and earlier versions.

## Favorite a build pipeline

- [New navigation](#)
- [Previous navigation](#)

Open **Pipelines>Builds** and choose either **Mine** or **Definitions** page. Choose the star icon next to the build definition you want to favorite. Or, open the context menu of the build definition, and then select **Add to my favorites** or **Add to team favorites**.

The screenshot shows the 'Build Definitions' page in the Azure DevOps interface. At the top, there's a search bar labeled 'Build ID or build number' with a magnifying glass icon, and buttons for '+ New' and '+ Import'. Below the search bar, there are tabs for 'Mine', 'Definitions', 'Queued', and 'XAML'. The 'Mine' tab is currently selected. The main area displays a list of build definitions. The first item in the list is 'fabrikam build', which has a yellow star icon next to it. A context menu is open over this definition, listing various actions: 'Queue new build...', 'Edit definition', 'Pause', 'View builds', 'Add to my favorites' (with a red box around it), 'Add to team favorites >', 'Clone...', 'Export', 'Rename...', 'Save as a template...', 'Delete definition', 'Security...', and 'Add to dashboard'. To the right of the 'fabrikam build' row, there are columns for 'Status' (No builds have r...), 'Triggered by' (-----), and 'History' (-----). Below the 'fabrikam build' row, another row for 'Fabrikam Fiber-Cl' is partially visible.

Choose the **Previous navigation** tab for guidance. **New navigation** isn't supported for TFS 2018 and earlier versions.

## Favorite a shared query

- [New navigation](#)
- [Previous navigation](#)

Open **Boards>Queries** and choose the **All** page. Expand a folder as needed. Choose the star icon next to the query you want to favorite.

Or, open the context menu of the query, and then select **Add to Team Favorites**, and then select from the list of teams.

## Queries

The screenshot shows the TFS Queries interface. At the top, there are tabs for 'Favorites' and 'All', a 'New query' button, and a 'Filter by keywords' search bar. Below the search bar is a 'Title' filter dropdown. Under 'Shared Queries', there's a 'Current Sprint' folder containing a 'Blocked Tasks' query. The 'Blocked Tasks' query card includes a star icon, three dots for more options, and a 'K' icon with the name 'Kathryn updated 7/12/2018'. A context menu is open over the query card, listing options: 'Run query', 'Edit', 'Rename', 'Delete', 'Add to Team Favorites' (which is highlighted with a red box), 'Customer Service', 'Fabrikam Fiber Team', 'Management team', and 'Manage Tags'. The 'Phone' option under 'Add to Team Favorites' is also highlighted with a red box.

You can also set a query as a personal favorite by opening the query and choosing the star icon.

Queries > Shared Queries > All items

Choose the **Previous navigation** tab for guidance. **New navigation** isn't supported for TFS 2018 and earlier versions.

## Favorite a delivery plan

To learn more about delivery plans, see [Review team Delivery Plans](#).

- [New navigation](#)
- [Previous navigation](#)

To mark a delivery plan as a favorite, open the **Boards>Plans** page and choose the star icon next to the Delivery Plan.

Choose the **Previous navigation** tab for guidance. **New navigation** isn't supported for TFS 2018 and earlier versions.

## Favorite a test plan

To learn more about test plans, see [Create a test plan and test suite](#).

- [New navigation](#)
- [Previous navigation](#)

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

Choose the **Previous navigation** tab for guidance. **New navigation** isn't supported for TFS 2018 and earlier

versions.

## Unfavorite an artifact

- [New navigation](#)
- [Previous navigation](#)

You can unfavorite an artifact from your **Favorites** page. Choose the inbox icon, and then choose **Favorites**. Choose the favorited icon of a currently favorited artifact.

The screenshot shows the 'Favorites' page in the TFS interface. At the top, there's a navigation bar with icons for search, inbox (highlighted with a red box), notifications, and user profile. Below the bar, tabs for 'Work Items', 'Pull requests', and 'Favorites' are visible, with 'Favorites' being the active tab. The main content area is organized into sections: 'Projects', 'Teams', 'Dashboards', 'Plans', and 'Queries'. Each section lists artifacts with their names and a yellow star icon indicating they are favorited. For example, under 'Projects', 'Fabrikam Fiber' is listed with a star. Under 'Teams', 'Phone', 'Voice', and 'Web' are listed with stars. Under 'Dashboards', 'Fabrikam Fiber Team Analytics' is listed with a star. Under 'Plans', 'Backlog team plans' and 'Fabrikam Fiber Feature plans' are listed with stars. Under 'Queries', 'All items', 'All items on all projects', and 'Assigned to me' are listed with stars.

| Category   | Artifact                      | Status |
|------------|-------------------------------|--------|
| Projects   | Fabrikam Fiber                | ★      |
|            |                               |        |
|            |                               |        |
| Teams      | Phone                         | ★      |
|            | Voice                         | ★      |
|            | Web                           | ★      |
| Dashboards | Fabrikam Fiber Team Analytics | ★      |
|            |                               |        |
|            |                               |        |
| Plans      | Backlog team plans            | ★      |
|            | Fabrikam Fiber Feature plans  | ★      |
|            |                               |        |
| Queries    | All items                     | ★      |
|            | All items on all projects     | ★      |
|            | Assigned to me                | ★      |

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

Choose the **Previous navigation** tab for guidance. **New navigation** isn't supported for TFS 2018 and earlier versions.

## Related articles

- [Manage personal notifications](#)
- [Set your preferences](#)

# Follow a user story, bug, issue, or other work item or pull request

2/7/2019 • 3 minutes to read • [Edit Online](#)

[Azure Boards](#) | [Azure Repos](#) | [Azure DevOps Server 2019](#) | [TFS 2018](#) | [TFS 2017](#)

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

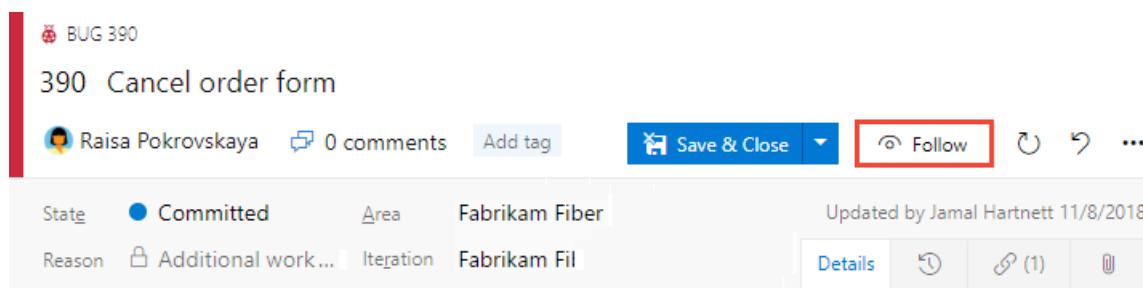
This article shows you how to:

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

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

## Follow a work item

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



### 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](#).

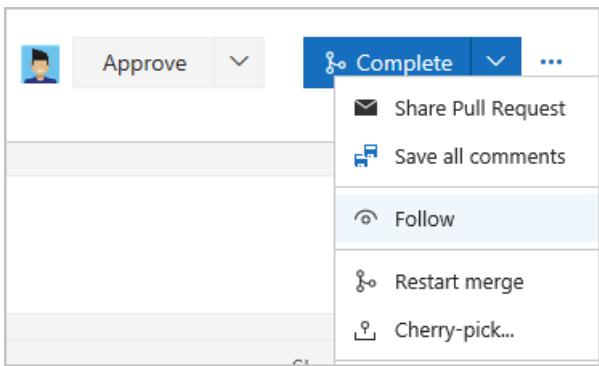
You'll only receive notifications when other members of your team modifies the work item, such as adding to the discussion, changing a field value, or adding an attachment.

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

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

## Follow a pull request

To track the progress of a single pull request, choose the  actions icon for the pull request, and select the  [Follow](#) option. 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 user profile](#).

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

## Manage work items that you're following

You can review and manage all the work items you've selected to follow.

### NOTE

Your web portal uses either the **New navigation** or **Previous navigation** user interface. Choose the **New navigation** tab if the **New Navigation** feature is enabled. You'll see a vertical sidebar along with other navigational features when **New Navigation** has been enabled for the signed-in user or the organization. Choose **Previous navigation** when you see a top-level, blue-bar—indicating that **New navigation** isn't enabled. For more information, see [Web portal navigation](#).

### NOTE

Choose the **New navigation** tab for guidance. Azure DevOps Server 2019 supports the **New Navigation** user interface. For more information, see [Web portal navigation](#).

### NOTE

Choose the **Previous navigation** tab for guidance. TFS 2018 and earlier versions only support the previous navigation user interface. For more information, see [Web portal navigation](#).

- [New navigation](#)
- [Previous navigation](#)

Open **Boards>Queries**, choose **All**, and under **My Queries**, choose **Followed work items**.

Fabrikam Fiber

Overview

Boards

Work Items

Boards

Backlogs

Sprints

**Queries**

Plans

Code

Queries

All

New query

Title

My Queries

- Active bugs
- All Items
- Assigned to me
- Closed bugs
- Fabrikam Fiber Team - Backlog items
- Followed work items**
- Following - my query

From this view, you can view all items you're following across all projects. 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.

You can also view and manage work that you're following from **Boards>Work Items** and pivot to **Following**.

Azure DevOps fabrikam / Fabrikam Fiber

Fabrikam Fiber

Overview

Boards

**Work Items**

Boards

Backlogs

Sprints

Queries

Following

New Work Item

Open in Queries

Column Op

| ID  | Assigned To       | State       | Title                     |
|-----|-------------------|-------------|---------------------------|
| 375 | Jamal Hartnett    | ● Committed | Check service status      |
| 361 | Christie Church   | ● Approved  | Interim save on long form |
| 384 | Christie Church   | ● Committed | Secure sign-in            |
| 360 | Raisa Pokrovskaya | ● New       | Change initial view       |
| 436 | Jamal Hartnett    | ● Committed | Hello World Web Site      |

Choose the **Previous navigation** tab for guidance. **New navigation** isn't supported for TFS 2018 and earlier versions.

## Related articles

- [Manage personal notifications](#)

- [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

2/5/2019 • 11 minutes to read • [Edit Online](#)

**Azure DevOps Services | Azure DevOps Server 2019 | TFS 2018 | TFS 2017 | TFS 2015 | TFS 2013**

With Stakeholder access, you can add and modify work items, manage build and release pipelines, and view dashboards. You can check project status and provide direction, feedback, feature ideas, and business alignment to a team. Stakeholder access is one of several supported access levels. To understand the full set of features Stakeholders have access to, see [About access levels](#).

## NOTE

For public projects, Stakeholder access gives users greater access to work tracking features. To learn more, see [Default roles and access for public projects](#).

With Stakeholder access, you can add and modify work items, view and approve pipelines, and view dashboards. You can check project status and provide direction, feedback, feature ideas, and business alignment to a team. Stakeholder access is one of several supported access levels. To understand the full set of features Stakeholders have access to, see [About access levels](#).

With Stakeholder access, you can add and modify work items. You can check project status and provide direction, feedback, feature ideas, and business alignment to a team. Stakeholder access is one of several supported access levels. To understand the full set of features Stakeholders have access to, see [About access levels](#).

Use this topic to learn:

- How to sign-in to a project
- 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

For information about working with pipelines, see these articles:

- [Build your GitHub repository](#)
- [Build OSS repositories](#)

## First time signing in

1. Choose 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://dev.azure.com/OrganizationName/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 organization owner or project administrator to add you as a member of the project with Stakeholder access.

# View and add work items

You can start viewing and adding work items once you connect to a project.

## NOTE

Your web portal uses either the **New navigation** or **Previous navigation** user interface. Choose the **New navigation** tab if the **New Navigation** feature is enabled. You'll see a vertical sidebar along with other navigational features when **New Navigation** has been enabled for the signed-in user or the organization. Choose **Previous navigation** when you see a top-level, blue-bar—indicating that **New navigation** isn't enabled. For more information, see [Web portal navigation](#).

## NOTE

Choose the **New navigation** tab for guidance. Azure DevOps Server 2019 supports the **New Navigation** user interface. For more information, see [Web portal navigation](#).

## NOTE

Choose the **Previous navigation** tab for guidance. TFS 2018 and earlier versions only support the previous navigation user interface. For more information, see [Web portal navigation](#).

- [New navigation](#)
- [Previous navigation](#)

1. (1) Check that you have selected the right project, then (2) choose **Boards>Work Items**.

| ID  | Assigned To       | State     | Title                     |
|-----|-------------------|-----------|---------------------------|
| 375 | Jamal Hartnett    | Committed | Check service status      |
| 361 | Christie Church   | Approved  | Interim save on long form |
| 384 | Christie Church   | Committed | Secure sign-in            |
| 360 | Raisa Pokrovskaya | New       | Change initial view       |
| 436 | Jamal Hartnett    | Committed | Hello World Web Site      |

2. Using the drop-down menu, you can focus on relevant items inside a project using one of the seven pivots as described next.

Work Items

- **Assigned to me:** lists all work items assigned to you in the project in the order they were last updated. To open or update a work item, simply click its title.
- **Following:** lists work items that you've elected to follow.
- **Mentioned:** lists work items in which you've been mentioned in the last 30 days.
- **My activity:** lists work items that you have recently viewed or updated.
- **Recently updated:** lists work items recently updated in the project.
- **Recently completed:** lists work items completed or closed in the project.
- **Recently created:** lists work items created within the last 30 days in the project.

3. To add a work item, simply choose the work item type from the **New Work Item** drop down menu.

For example, here we choose User Story.

Work Items

| ID  | Title                        | Type       | Status   | Area           | Tags |
|-----|------------------------------|------------|----------|----------------|------|
| 348 | This is the first user story | Bug        | Resolved | Fabrikam Fiber |      |
| 512 | Welcome to the system        | Epic       | New      | Fabrikam Fiber |      |
| 498 | Secure SSO implementation    | Feature    | Active   | Fabrikam Fiber |      |
| 468 | Customer Support Portal      | Issue      | New      | Fabrikam Fiber |      |
| 342 | Integrate payment gateway    | Task       | Resolved | Fabrikam Fiber |      |
| 486 | Welcome to the system        | User Story | Closed   | Fabrikam Fiber |      |

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

USER STORY 398

398 Cancel order form

Jamal Hartnett 0 Add Tag

Save & Close Follow ...

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

Reason: New Iteration: Fabrikam Fiber

Description:

Planning: Story Points: 2 Priority: Risk:

Development: + Add link Development hasn't started on this item.

Acceptance Criteria:

Related Work: + Add link There are no links in this group.

Classification: Value area: Business

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.

Choose the **Previous navigation** tab for guidance. **New navigation** isn't supported for TFS 2018 and earlier versions.

For descriptions of each field, see [Work item field index](#).

#### NOTE

Depending on the process chosen when the project was created, the types of work items you can create will differ. For example, backlog items may be called user stories ([Agile](#)), product backlog items ([Scrum](#)), 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](#).

## Add tags to a work item

Tags are useful for filtering backlogs, boards, and queries

All users granted Stakeholder access for a private project can only [add existing tags to work items](#), not add new tags. Even if the **Create tag definition** permission for the user is set to Allow. This is part of the Stakeholder access settings.

Azure DevOps Services users granted Stakeholder access for a public project can add new and existing tags to work items.

## Check the backlog, add work items to the backlog

Work appears in the backlog in priority order. Work item types may include bugs depending on the settings made for the team.

- [New navigation](#)
- [Previous navigation](#)

1. (1) Check that you have selected the right project, (2) choose **Boards>Backlogs**, and then (3) select the correct team from the team selector menu.

The screenshot shows the Azure DevOps interface for the 'fabrikam / Fabrikam Fiber' project. The top navigation bar has 'fabrikam / Fabrikam Fiber' with a dropdown arrow and a red circle with '1'. Below it, the 'Fabrikam Fiber Team' dropdown is highlighted with a red box and a red circle with '3'. The left sidebar has a 'Backlogs' section with a red box and a red circle with '2'. The main area displays a backlog of work items:

| # | Assigned To       | State     | Title                       |
|---|-------------------|-----------|-----------------------------|
| 1 | Jamal Hartnett    | Committed | Hello World Web Site        |
| 2 | Jamal Hartnett    | Committed | Slow response on informa... |
| 3 | Raisa Pokrovskaya | New       | Add an information form     |
| 4 | Raisa Pokrovskaya | New       | Change initial view         |
| 5 | Christie Church   | Committed | Secure sign-in              |
| 6 | Johnnie McLeod    | Approved  | Welcome back page           |
| 7 | Christie Church   | Committed | Cancel order form           |

To choose another team, open the selector and select a different team or choose the [Browse all sprints](#) option. Or, you can enter a keyword in the search box to filter the list of team backlogs for the project.

A dropdown menu titled 'Fabrikam Fiber Team' with a red box and a red circle with '2'. It includes a search bar and a list of teams:

- Account Management
- Customer Profile
- Fabrikam Team **(selected)**
- Phone
- Service Delivery
- Service Status
- Shopping Cart
- [Browse all backlogs](#)

**TIP**

Choose the star icon to favorite a team backlog. Favorited artifacts ( favorited icon) appear at the top of the team selector list.

2. Check that you have selected **Backlog items** (for Scrum), **Stories** (for Agile), or **Requirements** (for CMMI) as the backlog level.

The screenshot shows the top navigation bar of a TFS backlog items board. It includes the project name 'Fabrikam Fiber Team', a star icon, and a refresh icon. Below the project name are three buttons: '+ New Work Item', 'Backlog items Board', and '...'. To the right of these is a dropdown menu labeled 'Backlog items' with a red box around it. Further right are icons for filter, settings, and a refresh arrow.

3. (Optional) To choose which columns should display and in what order, choose the '...' actions icon and select **Column options**. To learn more, see [Change column options](#).

The screenshot shows the '...' actions menu that was opened in the previous step. It contains three options: 'Column options' (which is highlighted with a red box), 'Create query', and 'Email'.

4. To view or edit a work item, select it and choose **Enter**.
5. To add a work item, choose the '+ New Work Item', enter a title and then press the Enter key or choose **Add to top**.

The screenshot shows the backlog items board with a new work item titled 'Hello World Web' selected. The title is highlighted with a red box. Other items in the list include 'Product Bac...' and 'Add to top'.

Repeat this step to capture all your ideas as work items.

Choose the **Previous navigation** tab for guidance. **New navigation** isn't supported for TFS 2018 and earlier versions.

## Check work in progress

To view the team's progress, open the Kanban board. To view or edit a work item, choose a title and press **Enter**, or double-click the title.

- [New navigation](#)
- [Previous navigation](#)

1. (1) Check that you have selected the right project, (2) choose **Boards>Boards**, and then (3) select the correct team from the team selector menu.

The screenshot shows the Azure DevOps interface. At the top left is the 'Azure DevOps' logo. Next to it is a dropdown menu labeled 'fabrikam / Fabrikam Fiber' with a red box around it and a red circle with the number '1' above it. On the far right of the header is a red circle with the number '3'. The main area has a sidebar on the left with icons for Overview, Boards (highlighted with a red box and the number '2'), Backlogs, and Sprints. The main content area shows a 'Backlog' tab selected. A search bar at the top of the backlog section has a red box around it and a red circle with the number '3' above it. Below the search bar is a 'New item' button. The backlog board displays several items:

- 'Welcome back page' by Johnnie McLeod, Iteration ... Sprint 3, 0/4 completed, 1 in progress.
- 'Add an information form' by Raisa Pokrovskaya, Iteration ... Sprint 3, 0/2 completed.

On the right side of the backlog board, there are two sections: 'Slow form' and 'Jam'.

To choose another team's board, open the selector and select a different team or choose the [Browse all team boards](#) option. Or, you can enter a keyword in the search box to filter the list of team backlogs for the project.

A dropdown menu titled 'Fabrikam Fiber Team' with a red box around it and a red circle with the number '3' above it. The menu contains the following items:

- Fabrikam Fiber Team
- Management team
- Phone
- Voice
- Web
- [Browse all team boards](#)

#### TIP

Choose the star icon to favorite a team board. Favorited artifacts ( favored icon) appear at the top of the team selector list.

- Check that you have selected **Backlog items** (for Scrum), **Stories** (for Agile), or **Requirements** (for CMMI) as the backlog level.

The navigation bar at the top of the backlog items page includes the following items:

- New Work Item
- [Backlog items Board](#)
- ...
- [Backlog items](#) (highlighted with a red box)
- Filter icon
- Settings icon
- Help icon

Choose the **Previous navigation** tab for guidance. **New navigation** isn't supported for TFS 2018 and earlier versions.

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

- [New navigation](#)

- Previous navigation

1. Choose **Boards>Work Items**, and then select **Assigned to me**.

The screenshot shows the 'Work Items' page in TFS. At the top, there's a header with 'Assigned to me' (with a dropdown arrow), '+ New Work Item', 'Open in Queries', and 'Recycle Bin'. Below the header is a navigation bar with 'Assigned to me' highlighted and a red box around it. To the right of the navigation bar are buttons for 'Types' and 'States'. A dropdown menu is open under 'Assigned to me', listing 'Following', 'Mentioned', 'My activity', 'Recently updated', 'Recently completed', and 'Recently created'. The main area displays work items in a grid. One item is visible: 'Architecture changes' (with permissions) - New (status) - In Progress (state). The status is highlighted with a blue dot. The state is also highlighted with a blue dot. The author is 'Fabrikam Fiber\Voice'.

You can focus on relevant items inside a 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](#).

2. To query for work items, see [View, run, or email a work item query](#).

Choose the **Previous navigation** tab for guidance. **New navigation** isn't supported for TFS 2018 and earlier versions.

## 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](#)
- [Provide Stakeholders access to edit build and release pipelines](#)

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](#).

# Tutorial: Change individual or group permissions, grant select access to specific functions

1/31/2019 • 4 minutes to read • [Edit Online](#)

[Azure DevOps Services](#) | [Azure DevOps Server 2019](#) | [TFS 2018](#) | [TFS 2017](#) | [TFS 2015](#) | [TFS 2013](#)

The standard way for permissions to accrue to individuals are by adding user accounts to one or more built-in security groups. However, in certain instances, you'll want to grant additional permissions to select individuals, but perhaps not all permissions assigned to the security group. For example, you might want to grant several individuals the ability to add or edit area and iteration paths, but not have all permissions available to members of the Project Administrators group.

The three ways to change permissions for an individual are:

- Create a custom Azure DevOps security group, define permissions for that group, add the user account to the group
- For object-level permissions: Add the user account and set permissions
- For project or collection-level permissions: Search for the user account and selectively change their permission assignments

In this article you learn how to do the following:

- Create a custom security group
- Set permissions for a custom security group
- Add members to a custom security group
- Change the permission assignments for an individual user account

If you are new to administrating permissions and groups, review [About permissions and groups](#) to learn about permission states and inheritance.

## NOTE

The images you see from your web portal may differ from the images you see in this article. These differences result from updates made to Azure DevOps Services or your on-premises deployment. However, the basic functionality available to you remains the same unless explicitly mentioned.

## Create a custom security group

Create a custom security group at the project-level or the collection-level. The method for creating a custom security group is the same, no matter at what level you add it.

To create a project-level security group, open the web portal and choose the project where you want to add users or groups.

#### NOTE

Your web portal uses either the **New navigation** or **Previous navigation** user interface. Choose the **New navigation** tab if the **New Navigation** feature is enabled. You'll see a vertical sidebar along with other navigational features when **New Navigation** has been enabled for the signed-in user or the organization. Choose **Previous navigation** when you see a top-level, blue-bar—indicating that **New navigation** isn't enabled. For more information, see [Web portal navigation](#).

#### NOTE

Choose the **New navigation** tab for guidance. Azure DevOps Server 2019 supports the **New Navigation** user interface. For more information, see [Web portal navigation](#).

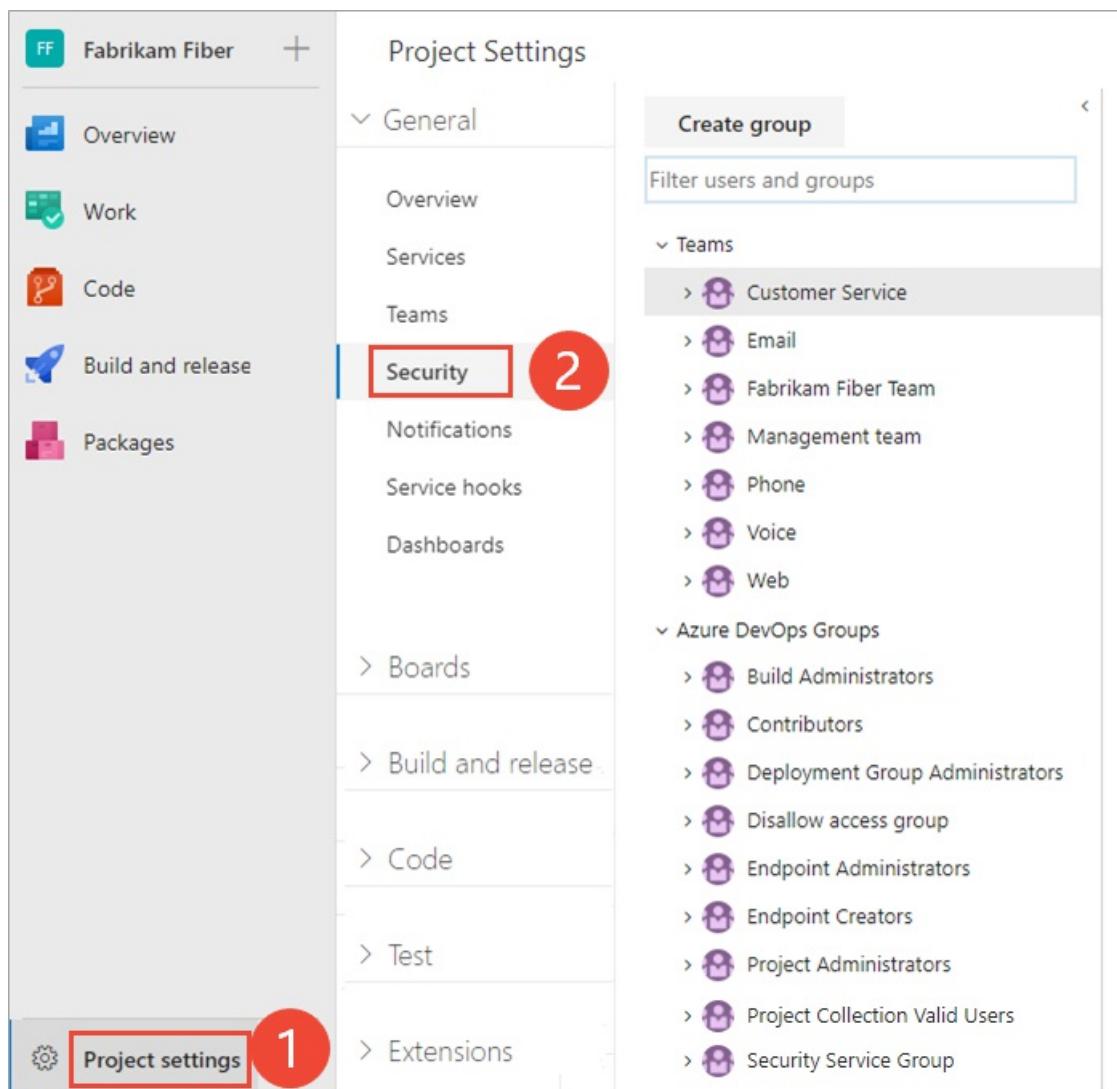
#### NOTE

Choose the **Previous navigation** tab for guidance. TFS 2018 and earlier versions only support the previous navigation user interface. For more information, see [Web portal navigation](#).

- [New navigation](#)
- [Previous navigation](#)

## 1. Choose **Project Settings > Security**.

*To see the full image, click to expand.*



2. Choose **Create group** to open the dialog for adding a group.

The screenshot shows the 'Create group' dialog box. On the left, there's a sidebar with a tree view of existing groups: 'Teams' (Customer Service, Email, Fabrikam Fiber Team, Management team, Phone, Voice, Web) and 'Azure DevOps Groups' (Build Administrators, Contributors, Deployment Group Administrators, Disallow access group, Endpoint Administrators). The main area is titled 'Permissions' and lists various permissions with their current status ('Not set' or 'Allow (inherited)').

|                                     | Permissions       | Members | Member of |
|-------------------------------------|-------------------|---------|-----------|
| Bypass rules on work item updates   | Not set           |         |           |
| Change process of team project.     | Not set           |         |           |
| Create tag definition               | Allow (inherited) |         |           |
| Create test runs                    | Allow (inherited) |         |           |
| Delete and restore work items       | Not set           |         |           |
| Delete shared Analytics views       | Allow (inherited) |         |           |
| Delete team project                 | Not set           |         |           |
| Delete test runs                    | Allow (inherited) |         |           |
| Edit project-level information      | Not set           |         |           |
| Edit shared Analytics views         | Allow (inherited) |         |           |
| Manage project properties           | Not set           |         |           |
| Manage test configurations          | Allow (inherited) |         |           |
| Manage test environments            | Allow (inherited) |         |           |
| Move work items out of this project | Not set           |         |           |
| Permanently delete work items       | Not set           |         |           |

3. Enter a name for the group, and optionally a description.

For example, here we define a Team Admins group.

The screenshot shows the 'Create new Azure DevOps Services group' dialog. It has a 'PROFILE' section with a placeholder profile picture, a 'Group name' field containing 'Team admins', and a 'Description' field with the placeholder text 'Add all Team Admins to this group to provide them enhanced permissions'. At the bottom are 'Create group' and 'Cancel' buttons.

4. Choose **Create group**.

Choose the **Previous navigation** tab for guidance. **New navigation** isn't supported for TFS 2018 and earlier versions.

## Set permissions for a custom security group

1. To set permissions for the custom group you just created, choose the group name and then set one or more

permissions.

The screenshot shows the 'Security' tab in the Azure DevOps interface. On the left, there's a sidebar with 'Create group' and a 'Filter users and groups' search bar. Below that is a tree view of security groups under 'Azure DevOps Groups': 'Build Administrators', 'Contributors', 'Disallow access group', 'Project Administrators', 'Project Valid Users', 'Readers', 'Release Administrators', and 'Team Admins'. The 'Team Admins' item is highlighted with a red box. The main panel shows the 'Fabrikam Fiber > Team Admins' group details. It has tabs for 'Permissions', 'Members', and 'Member of'. The 'Permissions' tab lists various project-level permissions with their current status ('Allow', 'Deny', 'Not set'): Bypass rules on work item updates (Allow), Create tag definition (Allow), Create test runs (Allow), Delete and restore work items (Allow), Delete team project (Deny), Delete test runs (Not set), Edit project-level information (Not set), Manage project properties (Deny), Manage test configurations (Allow), Manage test environments (Allow), Move work items out of this project (Allow), Permanently delete work items (Allow), Rename team project (Deny), Suppress notifications for work item updates (Not set), View analytics (Allow (inherited)), View project-level information (Allow), and View test runs (Allow). At the bottom of the permissions list is a link 'Clear explicit permissions'. At the very bottom are 'Save changes' and 'Undo changes' buttons.

For a description of each permission, see [Permissions and groups reference, project-level permissions](#).

2. Choose **Save changes**.

## Add members to a custom security group

You add members to a custom security group in the same way you add users to a built-in group.

1. Choose the security group, choose **Members**, and then choose **Add**.

The screenshot shows the 'Create group' interface. On the left, there's a sidebar with 'Teams' and 'Azure DevOps Groups' sections. Under 'Azure DevOps Groups', several items are listed: Build Administrators, Contributors, Disallow access group, Project Administrators, Project Valid Users, Readers, Release Administrators, and Team Admins. 'Team Admins' is highlighted with a grey background. The main area has tabs for 'Permissions' and 'Members'. The 'Members' tab is selected and highlighted with a red box around its title. Below it is a table with columns 'Display Name' and 'Username Or Scope'. A message says 'No identities found in current scope.' At the bottom of the table are 'Add...', 'Search', and 'Member of' buttons.

2. Type the name of the user account into the text box. You can type several identities into the text box, separated by commas. The system will automatically search for matches. Choose the match(es) that meets your choice.

The screenshot shows the 'Add users and groups' dialog. It has a text input field labeled 'User or group' containing 'Chris'. Below it, a search result for 'Christie Church' is displayed, showing her profile picture, name, email ('fabrikamfiber1@hotmail.com'), and a copy icon. The text 'Showing 1 result' is below the list. At the bottom are 'Save changes' and 'Cancel' buttons.

#### NOTE

Users that have limited access, such as Stakeholders, won't be able to access select features even if granted permissions to those features. To learn more, see [Permissions and access](#).

## Change the permission assignments for an individual

### To change the permission at a project-level

- From the project-level **Security** page, type the name of the user account in the **Filter users and groups** box and select the account whose permissions you want to change.

2. Change the permissions for the account, setting a permission as **Allow** or **Deny**.

| Permission                               | Setting           |
|------------------------------------------|-------------------|
| Bypass rules on work item updates        | Not set           |
| Create tag definition                    | Allow (inherited) |
| Create test runs                         | Allow (inherited) |
| Delete and restore work items            | Allow             |
| Delete team project                      | Not set           |
| Delete test runs                         | Allow (inherited) |
| Edit project-level information           | Not set           |
| Manage project properties                | Allow             |
| Manage test configurations               | Allow (inherited) |
| Manage test environments                 | Allow (inherited) |
| Move work items out of this project      | Allow             |
| Permanently delete work items            | Allow             |
| Rename team project                      | Not set           |
| Skip notifications for work item updates | Not set           |
| View analytics                           | Allow (inherited) |
| View project-level information           | Allow (inherited) |
| View test runs                           | Allow (inherited) |

For a description of each permission, see [Permissions and groups reference, project-level permissions](#).

3. Choose **Save changes**.

#### To change the permission at a collection level

1. Open the account-level or collection-level **Security** admin page and follow the instructions provided in the previous section for project-level permissions.

For a description of each collection-level permission, see [Permissions and groups reference, collection-level permissions](#).

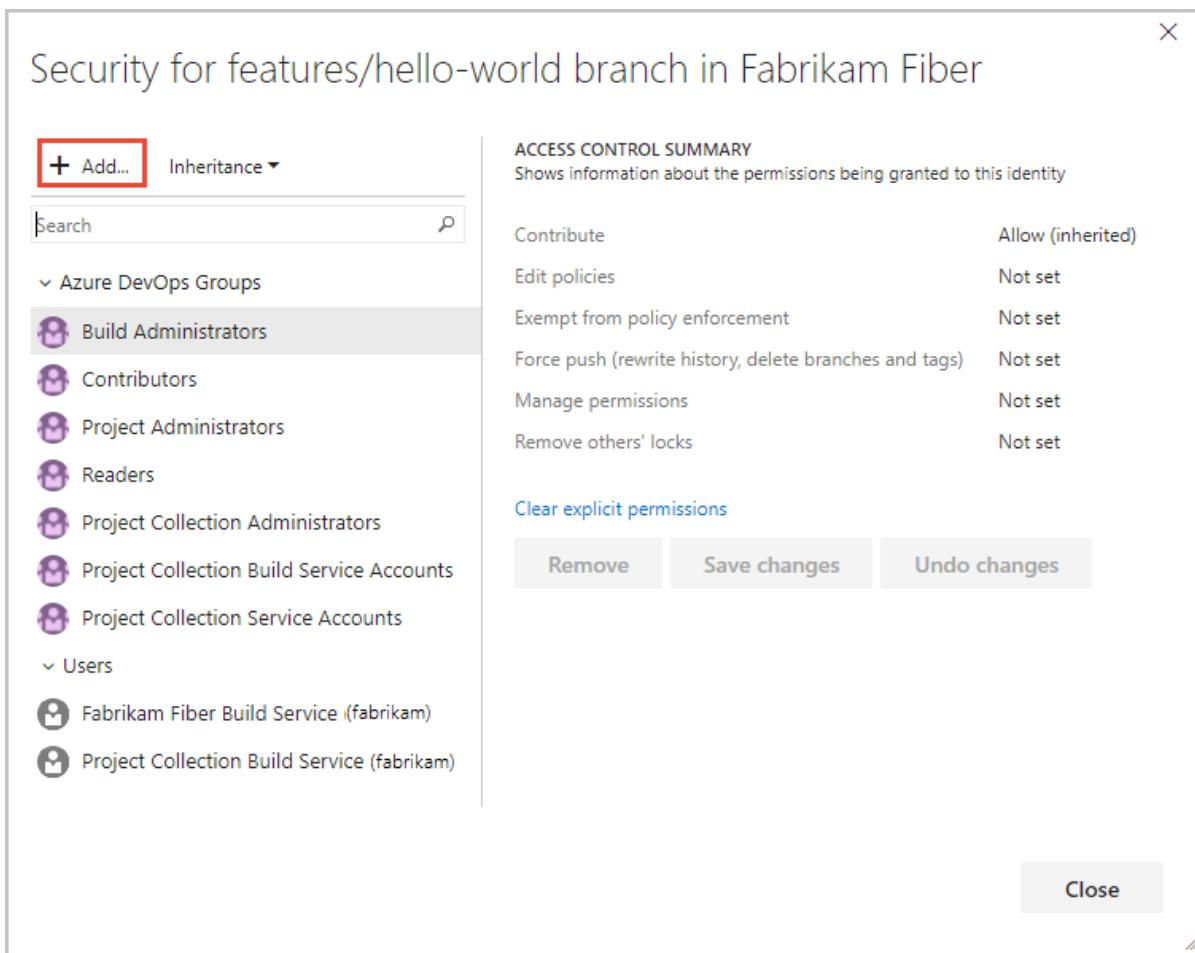
#### To change the permission at an object-level

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

| AREA | TASK |
|------|------|
|      |      |

|                                                 |                                                                                                                                                                                                    |
|-------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Wiki & Dashboard permissions                    | <ul style="list-style-type: none"> <li>• README &amp; Wiki</li> <li>• Dashboards</li> </ul>                                                                                                        |
| DevOps (code, build, test, release) permissions | <ul style="list-style-type: none"> <li>• Git branch</li> <li>• Git repository</li> <li>• TFVC</li> <li>• Builds</li> <li>• Release pipeline security</li> <li>• Approvals and approvers</li> </ul> |
| Work tracking permissions                       | <ul style="list-style-type: none"> <li>• Area and iteration paths</li> <li>• Work item query and folder</li> <li>• Plan permissions</li> </ul>                                                     |

1. From the Security dialog, choose **Add** to add a user account.



2. Type the name of the user account, choose search, and select the account you want.
3. Select the user name from the left pane and then update the permission assignments, setting **Allow** or **Deny** for specific permissions.

Security for features/hello-world branch in Fabrikam Fiber

+ Add... Inheritance ▾

Search

▼ Azure DevOps Groups

- Build Administrators
- Contributors
- Project Administrators
- Readers
- Project Collection Administrators
- Project Collection Build Service Account
- Project Collection Service Accounts

▼ Users

- Raisa Pokrovskaya
- Fabrikam Fiber Build Service (fabrikam)
- Project Collection Build Service (fabrikam)

ACCESS CONTROL SUMMARY  
Shows information about the permissions being granted to this identity

|                                                        |                   |
|--------------------------------------------------------|-------------------|
| Contribute                                             | Allow (inherited) |
| Edit policies                                          | Allow (inherited) |
| Exempt from policy enforcement                         | <b>Allow</b>      |
| Force push (rewrite history, delete branches and tags) | Allow (inherited) |
| Manage permissions                                     | Allow (inherited) |
| Remove others' locks                                   | Allow (inherited) |

[Clear explicit permissions](#)

[Remove](#) [Save changes](#) [Undo changes](#)

[Close](#)

For a description of a specific permission, see [Permissions and groups reference](#).

4. Choose **Save changes**.

## Next steps

[Grant or restrict access to select features](#)

## Related articles

- [Permissions lookup guide](#)
- [About permissions and groups](#)
- [Permissions and groups reference](#)
- [Set permissions at the project-level or project collection-level](#)

# Tutorial: Grant or restrict access to select features and functions

1/25/2019 • 6 minutes to read • [Edit Online](#)

**Azure DevOps Services | Azure DevOps Server 2019 | TFS 2018 | TFS 2017 | TFS 2015 | TFS 2013**

You can grant or restrict access to resources that you manage in Azure DevOps Services or Team Foundation Server (TFS). Depending on your project needs, you may want to open up or close down access to a select set of features and for a select set of users. While the built-in security groups provide a standard set of permission assignments, you may need additional security requirements not met by these assignments.

If you are new to administrating permissions and groups, review [About permissions and groups](#) to learn about permission states and inheritance.

Use this topic you learn how to do the following:

- Recommended method for granting and restricting permissions
- Delegate tasks by assigning select permissions to specific roles
- Restrict access to view or modify objects
- Restrict modification of work items based on a user or group

## TIP

Because you set many permissions at an object-level, such as repositories and area paths, how you structure your project will determine the areas you can open up or close down.

## Recommended method for granting and restricting permissions

For maintenance purposes, we recommend you use either the built-in security groups or [custom security groups to manage permissions](#).

You can't change the permission settings for the Project Administrators group or the Project Collection Administrators group. This is by design. However, for all other groups, you can change the permissions.

If you manage a small number of users, then you may find changing individual permissions a valid option. However, custom security groups allows you to better track roles and permissions assigned to those roles.

## Delegate tasks to specific roles

As an administrator or account owner, it's a good idea to delegate administrative tasks to those team members who lead or manage an area. Several of the main built-in roles which come with default permissions and role assignments are:

- Readers
- Contributors
- Team Administrator (role)
- Project Administrators
- Project Collection Administrators

For a summary of permissions provided to the above roles, see [Default permissions and access](#), or for the Project

Collection Administrators, see [Add administrators](#)

To delegate tasks to other members within your organization, consider creating a custom security group and then granting permissions as indicated in the following table.

| Role                                                                   | Tasks to perform                                                                                                                                         | Permissions to set to Allow                                                                                                                                                                                                                                |
|------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Development lead (Git)                                                 | Manage branch policies                                                                                                                                   | Edit policies, Force push, and Manage permissions<br>See <a href="#">Set branch permissions</a> .                                                                                                                                                          |
| Development lead (TFVC)                                                | Manage repository and branches                                                                                                                           | Administer labels, Manage branch, and Manage permissions<br>See <a href="#">Set repository permissions for Git or TFVC</a> .                                                                                                                               |
| Software architect (Git)                                               | Manage repositories                                                                                                                                      | Create repositories, Force push, and Manage permissions<br>See <a href="#">Set repository permissions for Git or TFVC</a> .                                                                                                                                |
| Team administrators                                                    | Add area paths for their team<br>Add shared queries for their team                                                                                       | Create child nodes, Delete this node, Edit this node<br>See <a href="#">Create child nodes, modify work items under an area path</a><br>Contribute, Delete, Manage permissions (for a query folder), See <a href="#">Set query permissions</a> .           |
| Contributors                                                           | Add shared queries under a query folder, Contribute to dashboards                                                                                        | Contribute, Delete (for a query folder), See <a href="#">Set query permissions</a><br>View, Edit, and Manage dashboards, See <a href="#">Set dashboard permissions</a> .                                                                                   |
| Project or product manager                                             | Add area paths, iteration paths, and shared queries<br>Delete and restore work items, Move work items out of this project, Permanently delete work items | Edit project-level information, See <a href="#">Add administrators, set permissions at the project-level or project collection-level</a> .                                                                                                                 |
| Process template manager ( <a href="#">Inheritance process model</a> ) | Work tracking customization                                                                                                                              | Administer process permissions, Create new projects, Create process, Delete field from account, Delete process, Delete project, Edit process<br>See <a href="#">Add administrators, set permissions at the project-level or project collection-level</a> . |
| Process template manager ( <a href="#">Hosted XML process model</a> )  | Work tracking customization                                                                                                                              | Edit collection-level information, See <a href="#">Add administrators, set permissions at the project-level or project collection-level</a> .                                                                                                              |
| Project management ( <a href="#">On-premises XML process model</a> )   | Work tracking customization                                                                                                                              | Edit project-level information, See <a href="#">Add administrators, set permissions at the project-level or project collection-level</a> .                                                                                                                 |

|                     |                                                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
|---------------------|-----------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Permissions manager | <p>Manage permissions for a project, account, or collection</p> | <p>For a project, Edit project-level information<br/>For an account or collection, Edit instance-level (or collection-level) information<br/>To understand the scope of these permissions, see <a href="#">Permission lookup guide</a>. To grant permissions, See <a href="#">Add administrators, set permissions at the project-level or project collection-level</a>.</p> <p>You can also grant permissions to manage permissions for the following objects:</p> <ul style="list-style-type: none"> <li>• <a href="#">Manage Git or TFVC repository permissions</a></li> <li>• <a href="#">Manage Git branch permissions</a></li> <li>• <a href="#">Administer build and release permissions</a></li> <li>• <a href="#">Manage Wiki permissions</a>.</li> </ul> |
|---------------------|-----------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

## Restrict access to view or modify objects

Azure DevOps and TFS are designed to enable all valid users to be able to view all objects defined in the system. You can restrict access to resources by setting the permission state to **Deny**. You can set permissions for members that belong to a custom security group or for an individual user. To learn more about how to set these types of permissions, see [Change individual permissions, grant select access to specific functions](#).

| Area to restrict                                       | Permissions to set to Deny                                                                                                                                                                                 |
|--------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| View or contribute to a repository                     | <p>View, Contribute<br/>See <a href="#">Set repository permissions for Git or TFVC</a>.</p>                                                                                                                |
| View, create, or modify work items within an area path | <p>Edit work items in this node, View work items in this node<br/>See <a href="#">Set permissions and access for work tracking</a>, <a href="#">Modify work items under an area path</a>.</p>              |
| View or update select build and release pipelines      | <p>Edit build pipeline, View build pipeline<br/>Edit release pipeline, View release pipeline<br/>You set these permissions at the object level. See <a href="#">Set build and release permissions</a>.</p> |
| Edit a dashboard                                       | <p>View dashboards<br/>See <a href="#">Set dashboard permissions</a>.</p>                                                                                                                                  |

## Restrict modification of work items based on a user or group

For [On-premises XML process model](#), you can customize work item types to support these restriction requests:

- Restrict who can create or modify a work item
- Restrict who can create specific work item types, such as Epics or Features

You achieve this by adding a rule to the work item type, usually within the **WORKFLOW** section. To learn more, see [Add a rule to a work item type, Apply or ignore rules based on user or group](#).

### NOTE

These restriction types aren't available for organizations in Azure DevOps and the [Inheritance process model](#).

## Try this next

[Remove user accounts](#)

## Related articles

- [Default permissions and access](#)
- [Permission lookup guide](#)
- [About permissions and groups](#)
- [Permissions and groups reference](#)
- [Set permissions at the project-level or project collection-level](#)

# What are the key concepts for working with Azure DevOps Services and Team Foundation Server?

2/7/2019 • 6 minutes to read • [Edit Online](#)

[Azure DevOps Services](#) | [Azure DevOps Server 2019](#) | [TFS 2018](#) | [TFS 2017](#) | [TFS 2015](#) | [TFS 2013](#)

The set of platforms, services, and tools you have access to through Azure DevOps Services can be overwhelming. Before you start to use 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 and integrated software development

Azure DevOps Services, our hosted cloud offering, and Team Foundation Server (TFS), our on-premises platform, provide small teams as well as enterprises with 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 their 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 like 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 Azure DevOps Services and TFS is standard Git. You can use Visual Studio with third-party Git services. 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.

## 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 tracked 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 that 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.

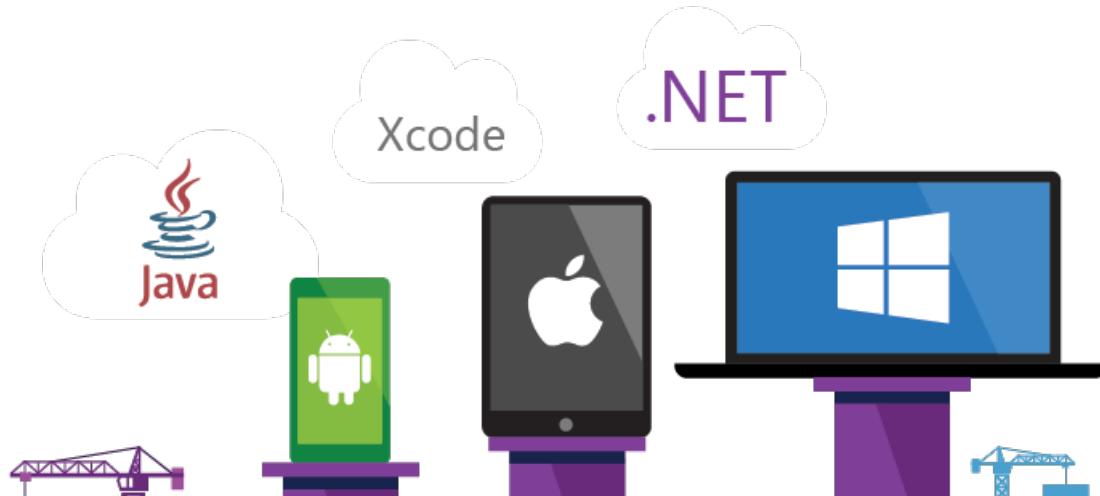
- Product backlog: Used to create and prioritize stories or requirements.
- Kanban: Used to visualize and manage the flow of work as it moves from inception, to in-progress, to done.
- Sprint backlogs: Used to plan work to complete during a sprint cycle, a regular two to four-week cadence that teams use when implementing Scrum.
- Task board: Used during daily Scrum meetings to review work that's 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 and help teams to monitor progress and trends.

## DevOps and continuous integration

The 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 pipelines can include instructions to run tests after the build runs.
- Release pipelines support managing deployment of your software builds to staging or production environments.



## Scaling

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

To learn more, see [About projects and scaling your organization](#). Also, for stories and short videos on how Microsoft transitioned from waterfall to Agile, see [Scaling Agile across the enterprise](#).

# Customization and configuration of resources

You can configure and customize most services and applications to support your business needs or the way your teams work. For a comprehensive view of what resources can be configured, see [About team, project, and organizational-level settings](#).

- **Dashboards:** Each team can [configure their set of dashboards](#) to share information and monitor their progress.
- **Source control:** For each [Git repository](#), you can apply branch policies and define branch permissions. For TFVC repositories, you can [set check-in policies](#).
- **Work tracking:** You can add fields, change the workflow, add custom rules, and add custom pages to the work item form of most work item types. You can also add custom work item types. For details, see [Customize an inheritance process](#).
- **Build and release:** You can fully customize your build and release pipelines, define build steps, release environments, and deployment schedule. For details, see [Azure Pipelines](#).
- **Test:** You can define and configure test plans, test suites, and test cases, and configure test environments. You can also add test steps within your build pipelines. For details, see [Exploratory and manual testing](#), [Load testing](#), and [Set up continuous testing for your builds](#).
- **Dashboards:** Each team can [configure their set of dashboards](#) to share information and monitor their progress.
- **Source control:** For each [Git repository](#), you can apply branch policies and define branch permissions. For TFVC repositories, you can [set check-in policies](#).
- **Work tracking:** You can add fields, change the workflow, add custom rules, and add custom pages to the work item form of most work item types. You can also add custom work item types. For details, see [Customize the on-premises XML process model](#).
- **Build and release:** You can fully customize your build and release pipelines, and define build steps, release environments, and the deployment schedule. For details, see [Azure Pipelines](#).
- **Test:** You can define and configure test plans, test suites, and test cases, and configure test environments. You can also add test steps within your build pipelines. For details, see [Exploratory and manual testing](#), [Load testing](#), and [Set up continuous testing for your builds](#).

## Extensibility

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

- [Visual Studio Marketplace](#), Azure DevOps tab: Provides extensions that you can install either on your organization, server, or Visual Studio client.
- [Service hooks](#): Enable you to perform tasks on other services when events happen within your project that's hosted on Azure DevOps Services or TFS.
- [REST APIs](#): Provide the ability to create custom extensions that plug into Azure DevOps Services 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](#)
- [Azure DevOps data protection overview](#)

# Plan your organizational structure

2/5/2019 • 14 minutes to read • [Edit Online](#)

**Azure DevOps Services | Azure DevOps Server 2019 | TFS 2018 | TFS 2017 | TFS 2015 | TFS 2013**

Your business structure should act as a guide to the number of organizations, projects, and teams that you create in Azure DevOps.

Consider the following structures for your business or collaborative work in Azure DevOps:

- Quantity of organizations
- Quantity of projects under an organization

You also may want to plan for the following scenarios:

- Mapping your organizations and projects in Azure DevOps to your enterprise, business unit, and team structure
- Structuring your repositories (repos)
- Structuring your teams - it can either help or hinder teams to be Agile and autonomous
- Managing access to data - who needs to have access and who doesn't?
- Reporting needs
- Promoting common practices - learn more about [foundational elements you need to create an agile mindset and culture](#).

## Structure your organization

You need to have at least one organization, which may represent your company, your larger collection of code projects, or even multiple related business units.

### What is an organization?

An organization in Azure DevOps is a mechanism for organizing and connecting groups of related projects.

Examples are business divisions, regional divisions, or other enterprise structure. You can choose one organization for your entire company, or separate organizations for specific business units, or an organization just for you.

Each organization gets its own free tier of Azure DevOps services (up to five users for each service type) as follows.

- Azure Pipelines: One hosted job with 1,800 minutes per month for CI/CD and one self-hosted job
- Azure Boards: Work item tracking and Kanban boards
- Azure Repos: Unlimited private Git repos
- Azure Artifacts: Package management
- Load testing (20,000 VUMs per month)
- Unlimited stakeholders

### How many organizations do you need?

When you're starting out with Azure DevOps, begin with one organization. Then, you can add additional organizations—which may require different security models—later. If you only have a single code repo or project, you don't need more than one organization. If you have separate teams that need to work on code or other projects in isolation from one another, consider creating separate organizations for those teams. They'll have different URLs. Add projects, teams, and repos, as necessary, before you add another organization.

Take some time to review your work structure and the different business groups and participants to be managed. Read further in this article for more information on the [advantages and disadvantages of having multiple organizations](#) and [structure considerations](#).

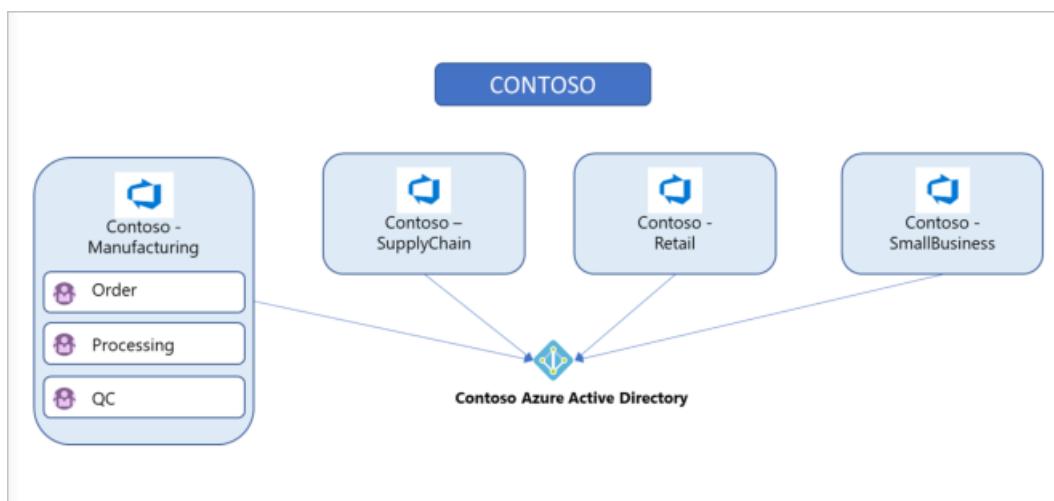
## Structure your projects

### What is a project?

A project in Azure DevOps contains the following set of features:

- Boards and backlogs for agile planning
  - Pipelines for continuous integration and deployment
  - Repos for version control and management of source code and artifacts
  - Continuous test integration throughout the project life cycle
- Each organization contains one or more projects

In the following image, the Contoso company has three projects within their Contoso-Manufacturing organization.



### How many projects do you need?

You need at least one project to start using an Azure DevOps service, such as Azure Boards, Azure Repos, or Azure Pipelines. When you create your organization, a default project is created for you. In your default project, you have a code repo to start working in, a backlog that you can use to track work, and at least one pipeline, depending on your license, to begin automating build and release of your code.

Within an organization, you can do either of the following approaches:

- Create a single project that contains many repos and teams
- Create many projects, each with its own set of teams, repos, builds, work items, and other elements

Even if you have many teams working on hundreds of different applications and software projects, you can manage them within a single project in Azure DevOps. However, if you want to manage more granular security between your software projects and their teams, consider using many projects. At the highest level of isolation is an organization, where each organization has its own Azure AD tenancy.

#### Single project

A single project puts all of the work at the same "portfolio" level for the entire organization. Your work has the same set of repos and iteration paths. A single project allows teams to share source repos, build definitions, release definitions, reports, and package feeds. You might have a large product or service that's managed by many teams. Those teams have tight inter-dependencies on each other across the product life cycle. You create a project and divide the work using teams and area paths. This setup gives your teams visibility into each other's work, so the organization stays aligned. Your teams use the same taxonomy for work item tracking, making it easier to communicate and stay consistent.

**TIP**

When multiple teams work on the same product, having all teams on the same iteration schedule helps keep your teams aligned and delivering value on the same cadence. For example, the organization in Azure DevOps has over 40 feature teams and 500 users within a single project - this works well because we're all working on a common product set with common goals and a common release schedule.

A high volume of queries and boards can make it hard to find what you're looking for. Depending on the architecture of your product, this difficulty can bleed into other areas such as builds, releases, and repos. Make sure to use good naming conventions and a simple folder structure. When you add a repo to your project, consider your strategy and determine whether that repo could be placed into its own project.

**Many projects**

Project structure is best determined by how you ship the product. Having several projects shifts the administration burden and gives your teams more autonomy to manage the project as the team decides. It also provides greater control of security and access to assets across the different projects. Having team independence with many projects creates some alignment challenges, however. If each project is using a different process or iteration schedule, it can make communication and collaboration difficult if the taxonomies aren't the same.

**TIP**

If you use the same process and iteration schedules across all your projects, your ability to roll-up data and report across teams is improved.

Azure DevOps provides cross-project experiences when it comes to managing work.

You may want to add another project due to the following scenarios:

- To prohibit or manage access to the information within a project
- To support custom work tracking processes for specific business units within your organization
- To support entirely separate business units that have their own administrative policies and administrators
- To support testing customization activities or adding extensions before rolling out changes to the working project

When you're considering many projects, keep in mind that Git repo portability makes it easy to move a repo between projects, which allows you to still have full-fidelity commit history. Other history can't be migrated between projects. Examples are push and pull request history.

When you map projects to business units, your company gets a single organization and sets up many projects with one or more projects representing a business unit. All Azure DevOps assets of the company are contained within this organization and located within a given region (for example, Western Europe). Consider the following advantages and disadvantages of mapping your projects to business units:

| MANY PROJECTS                                                                                                                             |                                                                                                                                                     |
|-------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------|
| Advantages                                                                                                                                | Disadvantages                                                                                                                                       |
| Works well if all business units of your company are in the same geographical area. (for example, the entire company is in North America) | Business units can't administer their own users, policies, access management, or billing practices and require shared ownership of the organization |
| Works well if you don't need to track budgets or spending per business unit                                                               | Business units must share resources, like Azure Pipelines (for CI/CD)                                                                               |

| MANY PROJECTS                                                                                                          |                                                                                                                                                                                             |
|------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Works well if you don't have any regulatory or compliance needs for geographical isolation of your Azure DevOps assets | Business units can't track spending and billing separately                                                                                                                                  |
| You can easily create cross-project queries and move work items from one project to another                            | Doesn't work if you're migrating from on-premises with multiple collections, since you end up with multiple organizations and each collection on-premises mapped to a separate organization |

## Structure your teams, repos, and version control within a project

Consider the specific strategic work scoped to one of the organizations you created previously and who should have access. Use this information to name and [create a project](#). This project has a URL defined under the organization you created it in and can be accessed at <https://dev.azure.com/{organization-name}/{project-name}>.

Configure your project by visiting its URL and select the **Project settings** button at the lower right of the page.

The screenshot shows the Azure DevOps Project Overview page for the 'FabrikamFiber' project. The URL in the browser is <https://dev.azure.com/fabrikam/FabrikamFiber>. The left sidebar contains links for Overview, Summary, Dashboards, Wiki, Boards, Repos, Pipelines, Test Plans, and Artifacts. The 'Project settings' link at the bottom of the sidebar is highlighted with a red box. The main content area features a 'Welcome to the project!' message, service links for Boards, Repos, Pipelines, Test Plans, and Artifacts, and a 'or manage your services' link.

Learn more about [managing projects](#).

### What is a team?

A team is a unit that supports many [team-configurable tools](#), which help you plan and manage work, and facilitate collaboration.

## **Creating a team for each distinct product or feature team**

Every team owns their own backlog, to create a new backlog you create a new team. By [configuring teams and backlogs into a hierarchical structure](#), program owners can more easily track progress across teams, manage portfolios, and generate rollup data. A team group is created when you create a team. You can use this group in queries or to set permissions for your team.

## **Managing version control**

In projects where the Azure Repos service is enabled, version control repos can store and revise code. Consider the following options when you're configuring repos.

### **Git vs. Team Foundation Version Control (TFVC)**

Azure Repos offers the following version control systems for teams to choose from:

- Git and TFVC. Projects can have repos of each type. By default, new projects have an empty Git repo. Git enables a great amount of flexibility in developer workflows and integrates with nearly every relevant tool in the developer ecosystem. Any project can use Git repos. There's no limit on the number of Git repos that can be added to a project.

TFVC is a centralized version control system that is also available. Unlike Git, only one TFVC repository is created for a project. But, within that repo, folders and branches are used to organize code for multiple products and services if desired.

### **One vs. many repos**

Customers who need multiple repos often ask whether to set up multiple repos in a single project or have a repo set up per project. The following guidance relates to the planning and administration functions across those repos.

Starting with a single project containing multiple repos is reasonable, especially if the products/services are working on a coordinated release schedule. If developers are frequently working with multiple repos, keeping them in a single project encourages the processes to remain shared and consistent. Administering repo access is simpler in a single project, as access controls and options like case enforcement and max file size can be set at the project level. Note that repos can have these access controls and settings managed individually, even if they're in a single project.

If the products stored in multiple repos are working on independent schedules or processes, you can split them into multiple projects. Keep in mind that Git repo portability makes it easy to move a repo between projects and still keep full-fidelity commit history. Other history like push and pull request history cannot be migrated between projects.

Your decision for one vs. many repos should be largely based on code dependencies and architecture. A good first rule to apply is to put each independently deploy-able product or service in its own repo. Don't separate a codebase into many repos if you expect to make coordinated code changes across those repos, as there are no tools to assist in coordinating those changes. If your codebase is already a monolith, keep it in one repo. For more details about monolithic repos, see [Git at Scale](#) articles. If you have many disconnected services, one repo per service can be a good strategy.

### **NOTE**

Consider [managing your permissions](#) so not everyone in your organization can [create a repo](#). One of the big challenges a growing team or company faces is the rapid proliferation of repos. If you have too many of them, it's very hard to keep track of who owns what code or other content stored in those repos.

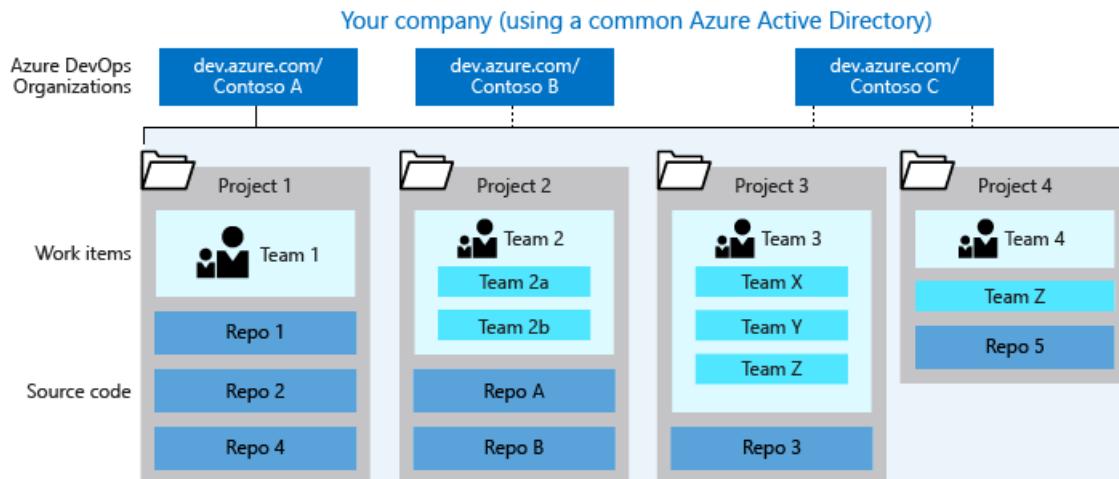
### **Shared repo vs. forked repos**

We recommend a shared repo approach within a trusted organization. In this model, developers use branches to maintain isolation of their changes from one another. Used with a good branching and release strategy, a single repo can scale to support concurrent development for more than a thousand developers. For more information about branching and release strategy, see [Adopt a Git branching strategy and Release Flow: Our Branching](#)

## Strategy.

Forks can be useful when you're working with vendor teams that should not have direct access to update the main repository. Forks can also be useful in scenarios where many developers contribute infrequently, such as in an open-source project. When you're working with forks, it may be useful to maintain a separate project to isolate the forked repos from the main repo. There may be added administrative overhead, but it keeps the main project cleaner. For more information, see the [Forks article](#).

The following image displays a sample of how "your company" could structure its organizations, projects, work items, teams, and repos.



## More about organizational structure

### Choosing your organization admin account type

When you create an organization, the identity that you're signed in with defines the identity provider that the organization uses, such as your Azure Active Directory or Microsoft account. Your organization can be created by using a Microsoft account or with an Azure Active Directory account. This account provides the credentials to sign in as an admin to your new organization at <https://dev.azure.com/{yourorganization}>.

### Using your Microsoft account

Use your Microsoft account if you don't need to authenticate users for an organization with Azure AD. All users must sign in to your organization with a Microsoft account. If you don't have a Microsoft account, you can [create a Microsoft account](#) at this time.

Microsoft

fabrikamfiber4@hotmail.com

Enter password

.....

Keep me signed in

[Forgot my password](#)

[Sign in with a different Microsoft account](#)

**Sign in**

If you don't have an Azure Active Directory instance, create one for free from the [Azure portal](#) or use your Microsoft account to create an organization. Then, you can [connect the organization to Azure AD](#).

#### Using your Azure Active Directory account

You might have an Azure AD account already if you use Azure or Office 365. If you work for a company that uses Azure AD to manage user permissions, you probably have an Azure AD account. Contact your company's Azure administrator to gain permissions to [create an organization](#) or to have them create one for you.

If you don't have an Azure AD account, learn how to [sign up for Azure AD](#) to automatically connect your organization to your Azure AD. All users must be members in that directory to access your organization. To add users from other organizations, use [Azure AD B2B collaboration](#).

Azure DevOps authenticates users through your Azure AD, so that only users who are members in that directory have access to your organization. When you remove users from that directory, they can no longer access your organization. Only specific [Azure AD administrators](#) manage users in your directory, so administrators control who accesses your organization.

After you create your Azure account, only members of that directory can access your organization, or you must use [Azure AD business-to-business \(B2B\) collaboration](#) to add users from other organizations.

Learn more about how to [manage users in Azure DevOps](#).

#### Mapping organizations to business units

When you map organizations to business units, each business unit within your company gets its own organization in Azure DevOps, along with its own Azure Active Directory tenant. [Projects](#) are set up within those individual organizations, as required, based on teams or ongoing work.

For a larger company, you can create multiple organizations using different user accounts (most likely Azure Active Directory accounts). Consider what groups and users share strategies and work, and group them into specific organizations. For example, the (fictional) Fabrikam company might create three organizations: Fabrikam-Marketing, Fabrikam-Engineering, and Fabrikam-Sales. Each organization has a separate URL, such as <https://dev.azure.com/Fabrikam-Marketing>, <https://dev.azure.com/Fabrikam-Engineering>, and <https://dev.azure.com/Fabrikam-Sales>. The organizations are all for the same company but are mostly isolated from each other. You don't need to have anything separated, however you should only create boundaries when it makes sense to your business. You can more easily partition an existing organization with projects, than combine different organizations.

| MAPPING ORGANIZATIONS TO BUSINESS UNITS                                                       |                                                                                                                                                                                                                                                                                    |
|-----------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Challenges                                                                                    | Advantages                                                                                                                                                                                                                                                                         |
| You can't link a work item from one organization to another organization within your company. | Strong isolation and regional separation of your business unit assets. Each organization can be set up in any of the supported regions. You can set up one organization in the Western US and another organization in Europe, in proximity to where your business unit is located. |
| You can't move a project from one organization to another organization within your company    | Resources can be shared across teams within organizations.                                                                                                                                                                                                                         |
| If you have external stakeholders with MSAs, you can manage them as internal Azure AD users.  | Access to organizations can be restricted to users within those organizations.                                                                                                                                                                                                     |
|                                                                                               | Each business unit can administer its own users, policies, access management, and billing practices for its organization.                                                                                                                                                          |

## MAPPING ORGANIZATIONS TO BUSINESS UNITS

Each business unit can buy resources, like Azure Pipelines (for CI/CD), and use them exclusively, managing costs independently.

## Try next

[Create an organization](#) or [Create a project](#)

Or, after you've created a new organization and project, you can begin sharing your code with others: [Code with git](#).

# What is source control?

1/25/2019 • 2 minutes to read • [Edit Online](#)

**Azure DevOps Services | Azure DevOps Server 2019 | TFS 2018 | TFS 2017 | TFS 2015 | TFS 2013**

A source control system, also called a *version control* system, allows developers to collaborate on code and track changes. Source control is an essential tool for multi-developer projects.

Our systems support two types of source control: Git (distributed) and Team Foundation Version Control (TFVC). TFVC is a centralized, client-server system. In both Git and TFVC, you can check in files and organize files in folders, branches, and repositories.

Manage your repos, branches, and other code development operations from **Azure Repos**.

The screenshot shows the Azure DevOps interface for managing a repository. The left sidebar has a 'Repos' section selected, which contains links for Overview, Boards, Files, Commits, Pushes, Branches, Tags, and Pull requests. The main area displays the contents of the 'master' branch of the 'FabrikamFiber' repository. It shows a folder named 'FabrikamFib...' and two files: '.gitattributes' and '.gitignore'. There are tabs for 'Contents' (selected), 'History', and 'New'. Below the files, there are columns for 'Name' and 'Last ch'.

With Git, each developer has a copy of the source repository, including all branch and history information, on their dev machine. Each developer works directly with their own local repository. 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 code base. Later, developers can merge, publish, or dispose of the branch.

## NOTE

Git in Visual Studio, Azure DevOps Services, and TFS is standard Git. You can use Visual Studio with third-party Git services. 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 are created on the server.

## Try next

Start sharing your code or get your code by using source control.

[Code with Git](#)

## Related articles

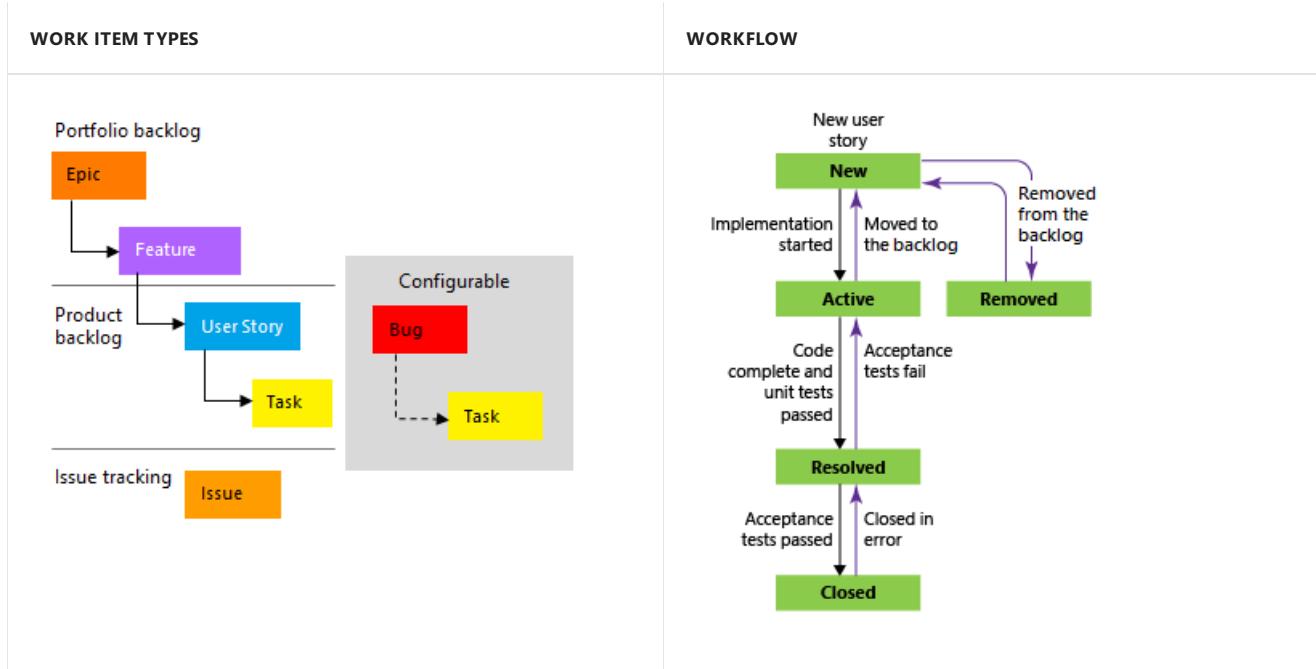
- [Azure Repos documentation](#)
- [Git repositories documentation](#)

# What is Azure Boards?

1/31/2019 • 10 minutes to read • [Edit Online](#)

## Azure Boards | Azure DevOps Server 2019 | TFS 2018 | TFS 2017 | TFS 2015 | TFS 2013

With Azure Boards, you can quickly and easily start tracking user stories, backlog items, task, features, and bugs associated with your project. You do this by adding one of three work item types—user stories, bugs, features, epics, and tasks—that the Agile process provides. As works progresses from not started to completed, you update the State workflow field from **New**, **Active**, **Resolved**, and **Closed**.



When you add a user story, bug, task, or feature, you create a work item. Each work item represents an object stored in the work item data store. Each work item is assigned a unique identifier (ID) within your projects.

### NOTE

Your first project corresponds to the Agile process unless Scrum or CMMI were selected. If you want a project that uses the Scrum or CMMI process, then you can [add another project](#) and specify the process through advanced setting options. See [Choose a process for a comparison of processes](#).

Add epics to track significant business initiatives, add features to track specific applications or set of work. Define user stories to track work that you'll assign to specific team members, and bugs to track code defects. Lastly, use tasks to track even smaller amounts of work for which you want to track time either in hours or days.

## IMPORTANT

**Select the version that meets your location and process:** We are experimenting with a new acquisition model which is currently available for users located in the United States and that sign up through [azure.com/boards](#). This model supports a new Basic process.

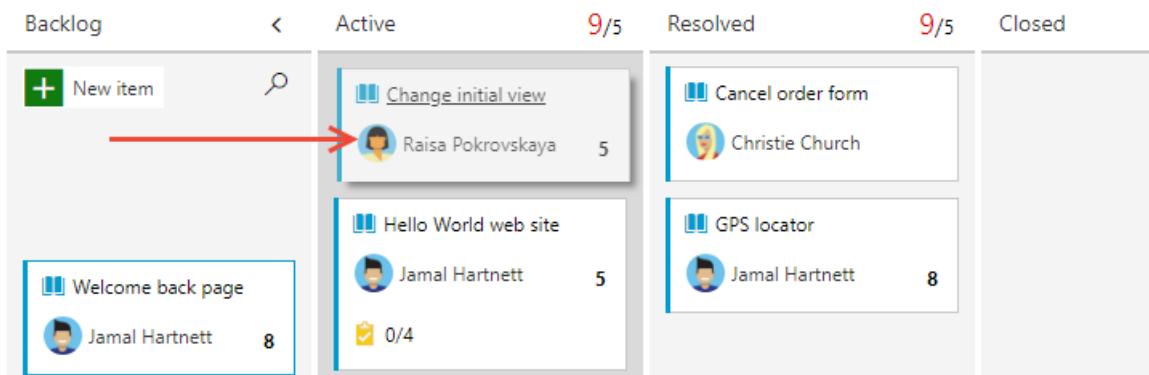
For International users and others who sign up through another method, the Agile process is used. Select your version of this article based on your location and process used.

- [Basic process](#)
- [Agile process](#)

## Track work, implement Kanban

- Quickly add and update the status of work you track from **New**, **Active**, **Resolved**, and **Closed** using the Kanban board. Add tasks as child items to user stories. Learn more: [Track user stories, features, and tasks](#).
- Assign work to team members, tag with labels to support queries and filtering, or share information through descriptions, attachments, or links to network shared content.
- Prioritize work through drag-and-drop on your team backlog. Learn more: [Create your backlog](#).

### Update the status of issues



### Prioritize your backlog of issues

| Order | Title                              | Tags       |
|-------|------------------------------------|------------|
| 1     | > 🚧 Slow response on welcome page  | Web        |
| 2     | 🚨 Secure sign-in                   | Mobile Web |
| 3     | > 🚧 Change the initial view        | Web        |
| 4     | 🚧 Interim save on long forms       |            |
| 5     | 🚧 Welcome back page                |            |
| +     | 🚨 Canadian addresses don't display | RC Review  |

## Collaborate

- Collaborate with others through the **Discussion** section of the work item form, using **@mentions** and **#ID** controls to quickly include others in the conversation or link to other work items. Learn more: [Discussion section](#).
- Create dashboards that track status and trends of work being accomplished. Learn more: [Add and manage dashboards](#).
- Set notifications to get alerted when an issue is created or changed. Learn more: [Set personal notifications](#).
- Elect to follow specific issues to get alerted when they are updated. Learn more: [Follow a work item](#).

## Get updated when a work item is updated

A screenshot of a Microsoft Azure DevOps work item page for a 'USER STORY 1\*'. The work item has been updated just now. The 'Follow' button in the top right corner is highlighted with a red box.

State: New  
Reason: New  
Area: Fabrikam Fiber  
Iteration: Fabrikam Fiber

Details | ⏰ | 🔍 | 🗑️

## Work in sprints, implement Scrum

- Plan sprints by assigning work to current or future sprints. Learn more: [Assign work to sprints](#).
- Forecast work that can get completed based on effort estimates. Learn more: [Forecast work](#).
- Determine how much work can be done within a sprint. Learn more: [Set team capacity](#).
- Bulk assign issues and tasks to team members and sprints. Learn more: [Bulk modify work items](#).

### Assign backlog items to a sprint

A screenshot of the 'Backlog items' board in Microsoft Azure DevOps. On the left, a list of backlog items is shown with columns for Order, State, and Title. Item 57 is selected. A red arrow points from this item to the 'Sprint 1' section on the right. The 'Sprint 1' section shows it is the 'Current' sprint, running from 6/11/2018 to 6/29/2018, with 15 working days. It notes 'No work scheduled yet'. Below this is a 'Future' section with planned effort and counts of 32 User Stories, 2 Tasks, and 19 Bugs.

| Order | State | Title                                   |
|-------|-------|-----------------------------------------|
| 54    | New   | Remove copy to clipboard dialog in Edge |
| 55    | New   | Remove New Project UI from VS           |
| 56    | New   | IsEmpty operator for Rich Text Fields   |
| 57    | New   | Add Iteration +/- n macro               |
| 58    | New   | Expose field description in fields api  |

Backlog

Sprint 1 Current Add Iteration +/- n macro 6/11/2018 - 6/29/2018 15 working days  
No work scheduled yet

Future  
Planned Effort: -  
32 User Story 2 Task 19 Bug

## Work effectively

- Organize work into a hierarchy by grouping issues under epics, and tasks under issues. Learn more: [Organize your backlog](#).
- Create queries and quickly triage issues and tasks. Learn more: [View and run queries](#) and [Triage work](#).
- Create work item templates to help contributors quickly add and define open meaningful issues and tasks. Learn more: [Use work item templates](#).
- Quickly find work items assigned to you or pivot or filter work items based on other criteria, such as work items that you follow, that you're mentioned in, or that you viewed or updated. Learn more: [View and add work items](#).

### Group items to create a hierarchy



[+ New Work Item](#) [View as board](#) [Column options](#) ...

| Order | State    | Title                               |
|-------|----------|-------------------------------------|
| ●     | New      | Web site updates                    |
| ●     | New      | Web pages                           |
| ●     | New      | Cancel order form                   |
| ●     | Active   | Hello World web site                |
| ●     | Active   | Change background color             |
| ●     | New      | Change page layout                  |
| ●     | New      | Develop about page                  |
| ●     | New      | Slow response on form               |
| ●     | New      | Welcome back page                   |
| ●     | Active   | Secure Sign-in                      |
| ●     | New      | Improve User Experience             |
| ●     | Active   | Emoticon feedback enabled in client |
| ●     | New      | Service status                      |
| ●     | New      | Service support                     |
| ●     | New      | Lookup service outages              |
| ●     | Resolved | Canadian addresses don't display    |
| ●     | Active   | Voicemail hang issue                |
| ●     | Active   | Check issues with permissions       |

## Connect with GitHub

If you use Azure Boards connected with GitHub, you can also do the following:

- From GitHub, use #AB to link GitHub commits and pull requests to your issues and tasks
- From Azure Boards issues and tasks, link to GitHub commits and pull requests.

Learn more: [GitHub & Azure Boards](#).

## Best tool for the job

Azure Boards provides the following main interactive lists and signboards. Each tool provides a filtered set of work items. All tools support viewing and defining work items. To learn more about effective use of these tools, see [Best tool to add, update, and link work items](#).

- Boards:** Boards present work items as cards and support quick status updates through drag-and-drop. The feature is similar to sticky notes on a physical whiteboard. Use to implement Kanban practices and visualize the flow of work for a team.
- Backlogs:** Backlogs present work items as lists. A product backlog represents your project plan and a repository of all the information you need to track and share with your team. Portfolio backlogs allow you to group and organize your backlog into a hierarchy. Use to plan, prioritize, and organize work.
- Sprints:** Sprint backlogs and taskboards provide a filtered view of work items a team assigned to a specific iteration path, or sprint. From your backlog, you can assign work to an iteration path by using drag-and-drop. You can then view that work in a separate *sprint backlog*. Use to implement Scrum practices.
- Queries:** Queries are filtered lists of work items based on criteria that you define by using a query editor. You

use queries to support the following tasks:

- Find groups of work items with something in common
- List work items for the purposes of sharing with others or performing bulk updatesTriage a set of items to prioritize or assign them
- Create status and trend charts that you then can add to dashboards.
- **Work items:** Use to quickly find work items assigned to you or pivot or filter work items based on other criteria, such as work items that you follow, that you're mentioned in, or that you viewed or updated.

## Teams and Backlogs, Boards, and Sprints

A team refers to a group of project members who work in a particular product area. Those areas are represented as *area paths*. Area paths are hierarchical paths that denote the possible areas of ownership in an organization. A team is defined by a name, its members, and its area paths.

Boards, Backlogs, Sprints rely on team configurations. For example, if you want to add a Kanban board or product backlog, you define a team. For more information on teams, see [About teams and Agile tools](#).

## Install and manage extensions

An extension is an installable unit that adds new capabilities to your projects. You can find extensions in the [Visual Studio Marketplace](#), Azure DevOps tab to support planning and tracking of work items, sprints, scrums, and more and collaboration among team members.

# Which tools and clients connect to Azure DevOps Services and Team Foundation Server (TFS)?

2/7/2019 • 8 minutes to read • [Edit Online](#)

[Azure DevOps Services](#) | [Azure DevOps Server 2019](#) | [TFS 2018](#) | [TFS 2017](#) | [TFS 2015](#) | [TFS 2013](#)

Learn about the tools and clients that can connect to Azure DevOps Services and TFS.

Our platform of software development tools began more than 20 years ago. We released Visual Basic and Visual Studio as an integrated development environment (IDE). Visual Studio supports many plug-ins that extend its functionality. In particular, the Team Explorer plug-in allows the Visual Studio client to connect to Azure DevOps Services and TFS to support source control, work tracking, build, and test operations.

The available tools that communicate with Azure DevOps Services and TFS are included as follows:

- 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 many tools through these versions of Visual Studio and plug-ins. To download any version of Visual Studio, go to 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, including 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. It supports designing, building, and managing complex enterprise applications.
- **Visual Studio Test Professional**: Provides access to Microsoft Test and development tools to support quality and collaboration throughout the development process.
- **Visual Studio Team Explorer**: Free solution for non-developers to interact with Team Foundation Server and Visual Studio Team Services.
- **[Eclipse/Team Explorer Everywhere](./java/download-eclipse-plug-in.md)**: Free plug-in to support teams running Eclipse on Linux, macOS, or Windows that connect to Azure DevOps Services or TFS.
- **Android Studio with the Azure DevOps Services Plug-in for Android Studio**: Free plug-in to support Android developers and connect to Git repositories on Azure DevOps Services or TFS.
- **IntelliJ with the Azure DevOps Services Plugin for IntelliJ**: Free plug-in to support developers who use IntelliJ IDEA or Android Studio to connect to Git repositories on Azure DevOps Services or TFS.
- **Visual Studio Code**: Free, open-source code editor with a free extension to support connecting to Git repositories on Azure DevOps Services or TFS.

### Team Explorer plug-in

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

The screenshot displays the Team Explorer interface for two different source control environments: Git and TFVC. Both pages feature a consistent header with navigation icons and a search bar. The main content area is divided into sections for 'Project' and 'Solutions'. Under 'Project', users can access 'Web Portal', 'Task Board', and 'Team Room'. The 'Solutions' section shows that no solutions were 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 integrates 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](#): By 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](#): Illustrate user stories and requirements by 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 Microsoft partner. 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](#): Manage your test efforts, create and run manual tests, and create and track bugs that are found during test efforts. Test Manager is installed with Visual Studio Test Professional and Visual Studio Enterprise.
- [Test & Feedback extension \(previously called the Exploratory Testing extension\)](#): This extension provides a lightweight plug-in to a web browser. Stakeholders can respond to feedback requests for user stories and features created in Azure DevOps Services or TFS. This extension is free to stakeholders.
- [Microsoft Feedback Client](#): Your stakeholders can use this client to record feedback for your application as video, audio, or type-written comments. This client is installed with all versions of Visual Studio, or it can be [installed from the free download](#). All feedback is stored in the work item data store and requires [stakeholders to have 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](#). New features are deployed every three weeks for Azure DevOps Services, and quarterly for TFS. For release notes, see [Azure DevOps Services Features Timeline](#).

You can use these browsers to access the web portal (Azure DevOps Services and TFS):

| VERSION               | MICROSOFT EDGE | INTERNET EXPLORER | SAFARI (MAC)  | FIREFOX     | CHROME      |
|-----------------------|----------------|-------------------|---------------|-------------|-------------|
| Azure DevOps Services | 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 |

Microsoft Edge, Firefox, and Chrome automatically update themselves, so Azure DevOps Services and TFS support the most recent version.

To learn more, see [Web portal navigation](#).

### Browser-based extensions

The following extensions are available from the Azure DevOps Marketplace and are built and maintained by the Azure DevOps Services product team:

- [Test Manager](#): Run tests by 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.
- [Azure Artifacts](#): Build packages of reusable code components and share them. The Azure Artifacts 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](#): Increase cross-team collaboration and code sharing by enabling developers to quickly locate relevant information within the code base of all projects hosted within an organization or collection. You can discover implementation examples, browsing definitions, and error text.
- [Work item search](#): Quickly find relevant work items by searching across all work item fields over all projects in an organization. Perform full-text searches across all fields to efficiently locate relevant work items. Use inline search filters, on any work item field, to quickly narrow down a list of work items.

Find additional extensions from the [Azure DevOps Marketplace](#).

## Application monitoring tools

To monitor your applications, you can use Azure 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. Application Insights automatically detect performance anomalies. It includes powerful analytics tools to help you diagnose issues and to understand what users actually do with your app. Application Insights is designed to help you continuously improve performance and usability. It works for apps on a wide variety of platforms—including .NET, Node.js, and Java EE—hosted on-premises or in the cloud.

With Application Insights, you can do the following:

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

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 the following apps and functionality:

- Android, Cordova, iOS, macOS, Unity, Windows, and Xamarin apps
- Live, reliable crash reports
- Collection of 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 by using command-line tools, such as the following tools:

- [Git commands](#)
- [TFVC commands](#)
- [TFSConfig](#)
- [TFSDeleteProject](#)
- [TFSSecurity](#)
- [TFSServiceControl](#)

- [witadmin \(work item tracking\)](#)

## Marketplace extensions

Visual Studio, Azure DevOps Services, 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. They're written with standard technologies—HTML, JavaScript, and CSS. You can develop your own extensions by using your preferred dev tools.

You build extensions by using our RESTful API library. Publish your extensions to the Azure DevOps Marketplace, where you can privately maintain or share them with millions of developers who use Visual Studio, Azure DevOps Services, and TFS.

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

## REST APIs

The Azure DevOps Services 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 Azure DevOps Services and TFS. To learn more, see [REST API overview](#).

## Related articles

- [Key concepts](#)
- [Essential services](#)
- [Software development roles](#)
- [Pricing](#)
- [Azure DevOps data protection overview](#)

# Software development roles supported by Azure DevOps Services and TFS

2/5/2019 • 4 minutes to read • [Edit Online](#)

[Azure DevOps Services](#) | [Azure DevOps Server 2019](#) | [TFS 2018](#) | [TFS 2017](#) | [TFS 2015](#) | [TFS 2013](#)

If you are a sole developer or you work on a small team, chances are that you perform tasks associated with issue tracking, feature planning, coding, testing, build, and deployment.

If you work in a large company, 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 article describes 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 pipelines, test tools, and more. If you need to lock down specific areas to a select set of contributors, you can do that through [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 Team Foundation Version Control (TFVC) repository hosted in Azure DevOps Services or Team Foundation Server (TFS). From the web portal or a supported IDE, they can view repositories, check history, and more.

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

### Project managers

A project manager typically plans the feature set to deliver, sets priorities, and tracks the status of work, code defects, and customer issues. The suite of web-based Agile tools provides PMs with the views and features that 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 [About Azure Boards and Agile tools](#).

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

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

One of the main advantages to working with Azure DevOps Services or TFS is the suite of tools and integrated functionality that support build, testing, and deploying software applications. Here are the main DevOps-associated tasks that Azure DevOps Services and TFS support:

- 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 in [Azure Pipelines](#) and [Azure Test Plans](#).

### **Stakeholders**

With stakeholder access, anyone in 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 Azure DevOps Services is the reduced overhead of server maintenance. But there are still several administrative tasks required to support a collaborative, integrated software development environment.

The main tasks are grouped as follows by membership in a security group or role.

### **Team administrators**

Responsible for configuring team settings, which include:

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

To get started, see [Manage teams and configure team tools](#).

### **Project administrators**

Responsible for configuring project-level resources, including:

- [Area paths](#) and [iteration paths](#)
- [Project permissions](#) and [repository security](#)
- [Build agents, pools, and service connections](#)

- Test and [release](#) retention policies
- [Area paths](#) and [iteration paths](#)
- [Project permissions](#) and [repository security](#)
- [Customizing work tracking objects](#)
- [Build agents, pools, and service connections](#)
- Test and [release](#) retention policies

## Organization owners and project collection administrators

Responsible for configuring organization-level resources. These tasks include:

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

To get started, see [Manage organizations](#) and [Settings](#).

## Project collection administrators

Responsible for configuring collection-level resources. These tasks include:

- Add and manage projects
- Manage collection-level permissions
- Install and manage extensions (install custom or [Marketplace extensions](#))

To get started, see [Settings](#).

## TFS administrators

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

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

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

## Related articles

- [Key concepts](#)
- [Essential services](#)
- [Plan your organizational structure in Azure DevOps](#)

# Project management and navigation glossary

1/31/2019 • 7 minutes to read • [Edit Online](#)

## Azure DevOps Services | Azure DevOps Server 2019 | TFS 2018 | TFS 2017

This glossary describes terms used when navigating in the web portal for Azure DevOps Services and Team Foundation Server (TFS). See also:

- [Agile glossary](#)
- [Security glossary](#)

## Backlogs

An interactive list of work items that corresponds to a team's project plan or roadmap for what the team plans to deliver. The product backlog supports prioritizing work, forecasting work by sprints, and quickly linking work to portfolio backlog items. You can define your backlog items and then manage their status using the Kanban board.

Each product backlog can be customized by a team. Learn more: [Create your backlog](#).

## Analytics views

Analytics views provide a simplified way to specify the filter criteria for a Power BI report based on the Analytics service. The Analytics service is the reporting platform for Azure DevOps Services.

## Area path

Area paths are used to group work items by team, product, or feature area. Iteration paths are used to group work into sprints, milestones, or other event-specific or time-related periods. You can use area paths to define a hierarchy of paths. To learn more, see [About area and iteration paths](#).

## Boards (Kanban)

An interactive, electronic sign board that supports visualization of the flow of work from concept to completion and lean methods. Learn more: [Kanban basics](#).

## Collections

A collection is a container for a number of projects in Azure DevOps. A default collection is created when you sign up with Azure DevOps Services or install Team Foundation Server. Within Azure DevOps Services, a collection corresponds to an organization. For on-premises TFS deployments, you can add and manage collections to specify the logical and physical resources available to the projects within the collection.

Learn more: [About projects and scaling your organization](#), [Manage organizations](#) or [Manage project collections in Team Foundation Server](#).

## Dashboards

Dashboards are user-configurable interactive signboards that provide real-time information. Dashboards are associated with a team and display configurable widgets to show information. To learn more, see [Add and manage dashboards](#).

## Extensions

Extensions are simple add-ons that are used to customize and extend the DevOps experience of Azure DevOps Services and TFS. They are written with standard technologies—HTML, JavaScript, CSS—and can be developed using your preferred development tools. Hundreds of extensions are available from the [Visual Studio Marketplace](#), Azure DevOps tab.

## Favorites

Tagging an object as a favorite is a method used to support quick navigation by yourself or other team members. You can tag work item queries and build definitions as personal and team favorites. Other objects you can tag as a favorite for yourself only include code branches, delivery plans, test plans, and teams or projects. To learn more, see [Set personal or team favorites](#).

## Follow

Tagging specific work items or pull requests to follow them is a method used to receive email updates about changes that are made to them. To learn more, see [Follow a work item or pull request](#).

## Git repository

A Git repository supports a distributed version control system for tracking changes, reviewing contributions to the code, and more. Each developer has a copy of the source repository on their dev machine. You can add multiple Git repositories to a project. Learn more: [Git Repositories](#).

### NOTE

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

## Notifications

With notifications, you receive an email when changes occur to work items, code reviews, pull requests, source control files, and builds. For example, you can get notified whenever a bug that you opened is resolved, or when a work item is assigned to you. You receive notifications based on rules or subscriptions made by you, for your teams, or for the project. Learn more: [About notifications](#).

## Pipelines

Pipelines are artifacts that you define to run concurrent builds or deploy concurrent releases. Two types of pipelines are supported, private and hosted. To learn more, see [CI/CD concurrent jobs](#).

## Plans (also known as delivery plans)

A plan is a configurable view that displays work from multiple teams and projects laid out within a calendar based on each team's iterations. Each row in the view represents the work from a team's product or portfolio backlog. Each card corresponds to a work item, such as user story, feature, or epic. To learn more, see [Review team delivery plans](#).

## Process

A process defines the building blocks of a work-tracking system. To customize a process, you first create an inherited process from one of the default system processes, [Agile](#), [Scrum](#), or [CMMI](#). All projects that use the process see the changes you make. To learn more, see [About process customization and inherited processes](#).

## Projects

A project, which was previously known as a *team project*, provides a repository for source code. A project provides a place where a group of people can plan, track progress, and collaborate on building software solutions. A project is defined for an Azure DevOps Services organization or within a TFS project collection. You can use it to focus on those objects defined within the project. To learn more, see [About projects and scaling your organization](#).

## Public projects

A project created within an Azure DevOps Services organization that is visible to the whole world. Everyone in the world can discover them and perform limited operations. Administrators can control who gets to fully contribute. Administrators can switch a project from private to public, and vice-versa, as described in [Change the project visibility](#).

## Queries

Queries are used to find and list work items. Queries support managed searches, which are used to triage work, versus ad-hoc searches, which are used to find a specific work item. To learn more, see [About managed queries](#).

## Repositories

A source control folder or container you configure to help you track file changes in. You can have any number of repository on your computer, each stored in their own folder. Each repository is independent, so changes saved in one repository don't affect the contents of another. Learn more: [Create a new Git repo](#).

## Sprints (also known as iterations)

A sprint is a time period of usually two to three weeks that's used to group work items to be completed during that time period. Sprints are used in Scrum methods to support sprint planning, sprint burndown, and other Scrum processes. Sprints are defined via iteration paths. To learn more, see [About area and iteration paths \(aka sprints\)](#).

## Sprint backlog

An interactive list of work items that have been assigned to the same sprint or iteration path for a team. The sprint backlog supports teams that use Scrum methodologies. Learn more: [Sprint planning](#).

## Taskboard

A taskboard is an interactive board of work items that you can use to review and update tasks defined for the sprint backlog. The taskboard supports teams that use Scrum methodologies. To learn more, see [Update and monitor your taskboard](#).

## Teams

A team corresponds to a selected set of project members. With teams, organizations can subcategorize work to better focus on all the work they track within a project. Each team gets access to a suite of Agile tools. Teams can use these tools to work autonomously and collaborate with other teams across the enterprise. Each team can configure and customize each tool to meet their work requirements. To learn more, see [About teams and Agile tools](#).

## Team Foundation Version Control (TFVC)

A centralized version control system. With TFVC, devs have only one version of each file on their dev machines. Branches are path-based and created on the server. Historical data is maintained only on the server. Branches are path-based and created on the server. Learn more: [Use Team Foundation Version Control](#).

## Widgets

Widgets display information and charts on dashboards. Many of them can be configured. Many widgets display information available from one or more data stores or charts created by the system. To learn more, see [Widget catalog](#).

## Work items

A work item represents an object stored in the work item data store. Each work item is based on a work item type—such as a user story, feature, bug, task, or issue—and is assigned an identifier which is unique across all projects in an organization or project collection. The work item types available to you are based on the process used when your project was created. Each work item supports capturing information, adding attachments, linking to other work items, and more. Learn more: [About work items](#).

## Work item types (WITs)

A WIT specifies the fields, workflow, and form used to track an item of work. Each WIT is associated with more than 30 system fields and several more type-specific fields. You use work items to plan and track the work required to develop your project. For an overview of predefined WITs provided with the default processes, see [Choose a process](#).

2 minutes to read

# Troubleshoot connecting to a project

1/31/2019 • 4 minutes to read • [Edit Online](#)

[Azure DevOps Services](#) | [Azure DevOps Server 2019](#) | [TFS 2018](#) | [TFS 2017](#) | [TFS 2015](#) | [TFS 2013](#)

## Troubleshoot connectivity

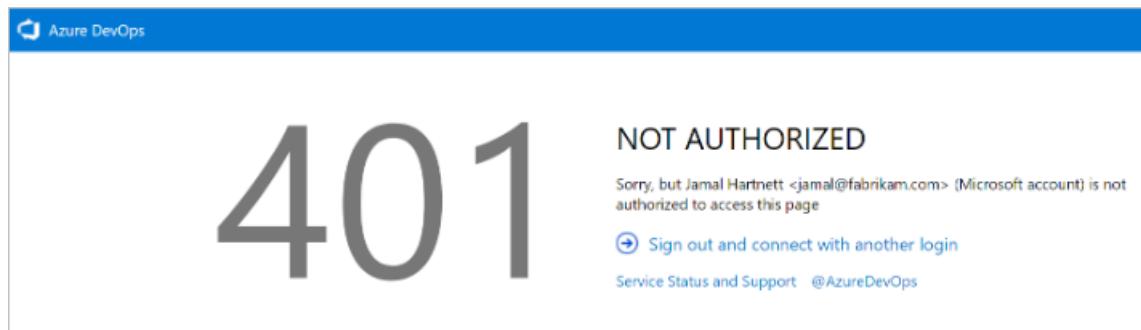
As a first step in resolving connectivity issues with Azure DevOps Services or TFS, complete the following steps:

1. Sign out of your browser. To do this, select the [Visual Studio sign out](#) link.
2. Delete the cookies in your browser. To delete cookies in most browsers, press Ctrl+Shift+Del.
3. Open Internet Explorer and delete the browser cookies. The Visual Studio IDE uses Internet Explorer cookies.
4. Close all browsers and close the Visual Studio IDE.
5. Use a private browser session to retry the connection. If the issue is with the Visual Studio IDE, remove the connection, and then re-add it.

## Troubleshoot signing in

Two types of identities can sign in: Microsoft accounts and Azure Active Directory (Azure AD) accounts. Depending on your account, you might experience one of the following errors.

401 - Not Authorized



The most common error page is the *401 Not Authorized* error. This occurs when your identity doesn't have permissions to enter an organization. Common reasons for the error include:

- Your identity isn't a member of the organization.
- Your identity has an invalid or missing license assignment.

If you think you're a member of the organization but are blocked by this error page, [contact customer support](#).

### Scenario 1

Your work or school Azure AD account doesn't have access, but your personal Microsoft account does.

401 - Work or school, or Personal account

401

## NOT AUTHORIZED

**jamal@fabrikam.com** has multiple accounts associated with it.Your work or school account does not have access to [dev.azure.com/Fabrikam](#), but **your personal account does have access**.[Sign in with your personal account](#)[Sign out and connect with another login](#)Service Status and Support [@AzureDevOps](#)

A highly specific 401 error case. In this case, both a personal Microsoft account and a work or school account (Azure AD) that have the same sign in address exist. You have signed in with your work or school account, but your personal account is the identity that has access to the organization.

**Mitigation**

In some cases, you might not know you have two identities with the same sign in address. The work or school Azure AD account might have been created by an administrator when you were added to Office365 or Azure AD.

To sign out of your current work or school Azure AD account, select **Sign in with your personal MSA account**, and then sign in by using your personal Microsoft account. After authentication, you should have access to the organization.

**TIP**

To avoid seeing this prompt, you can rename your Microsoft account. Then, only one identity (your work or school account, or Azure AD account) uses your sign-in address.

**Scenario 2**

Your personal Microsoft account doesn't have access but your Azure AD account does. This is an opposite version of the 401 error page. In this case, the personal account (Microsoft account identity) doesn't have access to the organization and the work or school account (Azure AD identity) does. The same guidance from Scenario 1 applies, but in reverse.

401 - Work or school, or Personal account

401

## NOT AUTHORIZED

**jamal@fabrikam.com** has multiple accounts associated with it.Your personal account does not have access to [dev.azure.com/Fabrikam](#), 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 [@AzureDevOps](#)**Mitigation**

If you enter your credentials correctly but you're redirected back to the original sign-in page, we recommend clearing all cookies, and then reattempting to sign in. If that doesn't fix the issue, contact customer support.

**Troubleshoot TFS connectivity**

Here's a list of the most frequently encountered connection problems and what to do about them. Complete the list in the order indicated.

1. Verify that you have the required permissions.

If the errors that you receive indicate read-only or blocked actions, you might not have permissions to act on the data.

2. Verify that your computer is connected to the network and that it can access network resources.

3. Verify that TFS hasn't been taken offline. Talk with your TFS administrator.

4. Check whether your project has been moved to another 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 organizations

When you use two or more organizations that are linked to Azure AD, such as organizations that are created in the Azure portal, the sign-out function might not work as expected. For example, you can't switch between different organizations to connect to multiple organizations that are linked to directory tenants.

When this problem occurs, a blank screen flashes several times. Then, one of the following error messages appears after you connect to or add a new connection in the **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 issue, apply Visual Studio 2013.2 or install a later version from the [Visual Studio download website](#).

Another solution is to delete your browser cookies. For more information, see the support article [You can't switch between different organizations in Visual Studio Online](#).

## Connect to TFS with Secure Sockets Layer

If you connect to a TFS instance that has Secure Sockets Layer (SSL) configured, you must 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 you move or split a project collection, you might need to clear the cache.

1. Sign in to your client computer for TFS 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 go to one of the following folders, depending on the operating system that's 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 7 or Windows Vista** *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}

1/25/2019 • 5 minutes to read • [Edit Online](#)

[Azure DevOps Services](#) | [Azure DevOps Server 2019](#) | [TFS 2018](#) | [TFS 2017](#) | [TFS 2015](#) | [TFS 2013](#)

You might receive this error when you try to connect to Azure DevOps Services or an on-premises Team Foundation Server from Visual Studio.

## You receive this error when you try to connect to Azure DevOps Services

| PROBLEM                                                                                      | RESOLUTION                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
|----------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| You don't have an active account or license.                                                 | Check with your 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 Azure DevOps Services organization is connected to the Azure Active Directory.          | When your Azure DevOps Services organization 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 Azure DevOps Services organizations 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 sign in to Azure DevOps Services from Visual Studio using different credentials. | See <a href="#">Connect to projects, Sign in with different credentials</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 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>TFSConfig ChangeServerID</b> command. See <a href="#">TFSConfig 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

2/15/2019 • 2 minutes to read • [Edit Online](#)

**Azure DevOps Services | Azure DevOps Server 2019 | TFS 2018 | TFS 2017 | TFS 2015 | TFS 2013**

If you are having network connection issues to Azure DevOps, 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.vssps.visualstudio.com>

## A more general list of URLs for signing in to Azure DevOps and Azure

- <https://windows.net>
- <https://microsoftonline.com>
- <https://visualstudio.com>
- <https://microsoft.com>
- <https://live.com>
- <https://dev.azure.com>
- <https://management.core.windows.net>
- <https://app.vssps.visualstudio.com>
- <https://vstsagentpackage.azureedge.net>
- <https://cdn.vsassets.io> -- hosts our CDN content
- <https://gallerycdn.vsassets.io> -- hosts Azure DevOps extensions
- <https://static2.sharepointonline.com> -- hosts some resources that we use in "office fabric" UI kit (fonts, etc).

To ensure your organization works with any existing firewall or IP restrictions, ensure that [dev.azure.com](https://dev.azure.com) is open and the [13.107.6.183](https://13.107.6.183) and [13.107.9.183](https://13.107.9.183) IP addresses are allowed.

## NuGet connections

- <https://azurewebsites.net>
- <https://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`.

# How do I get support and provide feedback for Azure DevOps and TFS products?

12/20/2018 • 4 minutes to read • [Edit Online](#)

[Azure DevOps Services](#) | [Azure DevOps Server 2019](#) | [TFS 2018](#) | [TFS 2017](#) | [TFS 2015](#) | [TFS 2013](#)

## IMPORTANT

Having problems? We can help. We offer a [live chat](#) (English only) support option. Choose from **Technical Support**, **Sales Support**, **Visual Studio (For your Company)**, and **Account, Subscription, and Billing Support**. Select your country from the dropdown menu, and then select **Live Chat (English)**.

Share your feedback and ideas with us, or join our communities. We're always working to improve Azure DevOps, and we want you to be part of the process!

Do you need to do any of the following?:

- **Get advice** Visit StackOverflow for [Azure DevOps](#) or [TFS](#).
- **Report a bug** Submit it through our Developer Community for [Azure DevOps](#) or [TFS](#).
- **Suggest a feature or a fix** Submit your idea or issue through our Developer Community for [Azure DevOps](#) or [TFS](#).
- **Find out what's new in Azure DevOps** Check out the [current Azure DevOps Release Notes](#). These notes are updated every three weeks.

## Azure DevOps and TFS Product Support

The primary support venues for Azure DevOps and TFS are as follows:

- [Azure DevOps Support](#)
- [TFS Support](#)

For technical support:

- [Basic support](#)
- [Premium support](#)

For billing support:

- [Azure DevOps](#) (from the Azure Support Portal)

## Get live help

We offer a [live chat](#) (English only) support option. Choose from **Technical Support**, **Sales Support**, **Visual Studio (For your Company)**, and **Account, Subscription, and Billing Support**. Select your country from the dropdown menu, and then select **Live Chat (English)**.

## 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 selecting 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 Azure DevOps. 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 Azure DevOps or TFS.

### Azure DevOps

An Azure DevOps URL consists of an organization name and dev.azure.com, for example:

`https://dev.azure.com/{yourorganization}`.

To learn the version number, enter the following address in a web browser:

`https://dev.azure.com/{yourorganization}/_home/About`

A page similar to the following opens showing the version number.

The screenshot shows the 'About Azure DevOps Services' page. The left sidebar has links for 'Home', 'My work items', and 'Settings'. The main content area displays the 'Azure DevOps Services' logo, the version number 'Version 17.139.28021.7', and the 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](https://ServerName:8080/tfs/_home/About)

A page similar to the following opens showing the version number.

The screenshot shows the 'About Microsoft Visual Studio Team Foundation Server' page. At the top, it says 'Visual Studio Team Foundation Server 2015'. Below that, it displays the title 'Microsoft Visual Studio Team Foundation Server'. Underneath the title, it shows 'Version 14.102.25423.0' and '© Microsoft Corporation. All rights reserved.'

| TFS RELEASE     | UPDATE        | VERSION NUMBER |
|-----------------|---------------|----------------|
| <b>TFS 2018</b> | 2018.3        | 16.131.28106.2 |
|                 | 2018.2        | 16.131.27701.1 |
|                 | 2018.1        | 16.122.27409.2 |
|                 | 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 |
|                 | RC1           | 15.103.25603.0 |
| <b>TFS 2015</b> | 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   |
|                 | Update 1 RC 2 | 14.0.24626.0   |

| TFS RELEASE     | UPDATE        | VERSION NUMBER |
|-----------------|---------------|----------------|
|                 | 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   |
| <b>TFS 2013</b> | 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   |
|                 | 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  |

| TFS RELEASE | UPDATE | VERSION NUMBER |
|-------------|--------|----------------|
|             | RTM    | 8.0.50727.147  |

## Related articles

- [Azure DevOps features timeline](#)
- [Report a problem with Visual Studio](#)

# Default permissions and access for Azure DevOps

2/5/2019 • 16 minutes to read • [Edit Online](#)

[Azure DevOps Services](#) | [Azure DevOps Server 2019](#) | [TFS 2018](#) | [TFS 2017](#) | [TFS 2015](#) | [TFS 2013](#)

To use Azure DevOps features, users must be added to a security group with the appropriate permissions and granted access to the web portal. Limitations to select features are based on the *access level* and *security group* to which a user is assigned. The **Basic** access level supports full access to all Azure Boards features.

**Stakeholder** access level provides partial support to select features, allowing users to view and modify work items, but not use all features. **Stakeholder** access is available to support free access to a limited set of features by an unlimited set of stakeholders.

The most common built-in security groups—**Readers**, **Contributors**, and **Project Administrators**—and team administrator role grant permissions to specific features.

In general, use the following guidance when assign users to an access level and security group:

- Grant **Basic** access and add to the **Contributors** security group full-time workers who contribute to the code base or manage projects.
- Grant **Stakeholder** access and add to the **Contributors** security group managers or users who don't actively contribute to the code base but want to check project status and provide direction, feedback, feature ideas, and business alignment to a team. Also,
- Grant **Stakeholder** access and add to the **Project Administrators** security group users tasked with managing project resources. If they will also contribute to the code base, then you must assign them **Basic** or higher-level access.
- Grant **Stakeholder** access and add to the **Project Collection Administrators** security group users tasked with managing organization or collection resources. If they will also contribute to the code base, then you must assign them **Basic** or higher-level access.

To learn more about administrative tasks see [About user, team, project, and organization-level settings](#). For a complete reference of all built-in groups and permissions, see [Permissions and groups](#). For information about access levels, see [About access levels](#).

In the tables provided in this article, a indicates that the corresponding access level or security group has access to a feature by default.

For a comparison chart of Stakeholder versus Basic access, see the [Feature matrix](#). To assign or change an access level, see [Add users and assign licenses](#). If you need to [grant specific users select permissions](#), you can do so.

## Azure Boards

You can plan and track work from the web portal **Boards** hub, and using Eclipse, Visual Studio, Excel, Project, and other clients. For an overview of work tracking features, see [About Agile tools](#).

Users granted Stakeholder access are granted different access to features depending on whether it is a private or a public project. For private projects, Stakeholders have limited access to select work tracking functions, whereas for public projects, Stakeholders enjoy full access to work tracking features. To learn more, see [About access levels, Stakeholder access](#).

## Work tracking

You can plan and track work from the web portal **Work** hub, and using Eclipse, Visual Studio, Excel, Project, and

other clients. For an overview of work tracking features, see [About Agile tools](#).

**NOTE**

Team administrators can configure settings for their team's tools. Organization owners and members of the Project Administrators group can configure settings for all teams. To be added as an administrator, see [Add team administrators](#) or [Add administrators, set permissions at the project-level or project collection-level](#).

## General work item feature access

You can use work items to track anything you need to track. To learn more, see [Understand how work items are used to track issues, tasks, and epics](#).

| TASK                                                                                                                           | STAKEHOLDERS             | READERS                  | CONTRIBUTORS             | TEAM ADMINS              |
|--------------------------------------------------------------------------------------------------------------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| View/open work items                                                                                                           | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Add work items, add tags to work items<br><i>(Stakeholders can assign existing tags to work items, but can't add new tags)</i> | <input type="checkbox"/> |                          | <input type="checkbox"/> | <input type="checkbox"/> |
| Change work item type                                                                                                          | <input type="checkbox"/> |                          | <input type="checkbox"/> | <input type="checkbox"/> |
| Move work item to another project                                                                                              |                          |                          | <input type="checkbox"/> | <input type="checkbox"/> |
| Email work items                                                                                                               | <input type="checkbox"/> |                          | <input type="checkbox"/> | <input type="checkbox"/> |
| Apply a work item template                                                                                                     | <input type="checkbox"/> |                          | <input type="checkbox"/> | <input type="checkbox"/> |
| Delete work items (able to restore from the Recycle bin)                                                                       |                          |                          | <input type="checkbox"/> | <input type="checkbox"/> |
| Permanently delete work items                                                                                                  |                          |                          |                          | <input type="checkbox"/> |
| <a href="#">Provide feedback</a> (through the Microsoft Feedback client)                                                       | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| <a href="#">Request feedback</a>                                                                                               |                          |                          | <input type="checkbox"/> | <input type="checkbox"/> |

**NOTE**

You can change the work item type or move work items to another project within a project collection. These features require that the data warehouse is disabled. With the data warehouse disabled, you can use the [Analytics Service](#) to support your reporting needs. To learn more about disabling the data warehouse, see [Disable the data warehouse and cube](#).

| TASK                                                                                                                           | STAKEHOLDERS             | READERS                  | CONTRIBUTORS             | TEAM ADMINS              |
|--------------------------------------------------------------------------------------------------------------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| View/open work items                                                                                                           | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Add work items, add tags to work items<br><i>(Stakeholders can assign existing tags to work items, but can't add new tags)</i> | <input type="checkbox"/> |                          | <input type="checkbox"/> | <input type="checkbox"/> |

|                                                                 |                          |                          |                          |                          |
|-----------------------------------------------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| Email work items                                                | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Apply a work item template                                      | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Delete work items (able to restore from the Recycle bin)        |                          |                          | <input type="checkbox"/> | <input type="checkbox"/> |
| Permanently delete work items                                   |                          |                          |                          | <input type="checkbox"/> |
| <b>Provide feedback</b> (through the Microsoft Feedback client) | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| <b>Request feedback</b>                                         |                          |                          | <input type="checkbox"/> | <input type="checkbox"/> |

| TASK                                                                                                                           | STAKEHOLDERS             | READERS                  | CONTRIBUTORS             | TEAM ADMINS              |
|--------------------------------------------------------------------------------------------------------------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| View/open work items                                                                                                           | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Add work items, add tags to work items<br><i>(Stakeholders can assign existing tags to work items, but can't add new tags)</i> | <input type="checkbox"/> |                          | <input type="checkbox"/> | <input type="checkbox"/> |
| Email work items                                                                                                               | <input type="checkbox"/> |                          | <input type="checkbox"/> | <input type="checkbox"/> |
| Delete work items (able to restore from the Recycle bin)                                                                       |                          |                          | <input type="checkbox"/> | <input type="checkbox"/> |
| Permanently delete work items                                                                                                  |                          |                          |                          | <input type="checkbox"/> |
| <b>Provide feedback</b> (through the Microsoft Feedback client)                                                                | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| <b>Request feedback</b>                                                                                                        |                          |                          | <input type="checkbox"/> | <input type="checkbox"/> |

| TASK                                                                                                                           | STAKEHOLDERS             | READERS                  | CONTRIBUTORS             | TEAM ADMINS              |
|--------------------------------------------------------------------------------------------------------------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| View/open work items                                                                                                           | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Add work items, add tags to work items<br><i>(Stakeholders can assign existing tags to work items, but can't add new tags)</i> | <input type="checkbox"/> |                          | <input type="checkbox"/> | <input type="checkbox"/> |
| Email work items                                                                                                               | <input type="checkbox"/> |                          | <input type="checkbox"/> | <input type="checkbox"/> |
| Permanently delete work items                                                                                                  |                          |                          |                          | <input type="checkbox"/> |
| <b>Provide feedback</b> (through the Microsoft Feedback client)                                                                | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| <b>Request feedback</b>                                                                                                        |                          |                          | <input type="checkbox"/> | <input type="checkbox"/> |

## Boards feature access

You use **Boards** to implement Kanban methods. Boards present work items as cards and support quick status updates through drag-and-drop.

| Task                                                                                                                                                      | Stakeholders             | Readers                  | Contributors             | Team Admins              |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| View boards and open work items                                                                                                                           | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Add work items to a board; update status, reorder, or reparent child tasks through drag-and-drop; update a field on a card                                |                          |                          | <input type="checkbox"/> | <input type="checkbox"/> |
| Add child tasks to a checklist                                                                                                                            | <input type="checkbox"/> |                          | <input type="checkbox"/> | <input type="checkbox"/> |
| Assign to a sprint (from card menu)                                                                                                                       | <input type="checkbox"/> |                          | <input type="checkbox"/> | <input type="checkbox"/> |
| Customize a board, configure team settings<br><i>(Stakeholders assigned as a team administrator or Project Administrator can configure team settings)</i> | <input type="checkbox"/> |                          |                          | <input type="checkbox"/> |

| Task                                                                                                                                                      | Stakeholders             | Readers                  | Contributors             | Team Admins              |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| View boards and open work items                                                                                                                           | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Add work items to a board; update status through drag-and-drop                                                                                            |                          |                          | <input type="checkbox"/> | <input type="checkbox"/> |
| Assign to a sprint                                                                                                                                        | <input type="checkbox"/> |                          | <input type="checkbox"/> | <input type="checkbox"/> |
| Customize a board, configure team settings<br><i>(Stakeholders assigned as a team administrator or Project Administrator can configure team settings)</i> | <input type="checkbox"/> |                          |                          | <input type="checkbox"/> |

## Backlogs features access

**Backlogs** display work items as lists. A product backlog represents your project plan and a repository of all the information you need to track and share with your team. Portfolio backlogs allow you to group and organize your backlog into a hierarchy.

| Task                                                                                                                                                      | Stakeholders             | Readers                  | Contributors             | Team Admins              |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| View backlogs and open work items                                                                                                                         | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Add work items to a backlog<br><i>(Stakeholders can only add items to the bottom of the backlog)</i>                                                      | <input type="checkbox"/> |                          | <input type="checkbox"/> | <input type="checkbox"/> |
| Use bulk edit features                                                                                                                                    | <input type="checkbox"/> |                          | <input type="checkbox"/> | <input type="checkbox"/> |
| Add child items to a backlog item; prioritize or reorder a backlog; parent items using the Mapping pane; Assign items to a sprint using the Planning pane |                          |                          | <input type="checkbox"/> | <input type="checkbox"/> |

| Customize a backlog, configure team settings<br><i>(Stakeholders assigned as a team administrator or Project Administrator can configure team settings)</i> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| Task                                                                                                                                                        | Stakeholders             | Readers                  | Contributors             | Team Admins              |
| View backlogs and open work items                                                                                                                           | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Add work items to a backlog<br><i>(Stakeholders can only add items to the bottom of the backlog)</i>                                                        | <input type="checkbox"/> |                          | <input type="checkbox"/> | <input type="checkbox"/> |
| Use bulk edit features                                                                                                                                      | <input type="checkbox"/> |                          | <input type="checkbox"/> | <input type="checkbox"/> |
| Add child items to a backlog item; prioritize or reorder a backlog; parent items using the Mapping pane                                                     |                          |                          | <input type="checkbox"/> | <input type="checkbox"/> |
| Customize a backlog, configure team settings<br><i>(Stakeholders assigned as a team administrator or Project Administrator can configure team settings)</i> | <input type="checkbox"/> |                          |                          | <input type="checkbox"/> |

### Sprints feature access

You use sprint tools to implement Scrum methods. The **Sprints** set of tools provide filtered views of work items that a team has assigned to specific iteration paths or sprints.

| Task                                                                                                                                    | Stakeholders             | Readers                  | Contributors             | Team Admins              |
|-----------------------------------------------------------------------------------------------------------------------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| View sprint backlogs, taskboards, and open work items                                                                                   | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Add work items to a sprint backlog<br><i>(Stakeholders can add backlog items to the bottom of a sprint backlog)</i>                     | <input type="checkbox"/> |                          | <input type="checkbox"/> | <input type="checkbox"/> |
| Add work items to a taskboard<br><i>(Stakeholders can add backlog items but not tasks)</i>                                              |                          |                          | <input type="checkbox"/> | <input type="checkbox"/> |
| Prioritize/reorder a sprint backlog or taskboard; add child items to a backlog item; reassign items to a sprint using the Planning pane |                          |                          | <input type="checkbox"/> | <input type="checkbox"/> |
| View team capacity (work details)                                                                                                       | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Set team capacity                                                                                                                       |                          |                          | <input type="checkbox"/> | <input type="checkbox"/> |
| Use bulk edit features                                                                                                                  | <input type="checkbox"/> |                          | <input type="checkbox"/> | <input type="checkbox"/> |
| Define sprints, set sprint dates                                                                                                        |                          |                          |                          | <input type="checkbox"/> |

|                                                                                                                                                                                 |                          |                          |                          |                          |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| Customize a sprint backlog or taskboard, configure team settings<br><i>(Stakeholders assigned as a team administrator or Project Administrator can configure team settings)</i> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| View sprint backlogs, taskboards, and open work items                                                                                                                           | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Add work items to a sprint backlog<br><i>(Stakeholders can add backlog items to the bottom of a sprint backlog)</i>                                                             | <input type="checkbox"/> |                          | <input type="checkbox"/> | <input type="checkbox"/> |
| Add work items to a taskboard<br><i>(Stakeholders can add backlog items but not tasks)</i>                                                                                      |                          |                          | <input type="checkbox"/> | <input type="checkbox"/> |
| Prioritize/reorder a sprint backlog or taskboard; add child items to a backlog item; reassign items to another using drag-and-drop                                              |                          |                          | <input type="checkbox"/> | <input type="checkbox"/> |
| View team capacity (work details)                                                                                                                                               | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Set team capacity                                                                                                                                                               |                          |                          | <input type="checkbox"/> | <input type="checkbox"/> |
| Use bulk edit features                                                                                                                                                          | <input type="checkbox"/> |                          | <input type="checkbox"/> | <input type="checkbox"/> |
| Define sprints, set sprint dates                                                                                                                                                |                          |                          |                          | <input type="checkbox"/> |
| Customize a sprint backlog or taskboard, configure team settings<br><i>(Stakeholders assigned as a team administrator or Project Administrator can configure team settings)</i> | <input type="checkbox"/> |                          |                          | <input type="checkbox"/> |

## Queries and semantic search

**Queries** are filtered lists of work items based on criteria that you define by using a query editor. **Adhoc searches** are powered by a semantic search engine.

| TASK                                                                                                                  | STAKEHOLDERS             | READERS                  | CONTRIBUTORS             | PROJECT ADMINS           |
|-----------------------------------------------------------------------------------------------------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| View and run managed queries                                                                                          | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Create and save managed My queries                                                                                    | <input type="checkbox"/> |                          | <input type="checkbox"/> | <input type="checkbox"/> |
| Create and save managed Shared queries<br><i>(Stakeholders can't save Shared queries even if granted permissions)</i> |                          |                          |                          | <input type="checkbox"/> |
| View query charts                                                                                                     |                          | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Create query charts                                                                                                   |                          |                          | <input type="checkbox"/> | <input type="checkbox"/> |

|                                        |                          |                          |                          |                          |
|----------------------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| Powerful semantic work-tracking search | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
|----------------------------------------|--------------------------|--------------------------|--------------------------|--------------------------|

| TASK                                                                               | STAKEHOLDERS             | READERS                  | CONTRIBUTORS             | TEAM ADMINS              |
|------------------------------------------------------------------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| View and run managed queries                                                       | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Create and save managed queries<br><i>(Stakeholders can't save shared queries)</i> | <input type="checkbox"/> |                          | <input type="checkbox"/> | <input type="checkbox"/> |
| View query charts                                                                  |                          | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Create query charts                                                                |                          |                          | <input type="checkbox"/> | <input type="checkbox"/> |

### Delivery plans feature access

[Delivery plans](#) display work items as cards against a calendar view. This format can be an effective communication tool with managers, partners, and stakeholders for a team. Users granted **Stakeholder** access for private projects have no access to delivery plans, while users granted **Stakeholder** access for public projects has the same access as regular Contributors granted **Basic** access.

| TASK                                                                                                                   | STAKEHOLDERS | READERS                  | CONTRIBUTORS             | PROJECT ADMINS           |
|------------------------------------------------------------------------------------------------------------------------|--------------|--------------------------|--------------------------|--------------------------|
| View delivery plans                                                                                                    |              | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Create, edit, or delete a delivery plan<br><i>(Contributors can only edit or delete plans that they create)</i>        |              |                          | <input type="checkbox"/> | <input type="checkbox"/> |
| Manage permissions for a delivery plan<br><i>(Contributors can only manage permissions for plans that they create)</i> |              |                          |                          | <input type="checkbox"/> |

### Additional permissions

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](#) and individual [queries and query folders](#).

## Azure Repos

You can manage your source code from the web portal **Repos** hub, or using Xcode, Eclipse, IntelliJ, Android Studio, Visual Studio, or Visual Studio Code.

Stakeholders for private projects have no access to **Repos**. Stakeholders for public projects have the same access to **Repos** as **Contributors**.

## Code: Source control

You can connect to your code from the web portal **Code** hub, or using Xcode, Eclipse, IntelliJ, Android Studio, Visual Studio, or Visual Studio Code. Stakeholders for private projects have no access to **Code**.

### Git

You can use [Git repositories](#) to host and collaborate on your source code. For an overview of code features and functions.

Set permissions across all Git repositories by making changes to the top-level **Git repositories** entry. Individual

repositories inherit permissions from the top-level **Git Repositories** entry. Branches inherit a subset of permissions from assignments made at the repository level. For branch permissions and policies, see [Set branch permissions](#) and [Improve code quality with branch policies](#).

| TASK                                                                                                                                                                          | READERS | CONTRIBUTORS | BUILD ADMINS | PROJECT ADMINS |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------|--------------|--------------|----------------|
| Clone, fetch, contribute to pull requests, and explore the contents of a repository                                                                                           | ✓       | ✓            | ✓            | ✓              |
| Contribute to a repository, create branches, create tags, manage notes                                                                                                        |         | ✓            | ✓            | ✓              |
| Create, delete, and rename repositories                                                                                                                                       |         |              |              | ✓              |
| Edit policies, Manage permissions, Remove others' locks                                                                                                                       |         |              |              | ✓              |
| Bypass policies when completing pull requests, Bypass policies when pushing, Force push (rewrite history, delete branches and tags) ( <i>not set for any security group</i> ) |         |              |              |                |

Set permissions across all Git repositories by making changes to the top-level **Git repositories** entry. Individual repositories inherit permissions from the top-level **Git Repositories** entry. Branches inherit a subset of permissions from assignments made at the repository level. For branch permissions and policies, see [Set branch permissions](#) and [Improve code quality with branch policies](#).

By default, the project-level Readers groups have read-only permissions.

| TASK                                                                                                                                                                                                                                                                                                                                                                                                                                                               | CONTRIBUTORS | BUILD ADMINS | PROJECT ADMINS |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------|--------------|----------------|
| <b>Branch Creation:</b> At the repository level, can push their changes to branches in the repository. Does not override restrictions in place from <a href="#">branch policies</a> . At the branch level, can push their changes to the branch and lock the branch.                                                                                                                                                                                               | ✓            | ✓            | ✓              |
| <b>Contribute:</b> At the repository level, can push their changes to branches in the repository. Does not override restrictions in place from <a href="#">branch policies</a> . At the branch level, can push their changes to the branch and lock the branch.                                                                                                                                                                                                    | ✓            | ✓            | ✓              |
| <b>Note Management:</b> Can push and edit Git notes to the repository. They can also remove notes from items if they have the Force permission.                                                                                                                                                                                                                                                                                                                    | ✓            | ✓            | ✓              |
| <b>Tag Creation:</b> Can push tags to the repository, and can also edit or remove tags if they have the Force permission.                                                                                                                                                                                                                                                                                                                                          | ✓            | ✓            | ✓              |
| <b>Administer:</b> Delete and rename repositories<br><br>If assigned to the top-level <b>Git repositories</b> entry, can add additional repositories. At the branch level, users can set permissions for the branch and unlock the branch. The Administer permission set on an individual Git repository does not grant the ability to rename or delete the repository. These tasks require Administer permissions at the top-level <b>Git repositories</b> entry. |              |              | ✓              |

|                                                                                                                                                                                                                                       |  |  |  |   |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|--|--|---|
| <b>Rewrite and destroy history (force push):</b> Can force an update to a branch and delete a branch. A force update can overwrite commits added from any user. Users with this permission can modify the commit history of a branch. |  |  |  | ✓ |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|--|--|---|

The Project Collection Build Service can read from all repositories by default. Any pipeline which runs with project collection scope can potentially read any repository in the organization/collection. You can remove this permission for a repository: set "Read" to "Deny" for the Project Collection Build Service.

## TFVC

[Team Foundation Version Control \(TFVC\)](#) provides a centralized version control system to manage your source control.

| TASK                                                                                                             | READERS   | CONTRIBUTORS | BUILD ADMINS | 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, or unlock other users' changes                                                           |           |              |              | ✓              |
| Manage branches, manage permissions                                                                              |           |              |              | ✓              |

## Azure Pipelines

You can define and manage your builds and releases from the web portal **Pipelines** hub. For an overview of pipelines features and functions, see [Continuous integration on any platform](#).

## Build and Release

You can define and manage your builds and releases from the web portal, **Build and Release**. For an overview of pipelines features and functions, see [Continuous integration on any platform](#).

From the web portal, you can set permissions for all or individual build pipelines, release pipelines, task groups, or variable groups. See [Set build and release permissions](#).

### NOTE

When the **Free access to Pipelines for Stakeholders** preview feature is enabled for the organization, Stakeholders get access to all **Build and Release** features. This is indicated by the preview icon shown in the following table. Without this feature enabled, stakeholders can only view and approve releases. To learn more, see [Provide Stakeholders access to edit build and release pipelines](#).

| TASK                                      | STAKEHOLDERS         | READERS              | CONTRIBUTORS         | BUILD ADMINS         | PROJECT ADMINS       | RELEASE ADMINS       |
|-------------------------------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|
| View release pipelines                    | <input type="text"/> |
| Define builds with continuous integration | <input type="text"/> |                      | <input type="text"/> | <input type="text"/> | <input type="text"/> |                      |

|                                                            |                          |                          |                          |                          |                          |                          |
|------------------------------------------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| Define releases and manage deployments                     | <input type="checkbox"/> |                          | <input type="checkbox"/> |                          | <input type="checkbox"/> |                          |
| Approve releases                                           | <input type="checkbox"/> |                          | <input type="checkbox"/> |                          | <input type="checkbox"/> |                          |
| Azure Artifacts (5 users free)                             | <input type="checkbox"/> |                          | <input type="checkbox"/> |                          | <input type="checkbox"/> |                          |
| Queue builds, edit build quality                           | <input type="checkbox"/> |                          | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |                          |
| Manage build queues and build qualities                    | <input type="checkbox"/> |                          |                          | <input type="checkbox"/> | <input type="checkbox"/> |                          |
| Manage build retention policies, delete and destroy builds | <input type="checkbox"/> |                          | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |                          |
| Administer build permissions                               | <input type="checkbox"/> |                          |                          | <input type="checkbox"/> | <input type="checkbox"/> |                          |
| Manage release permissions                                 | <input type="checkbox"/> |                          |                          |                          | <input type="checkbox"/> | <input type="checkbox"/> |
| Create and edit task groups                                | <input type="checkbox"/> |                          | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Manage task group permissions                              | <input type="checkbox"/> |                          |                          | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Can view library items such as variable groups             | <input type="checkbox"/> |
| Use and manage library items such as variable groups       | <input type="checkbox"/> |                          |                          | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

| Task | Stakeholders | Readers | Contributors | Build Admins | Project Admins | Release Admins |
|------|--------------|---------|--------------|--------------|----------------|----------------|
|------|--------------|---------|--------------|--------------|----------------|----------------|

|                                                            |                          |                          |                          |                          |                          |                          |
|------------------------------------------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| View build and release pipelines                           | <input type="checkbox"/> |
| Define builds with continuous integration                  |                          |                          | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |                          |
| Define releases and manage deployments                     |                          |                          | <input type="checkbox"/> |                          | <input type="checkbox"/> | <input type="checkbox"/> |
| Approve releases                                           | <input type="checkbox"/> |                          | <input type="checkbox"/> |                          | <input type="checkbox"/> | <input type="checkbox"/> |
| Azure Artifacts (5 users free)                             |                          |                          | <input type="checkbox"/> |                          | <input type="checkbox"/> | <input type="checkbox"/> |
| Queue builds, edit build quality                           |                          |                          | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |                          |
| Manage build queues and build qualities                    |                          |                          |                          | <input type="checkbox"/> | <input type="checkbox"/> |                          |
| Manage build retention policies, delete and destroy builds |                          |                          | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |                          |
| Administer build permissions                               |                          |                          |                          | <input type="checkbox"/> | <input type="checkbox"/> |                          |
| Manage release permissions                                 |                          |                          |                          |                          | <input type="checkbox"/> | <input type="checkbox"/> |
| Create and edit task groups                                |                          |                          | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Manage task group permissions                              |                          |                          |                          | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Can view library items such as variable groups             |                          | <input type="checkbox"/> |

|                                                      |  |  |  |  |  |  |
|------------------------------------------------------|--|--|--|--|--|--|
| Use and manage library items such as variable groups |  |  |  |  |  |  |
|------------------------------------------------------|--|--|--|--|--|--|

## Test Plans

### Test

You can define and manage manual tests from the web portal, **Test Plans** or **Test**. For an overview of manual test features and functions, see [Testing overview](#). You set [test permissions at the project level](#) from **Project Settings>Security**.

| TASK                                                                                                                                                                                              | STAKEHOLDER S | READERS | CONTRIBUTOR S | PROJECT ADMINS |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------|---------|---------------|----------------|
| Provide feedback using the Test & Feedback extension                                                                                                                                              | ✓             | ✓       | ✓             | ✓              |
| Exploratory testing, view test runs                                                                                                                                                               |               | ✓       | ✓             | ✓              |
| Manage test plans and test suites<br>Manage test configurations and test environments<br>Exploratory testing, create and delete test runs<br>Request feedback using the Test & Feedback extension |               |         | ✓             | ✓              |
| Test Manager (purchased separately)                                                                                                                                                               |               |         | ✓             | ✓              |

## Azure Artifacts

You can manage feeds from the web portal, **Artifacts** or **Build and release > Packages**. 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](#).

## Package management

You can manage feeds from the web portal, **Build and release > Packages**. 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                     |        | ✓           | ✓     |

| PERMISSION                | READER | CONTRIBUTOR | OWNER |
|---------------------------|--------|-------------|-------|
| Unlist/deprecate packages |        | ✓           | ✓     |
| Delete/unpublish package  |        |             | ✓     |
| Edit feed permissions     |        |             | ✓     |
| Rename and delete feed    |        |             | ✓     |

## Dashboards and charts

You can define and manage dashboards from the web portal, **Dashboard**. For an overview of dashboard and chart features, see [Dashboards](#). You set [dashboard permissions at the team level](#) from the team dashboard page.

Users granted Stakeholder access to private projects can't view or create query charts. Stakeholder access to public projects can view and create query charts.

| TASK                                                                      | STAKEHOLDERS | READERS | CONTRIBUTORS         | TEAM ADMINS | ORGANIZATION OWNER/PROJECT ADMINS |
|---------------------------------------------------------------------------|--------------|---------|----------------------|-------------|-----------------------------------|
| View work item query charts (from the Queries page)                       |              | ✓       | ✓                    | ✓           | ✓                                 |
| View dashboards (including work item query charts added to the dashboard) | ✓            | ✓       | ✓                    | ✓           | ✓                                 |
| Create work item query and test tracking charts <sup>1</sup>              |              |         | ✓                    | ✓           | ✓                                 |
| View the project page                                                     | ✓            | ✓       | ✓                    | ✓           | ✓                                 |
| Edit the project page <sup>1</sup>                                        |              |         |                      |             | ✓                                 |
| Navigate using the Project pages                                          | ✓            | ✓       | ✓                    | ✓           | ✓                                 |
| Add and configure dashboards <sup>1</sup>                                 |              |         | With permissions set | ✓           | ✓                                 |

### Notes:

1. Public project Stakeholders have full access to all features.

| TASK                                      | STAKEHOLDERS | READERS | CONTRIBUTORS | TEAM ADMINS | PROJECT ADMINS |
|-------------------------------------------|--------------|---------|--------------|-------------|----------------|
| View charts and dashboards                | ✓            | ✓       | ✓            | ✓           | ✓              |
| Create work item and test tracking charts |              |         | ✓            | ✓           | ✓              |
| View the project page                     | ✓            | ✓       | ✓            | ✓           | ✓              |
| Edit the project page                     |              |         |              |             | ✓              |

|                                  |   |   |                      |   |   |
|----------------------------------|---|---|----------------------|---|---|
| Navigate using the Project pages | ✓ | ✓ | ✓                    | ✓ | ✓ |
| Add and configure dashboards     |   |   | With permissions set | ✓ | ✓ |

## Analytics

From the web portal **Analytics views**, 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 Azure DevOps. 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. Users with **Stakeholder** access have no access to view or edit Analytics views.

| TASK                            | READERS | CONTRIBUTORS | PROJECT ADMINS |   |
|---------------------------------|---------|--------------|----------------|---|
| View a shared Analytics view    |         | ✓            | ✓              | ✓ |
| Edit and delete Analytics views |         |              | ✓              | ✓ |

## 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 | ORGANIZATION OWNER/PROJECT ADMINS |
|-----------------------------------------------|--------------|---------|--------------|-------------|-----------------------------------|
| Set personal notifications or alerts          | ✓            |         | ✓            | ✓           | ✓                                 |
| Set team notifications or alerts              |              |         |              | ✓           | ✓                                 |
| Set project-level notifications or alerts     |              |         |              |             | ✓                                 |
| Participate in Team (chat) rooms <sup>1</sup> |              |         | ✓            | ✓           | ✓                                 |
| READMEs                                       | See Note 2   | ✓       | ✓            | ✓           | ✓                                 |
| View Project Wikis                            | ✓            | ✓       | ✓            | ✓           | ✓                                 |
| View Code Wikis                               |              | ✓       | ✓            | ✓           | ✓                                 |
| Provision or create a Wiki                    |              |         |              |             | ✓                                 |
| Publish Code as Wiki                          |              |         | ✓            | See Note 3  | See Note 3                        |

|                                        |   |   |   |   |   |
|----------------------------------------|---|---|---|---|---|
| View the project page                  | ✓ | ✓ | ✓ | ✓ | ✓ |
| Edit the project page                  |   |   |   |   | ✓ |
| Navigate using the Project pages       | ✓ | ✓ | ✓ | ✓ | ✓ |
| Request feedback                       |   | ✓ | ✓ | ✓ | ✓ |
| Provide feedback                       | ✓ | ✓ | ✓ | ✓ | ✓ |
| Powerful semantic code search          | ✓ | ✓ | ✓ | ✓ | ✓ |
| Powerful semantic work tracking search | ✓ | ✓ | ✓ | ✓ | ✓ |

#### Notes

1. Team (chat) rooms have been deprecated for Azure DevOps Services and TFS 2018 and later versions.
2. Can view project READMEs, but not READMEs defined for a repository.
3. Project Admin or Team Admin with contribute permission can publish code as wiki. Project Admins have this permission by default.

## Related notes

- [Add users to a project or team](#)
- [Permissions and groups reference](#)
- [About access levels](#)
- [Web portal navigation](#)

# About access levels

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[Azure DevOps Services](#) | [Azure DevOps Server 2019](#) | [TFS 2018](#) | [TFS 2017](#) | [TFS 2015](#) | [TFS 2013](#)

Access levels grant or restrict access to select web portal features. This is in addition to permissions granted through security groups which provide or restrict specific tasks. Access levels enable administrators to provide their user base access to the features they need and only pay for those features.

## IMPORTANT

Make sure that you select the correct version of this article for Azure DevOps Services or Azure DevOps Server, renamed from Team Foundation Server (TFS). The version selector is located above the table of contents.

When you add a user or group to a team or project, they're automatically granted access to those features supported by the default access level and those supported by the security group to which they are added. Most users can access most features by being assigned to the **Basic** access level and **Contributors** security group. For a simplified overview of the permissions assigned to the most common groups—**Readers**, **Contributors**, and **Project Administrators**—as well as the **Stakeholder** access group, see [Permissions and access](#).

To add user accounts or groups to specific access levels, see [Manage users and access](#). Make sure to set each user's access level based on what you've purchased for that user.

To add user accounts or groups to specific access levels, see [Change access levels](#). Make sure to set each user's access level based on what you've purchased for that user.

## Supported access levels

You assign users or groups of users to one of the following access levels:

- **Stakeholders:** Provides partial access, can be assigned to unlimited users for free. Assign to users with no license or subscriptions who need access to a limited set of features.
- **Basic:** Provides access to most features. Assign to users with a TFS CAL, with a Visual Studio Professional subscription, and to users for whom you are paying for Azure Boards & Repos in an organization.
- **Visual Studio Subscription:** Provides access to premium features and all published DevOps extensions. Assign to users with a Visual Studio Enterprise subscription.
- **Stakeholders:** Provides partial access, can be assigned to unlimited users for free. Assign to users with no license or subscriptions who need access to a limited set of features.
- **Basic:** Provides access to most features. Assign to users with a TFS CAL, with a Visual Studio Professional subscription, and to users for whom you are paying for Azure Boards & Repos.
- **VS Enterprise:** Provides access to premium features. Assign to users with a subscription to Visual Studio Enterprise.
- **Advanced** (legacy access level, to be deprecated): Provides access to premium features. Only assign to users with a subscription to MSDN Platforms or Visual Studio Test Professional.
- **Stakeholders:** Provides partial access, can be assigned to unlimited users for free. Assign to users with no license or subscriptions who need access to a limited set of features.
- **Basic:** Provides access to most features. Assign to users with a TFS CAL or with a Visual Studio Professional

subscription.

- **VS Enterprise:** Provides access to premium features. Assign to users with a subscription to Visual Studio Enterprise.
- **Advanced** (legacy access level, to be deprecated): Provides access to premium features. Only assign to users with a subscription to MSDN Platforms or Visual Studio Test Professional.
- **Stakeholders:** Provides partial access, can be assigned to unlimited users for free. Assign to users with no license or subscriptions who need access to a limited set of features.
- **Basic:** Provides access to most features. Assign to users with a TFS CAL or with a Visual Studio subscription.
- **VS Enterprise (TFS 2017.1):** Provides access to premium features. Assign to users with a subscription to Visual Studio Enterprise.
- **Advanced (TFS 2017):** Provides access to premium features. Only assign to users with a subscription to MSDN Platforms or Visual Studio Test Professional.
- **Stakeholders:** Provides partial access, can be assigned to unlimited users for free. Assign to users with no license or subscriptions who need access to a limited set of features.
- **Basic:** Provides access to most features. Assign to users with a TFS CAL or with a Visual Studio subscription.
- **Advanced:** Provides access to premium features. Assign to users with a subscription to Visual Studio Enterprise, Visual Studio Test Professional or MSDN Platforms.

For details on benefits each subscription provides, see [Azure DevOps benefits for Visual Studio subscribers](#).

As the following images illustrate, **Basic** access includes all **Stakeholder** features and **Advanced** and **Visual Studio Enterprise** subscriber access levels include all **Basic** features. The red boxes show the features added with each access level.

- [Stakeholder](#)
- [Basic](#)
- [Visual Studio Subscription](#)
- [Advanced](#)
- [VS Enterprise](#)

| Name     | Stakeholder                                                                                                                                                                                                                                                                                                                 |
|----------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Features | <div style="border: 2px solid red; padding: 5px;"><p>View My Work Items<br/>Standard Features<br/>Agile boards<br/>Basic backlog and sprint planning tools<br/>Agile Portfolio Management<br/>View Releases and Manage Approvals<br/>Test summary access to stakeholder license users<br/>Administer organization</p></div> |

| Name     | Stakeholder                                                                                                                                                     |
|----------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Features | <div style="border: 2px solid red; padding: 5px;"><p>View My Work Items<br/>Standard Features<br/>Agile boards<br/>View Releases and Manage Approvals</p></div> |

## Stakeholder access

With Stakeholder access, users can create and modify work items, and can create and save queries. They have limited access to many of the Azure Boards features. They also can view and approve release pipelines and perform some administrative tasks.

With Stakeholder access, users can create and modify all work items, and can create and save queries. They have limited access to many of the Agile tool features. They also can view and approve releases.

## Public versus private feature access

**Stakeholder** access grants access to features differently depending on whether you're working from a private or a public project. To learn more about public projects, see [What is a public project?](#).

| Service, application, or setting     | Private project | Public project |
|--------------------------------------|-----------------|----------------|
| <b>Dashboards</b>                    | Partial access  | Full access    |
| <b>Wiki</b>                          | Partial access  | Full access    |
| <b>Boards (Work)</b>                 | Partial access  | Full access    |
| <b>Repos (Code)</b>                  | No access       | Full access    |
| <b>Pipelines (Build and Release)</b> | Full access     | Full access    |
| <b>Test Plans (Test)</b>             | No access       | No access      |
| <b>Notifications</b>                 | Full access     | Full access    |
| <b>Semantic search</b>               | Full access     | Full access    |
| <b>Project settings</b>              | Partial access  | Partial access |
| <b>Organization settings</b>         | Partial access  | Partial access |

## Stakeholder feature access

The following features are available to Stakeholders from the web portal for both public and private projects. For private projects, there are some limitations as noted. To get started as a Stakeholder, see [Get started as a Stakeholder](#).

| Feature               | Task                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | Private Project Limitations                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
|-----------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Boards/Work tracking: | <ul style="list-style-type: none"> <li>View My Work Items</li> <li>Agile boards</li> <li>Basic backlog and sprint planning tools</li> <li>Agile Portfolio Management</li> </ul><br><ul style="list-style-type: none"> <li>View, create, &amp; modify work items.</li> <li>View, add, &amp; modify items on backlogs.</li> <li>View sprint backlogs &amp; taskboards</li> <li>View the Kanban board.</li> <li>Add tasks to a checklist.</li> <li>View &amp; create managed queries</li> <li>Submit feedback responses</li> <li>Change work item type</li> </ul> <p>Private projects only:</p> <ul style="list-style-type: none"> <li>Move work item to another project</li> <li>Delete and restore work items</li> <li>Permanently delete work items</li> </ul> | <ul style="list-style-type: none"> <li>Can assign existing tags to work items, but can't add new tags.</li> <li>Can't change the backlog priority order (all items are added at the end of the backlog), and can't assign items to an iteration, use the mapping pane, or forecasting.</li> <li>Can't set or view team capacity for a sprint.</li> <li>Can't move cards on a board to update status, can't change the priority order, and can't set the values of fields shown on cards.</li> <li>Can't change priority order of tasks within a task checklist.</li> <li>Can save queries under My Queries but cannot save under Shared Queries.</li> </ul> |

|                                                                              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                                                                                                                                                                                                                                                                                                         |
|------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Standard Features: Organization, Charts, Dashboards, Wiki, and Notifications | <ul style="list-style-type: none"> <li>• <a href="#">Work across projects</a></li> <li>• <a href="#">View project welcome pages</a>.</li> <li>• <a href="#">View team dashboards</a></li> <li>• <a href="#">Manage personal notifications</a></li> <li>• <a href="#">View wiki pages</a>.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | <ul style="list-style-type: none"> <li>• Can't view query charts from the Queries page, however can view them when added to a team dashboard.</li> <li>• Can't view markdown README files defined for repositories.</li> <li>• Have read-only permissions to wiki pages. These permissions can't be changed.</li> </ul> |
| View Releases and Manage Approvals<br>Pipelines/Build & Release              | <ul style="list-style-type: none"> <li>• <a href="#">View releases</a></li> <li>• <a href="#">Approve releases</a></li> <li>• For public projects, Stakeholders have access to all <b>Pipeline (Build and Release)</b> features.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | <ul style="list-style-type: none"> <li>• When the <a href="#">Free access to Pipelines Preview</a> feature is enabled, Stakeholders gain access to all <b>Pipeline (Build and Release)</b> features.</li> </ul>                                                                                                         |
| Test summary access to stakeholder license users                             | <ul style="list-style-type: none"> <li>• <a href="#">Perform user acceptance testing</a></li> <li>• <a href="#">Request stakeholder feedback using the Test &amp; Feedback extension</a></li> <li>• <a href="#">Request feedback using the Microsoft Feedback client</a></li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                                                                                                                                                                                                                                                                                                         |
| Administer organization                                                      | <ul style="list-style-type: none"> <li>• <a href="#">Invite users and assign licenses</a>.</li> <li>• <a href="#">Create, delete, and edit child Area Paths</a></li> <li>• <a href="#">Create, delete, and edit child Iteration Paths</a></li> <li>• <a href="#">Administer process permissions</a></li> <li>• <a href="#">Create, delete, edit processes</a></li> <li>• <a href="#">Delete field from account</a></li> <li>• <a href="#">Bypass rules on work item updates</a></li> <li>• <a href="#">Suppress notifications for work item updates</a></li> </ul> <p>You can restrict access to one or more of the above features by changing the permissions granted to a user granted Stakeholder access. See <a href="#">Grant or restrict access to select features and functions</a>.</p> | <ul style="list-style-type: none"> <li>• Can add users and assign licenses when added to the <a href="#">Project Collection Administrators</a> group.</li> </ul>                                                                                                                                                        |

| FEATURE | TASK |
|---------|------|
|         |      |

|                                                                                                                                                                                                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Boards/Work tracking:<br><ul style="list-style-type: none"> <li>• View My Work Items</li> <li>• Agile boards</li> <li>• Basic backlog and sprint planning tools</li> <li>• Agile Portfolio Management</li> </ul> | <ul style="list-style-type: none"> <li>• <a href="#">View, create, &amp; modify work items</a><br/>Can assign existing tags to work items, but can't add new tags.</li> <li>• <a href="#">View, add, &amp; modify items on backlogs</a><br/>Can't change the backlog priority order (all items are added at the end of the backlog), and can't assign items to an iteration, use the mapping pane, or forecasting.</li> <li>• <a href="#">View &amp; modify items on sprint backlogs and taskboards</a><br/>Can't set or view team capacity.</li> <li>• <a href="#">View Kanban boards</a><br/>Can't move cards on the board to update status, can't change the priority order, and can't set the values of fields shown on cards.</li> <li>• <a href="#">Add tasks to Kanban board task checklists</a><br/>Can't change priority order of tasks.</li> <li>• <a href="#">View &amp; create managed queries</a><br/>Can save queries under My Queries but cannot save under Shared Queries.</li> <li>• <a href="#">Submit feedback responses</a></li> <li>• <a href="#">Change work item type</a></li> </ul> |
| Standard Features: Organization, Dashboards, Wiki, and Notifications                                                                                                                                             | <ul style="list-style-type: none"> <li>• <a href="#">Work across projects</a></li> <li>• <a href="#">View project welcome pages</a><br/>Can't view markdown README files defined for repositories.</li> <li>• <a href="#">View team dashboards</a></li> <li>• <a href="#">Manage personal notifications</a></li> <li>• <a href="#">View wiki pages</a><br/>Have read-only permissions to wiki pages. These permissions can't be changed.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| View Releases and Manage Approvals<br><br>Pipelines/Build & Release                                                                                                                                              | <ul style="list-style-type: none"> <li>• <a href="#">View releases</a></li> <li>• <a href="#">Approve releases</a></li> <li>• When the <b>Free access to Pipelines Preview</b> feature is enabled, Stakeholders gain access to all <b>Pipeline (Build and Release)</b> features.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| Test summary access to stakeholder license users                                                                                                                                                                 | <ul style="list-style-type: none"> <li>• <a href="#">Perform user acceptance testing</a></li> <li>• <a href="#">Request stakeholder feedback using the Test &amp; Feedback extension</a></li> <li>• <a href="#">Request feedback using the Microsoft Feedback client</a></li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| Administer organization                                                                                                                                                                                          | <ul style="list-style-type: none"> <li>• <a href="#">Add users to team projects</a><br/>Can add users and set access levels when added to the <b>Team Foundation Server Administrators</b> group.</li> <li>• <a href="#">Create, delete, and edit child Area Paths</a></li> <li>• <a href="#">Create, delete, and edit child Iteration Paths</a></li> <li>• <a href="#">Administer process permissions</a></li> <br/> <li>• <a href="#">Create, delete, edit processes</a></li> <li>• <a href="#">Delete field from account</a></li> <li>• <a href="#">Bypass rules on work item updates</a></li> <li>• <a href="#">Suppress notifications for work item updates</a></li> </ul> <p>You can restrict access to one or more of the above features by changing the permissions granted to Stakeholders. See <a href="#">Grant or restrict access to select features and functions</a>.</p>                                                                                                                                                                                                                     |

| FEATURE | TASK |
|---------|------|
|         |      |

|                                                                                                                                                                                                               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
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| <p>Work tracking:</p> <ul style="list-style-type: none"> <li>• View My Work Items</li> <li>• Agile boards</li> <li>• Basic backlog and sprint planning tools</li> <li>• Agile Portfolio Management</li> </ul> | <ul style="list-style-type: none"> <li>• <a href="#">View, create, and modify work items</a><br/>Can assign existing tags to work items, but can't add new tags.</li> <li>• <a href="#">View, add, and modify items on backlogs</a><br/>Can't change the backlog priority order (all items are added at the end of the backlog), and can't assign items to an iteration, use the mapping pane, or forecasting.</li> <li>• <a href="#">View, and modify items on sprint backlogs and taskboards</a><br/>Can't set or view team capacity.</li> <li>• <a href="#">View, and modify items (Kanban)</a><br/>Can't move cards on the board to update status, can't change the priority order, and can't set the values of fields shown on cards.</li> <li>• <a href="#">Add tasks to the checklist (Kanban)</a><br/>Can't change priority order of tasks.</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 and create managed queries</a><br/>Can save queries under My Queries but cannot save under Shared Queries.</li> <li>• <a href="#">Submit, view, and change feedback responses</a></li> </ul> |
| <p>Standard Features: Organization, Dashboards, Wiki, and Notifications</p>                                                                                                                                   | <ul style="list-style-type: none"> <li>• <a href="#">Work across projects</a></li> <li>• <a href="#">View project welcome pages</a><br/>Can't view markdown README files defined for repositories.</li> <li>• <a href="#">View team dashboards</a></li> <li>• <a href="#">Manage personal notifications</a></li> <li>• <a href="#">View wiki pages</a><br/>Have read-only permissions to wiki pages. These permissions can't be changed.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| <p>View Releases and Manage Approvals<br/>Pipelines/Build &amp; Release</p>                                                                                                                                   | <ul style="list-style-type: none"> <li>• <a href="#">View releases</a></li> <li>• <a href="#">Approve releases</a></li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |

| FEATURE                                                                                                                                                                                                       | TASK                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p>Work tracking:</p> <ul style="list-style-type: none"> <li>• View My Work Items</li> <li>• Agile boards</li> <li>• Basic backlog and sprint planning tools</li> <li>• Agile Portfolio Management</li> </ul> | <ul style="list-style-type: none"> <li>• <a href="#">View, create, and modify work items</a><br/>Can assign existing tags to work items, but can't add new tags.</li> <li>• <a href="#">View, add, and modify items on backlogs</a><br/>Can't change the backlog priority order (all items are added at the end of the backlog), and can't assign items to an iteration, use the mapping pane, or forecasting.</li> <li>• <a href="#">View, and modify items on sprint backlogs and taskboards</a><br/>Can't set or view team capacity.</li> <li>• <a href="#">View, and modify items (Kanban)</a><br/>Can't move cards on the board to update status, can't change the priority order, and can't set the values of fields shown on cards.</li> <li>• <a href="#">Add tasks to the checklist (Kanban)</a><br/>Can't change priority order of tasks. (Requires TFS 2015 or later version)</li> <li>• <a href="#">View the cumulative flow diagram</a></li> <li>• <a href="#">View and create managed queries</a><br/>Can save queries under My Queries but cannot save under Shared Queries.</li> <li>• <a href="#">Submit, view, and change feedback responses</a></li> </ul> |
| <p>Standard Features: Dashboards and Notifications</p>                                                                                                                                                        | <ul style="list-style-type: none"> <li>• <a href="#">View project welcome pages</a><br/>Can't view markdown README files defined for repositories.</li> <li>• <a href="#">View team dashboards (TFS 2015) or team home page (TFS 2013)</a></li> <li>• <a href="#">Set personal alerts for changes to work items</a></li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |

## Features not available to users with Stakeholder access

If a Stakeholder needs access to one or more of the following features—which support the daily work of product owners, team leads, developers, testers, and project administrators—you need to grant them **Basic** access.

### For Private projects:

- Change the priority of an item within a backlog
- Delete work items or move work items to another project
- Create shared queries, view charts, and modify the home page
- View Delivery Plans (a Marketplace extension)
- Access the full set of features under **Pipelines (Build and Release)**, **Repos (Code)** or **Test Plans (Test)**.

### For Public projects:

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

#### NOTE

Stakeholders that choose a feature that's not available to them receive an error message indicating that they don't have permissions to complete the task.

## Basic access, Azure Boards and Azure Repos

In addition to the features listed for **Stakeholder** access, the following features are available to users with **Basic** access. Basic access allows users to access features provided in the **Repos**, **Pipelines**, and **Test Plans** hubs in addition to **Dashboards** and **Boards**.

| FEATURE                     | SUPPORTED TASKS                                                                    |
|-----------------------------|------------------------------------------------------------------------------------|
| Request and Manage Feedback | <ul style="list-style-type: none"><li>• <a href="#">Request feedback</a></li></ul> |

|                                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
|------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Chart Viewing and Chart Authoring              | <ul style="list-style-type: none"> <li><a href="#">Create status and trend query-based charts</a></li> <li><a href="#">Add charts to dashboards</a></li> </ul>                                                                                                                                                                                                                                                                                                                                                                                       |
| Code                                           | <ul style="list-style-type: none"> <li><a href="#">Full access to all features to manage code using Git repositories</a></li> <li><a href="#">Full access to all features to manage code using Team Foundation Version Control (TFVC)</a></li> </ul>                                                                                                                                                                                                                                                                                                 |
| Build                                          | <ul style="list-style-type: none"> <li><a href="#">Full access to to all features to manage continuous integration and continuous delivery of software</a></li> </ul>                                                                                                                                                                                                                                                                                                                                                                                |
| Administer account                             | <ul style="list-style-type: none"> <li><a href="#">Full access to manage settings</a></li> </ul> <p>To modify a setting, you must be a member of the corresponding security group or role: team administrator, Project Administrator, or Project Collection Administrator. Otherwise, you have read-only access to settings.</p>                                                                                                                                                                                                                     |
| Advanced home page                             | <ul style="list-style-type: none"> <li><a href="#">Access to projects, work items, and pull requests defined across projects you work in</a></li> </ul> <p>Advanced home page allows you to configure and view the Project summary page in addition to team dashboards.</p>                                                                                                                                                                                                                                                                          |
| Advanced backlog and sprint planning tools     | <ul style="list-style-type: none"> <li><a href="#">View, add, and modify items on backlogs</a></li> </ul> <p>Full access to all backlog tools. Can change the backlog priority order, assign items to an iteration using drag-and-drop, use the mapping pane to parent or reparent items, and use the forecasting tool.</p> <ul style="list-style-type: none"> <li><a href="#">View, and modify items on sprint backlogs and taskboards</a></li> </ul> <p>Full access to all sprint planning tools. Can view and set team capacity for a sprint.</p> |
| Web-based Test Execution                       | <ul style="list-style-type: none"> <li><a href="#">Run manual tests</a></li> <li><a href="#">Run automated tests from test plans</a></li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                      |
| Author Release Pipelines and Manage Releases   | <ul style="list-style-type: none"> <li><a href="#">Author release pipelines</a></li> <li><a href="#">Define your multi-stage continuous deployment (CD) pipeline</a></li> <li><a href="#">Use approvals and gates to control your deployment</a></li> </ul>                                                                                                                                                                                                                                                                                          |
| Advanced portfolio management                  | <ul style="list-style-type: none"> <li><a href="#">Define features and epics</a></li> </ul> <p>Full access to all portfolio backlog and board tools. Can add features and epics from the Kanban board. Can change the backlog priority order or portfolio items, and use the mapping pane to parent or reparent items.</p>                                                                                                                                                                                                                           |
| Analyze test results and manage machine groups | <ul style="list-style-type: none"> <li><a href="#">Track test status</a></li> <li><a href="#">Test different configurations</a></li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                           |
| Delivery Plans                                 | <ul style="list-style-type: none"> <li><a href="#">View and configure team delivery plans</a></li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| Test services in build and release             | <ul style="list-style-type: none"> <li><a href="#">Run unit tests with your builds</a></li> <li><a href="#">Review test results</a></li> <li><a href="#">Analyze test results</a></li> </ul>                                                                                                                                                                                                                                                                                                                                                         |

## Basic access

In addition to the features listed for **Stakeholder** access, the following features are available to users with **Basic** access. Basic access allows users to access features provided in the **Code, Build and Release**, and **Test** hubs in addition to **Dashboards/Home** and **Work**.

| FEATURE                                      | SUPPORTED TASKS                                                                                                                                                                                                                                                                                                                                                                                                       |
|----------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Basic backlog and sprint planning tools      | <ul style="list-style-type: none"><li>• <a href="#">View, add, &amp; modify items on backlogs</a><br/>Can change the backlog priority order, assign items to an iteration using drag-and-drop, use the mapping pane to parent or reparent items, and forecasting tool.</li><li>• <a href="#">View &amp; modify items on sprint backlogs and taskboards</a><br/>Can view and set team capacity for a sprint.</li></ul> |
| Request and Manage Feedback                  | <ul style="list-style-type: none"><li>• <a href="#">Request feedback</a></li></ul>                                                                                                                                                                                                                                                                                                                                    |
| Chart Viewing and Chart Authoring            | <ul style="list-style-type: none"><li>• <a href="#">Create status and trend query-based charts</a></li><li>• <a href="#">Add charts to dashboards</a></li></ul>                                                                                                                                                                                                                                                       |
| Code                                         | <ul style="list-style-type: none"><li>• <a href="#">Full access to all features to manage code using Git repositories</a></li><li>• <a href="#">Full access to all features to manage code using Team Foundation Version Control (TFVC)</a></li></ul>                                                                                                                                                                 |
| Build                                        | <ul style="list-style-type: none"><li>• <a href="#">Full access to to all features to manage continuous integration and continuous delivery of software</a></li></ul>                                                                                                                                                                                                                                                 |
| Administer account                           | <ul style="list-style-type: none"><li>• <a href="#">Full access to manage settings</a><br/>To modify a setting, you must be a member of the corresponding security group or role: team administrator, Project Administrator, or Project Collection Administrator. Otherwise, you have read-only access to settings.</li></ul>                                                                                         |
| Advanced home page                           | <ul style="list-style-type: none"><li>• <a href="#">Access to projects, work items, and pull requests defined across projects you work in</a><br/>Advanced home page allows you to configure and view the Project summary page in addition to team dashboards.</li></ul>                                                                                                                                              |
| Advanced backlog and sprint planning tools   | <ul style="list-style-type: none"><li>• <a href="#">View, add, and modify items on backlogs</a><br/>Can change the backlog priority order, assign items to an iteration using drag-and-drop, use the mapping pane to parent or reparent items, and forecasting tool.</li><li>• <a href="#">View, and modify items on sprint backlogs and taskboards</a><br/>Can view and set team capacity for a sprint.</li></ul>    |
| Web-based Test Execution                     | <ul style="list-style-type: none"><li>• <a href="#">Run manual tests</a></li><li>• <a href="#">Run automated tests from test plans</a></li></ul>                                                                                                                                                                                                                                                                      |
| Author Release Pipelines and Manage Releases | <ul style="list-style-type: none"><li>• <a href="#">Author release pipelines</a></li><li>• <a href="#">Define your multi-stage continuous deployment (CD) pipeline</a></li><li>• <a href="#">Use approvals and gates to control your deployment</a></li></ul>                                                                                                                                                         |

|                                                |                                                                                                                                                                                                                                                                   |
|------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Advanced portfolio management                  | <ul style="list-style-type: none"> <li><a href="#">Define features and epics</a><br/>Can add features and epics from the Kanban board. Can change the backlog priority order or portfolio items, and use the mapping pane to parent or reparent items.</li> </ul> |
| Team rooms                                     | <ul style="list-style-type: none"> <li><a href="#">Collaborate within a team room</a><br/>Requires TFS 2017 or earlier versions. Deprecated for TFS 2018 and later versions.</li> </ul>                                                                           |
| Analyze test results and manage machine groups | <ul style="list-style-type: none"> <li><a href="#">Track test status</a></li> <li><a href="#">Test different configurations</a></li> </ul>                                                                                                                        |
| Delivery Plans                                 | <ul style="list-style-type: none"> <li><a href="#">View and configure team delivery plans</a><br/>Requires 2017.2 or later version</li> </ul>                                                                                                                     |

## Basic access

In addition to the features listed for **Stakeholder** access, the following features are available to users with **Basic** access. Basic access allows users to access features provided in the **Code, Build and Release**, and **Test** hubs in addition to **Dashboards/Home** and **Work**.

| FEATURE                                 | SUPPORTED TASKS                                                                                                                                                                                                                                                                                                                                                                                                    |
|-----------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Basic backlog and sprint planning tools | <ul style="list-style-type: none"> <li><a href="#">View, add, and modify items on backlogs.</a><br/>Can change the backlog priority order, assign items to an iteration using drag-and-drop, use the mapping pane to parent or reparent items, and forecasting tool.</li> <li><a href="#">View, and modify items on sprint backlogs and taskboards</a><br/>Can view and set team capacity for a sprint.</li> </ul> |
| Request and Manage Feedback             | <ul style="list-style-type: none"> <li><a href="#">Request feedback</a><br/>Requires 2015.1 or later version.</li> </ul>                                                                                                                                                                                                                                                                                           |
| Chart Viewing and Chart Authoring       | <ul style="list-style-type: none"> <li><a href="#">Create status and trend query-based charts</a></li> <li><a href="#">Add charts to dashboards</a></li> </ul>                                                                                                                                                                                                                                                     |
| Code                                    | <ul style="list-style-type: none"> <li><a href="#">Full access to all features to manage code using Git repositories</a></li> <li><a href="#">Full access to all features to manage code using Team Foundation Version Control (TFVC)</a></li> </ul>                                                                                                                                                               |
| Build                                   | <ul style="list-style-type: none"> <li><a href="#">Full access to to all features to manage continuous integration and continuous delivery of software</a></li> </ul>                                                                                                                                                                                                                                              |
| Administer account                      | <ul style="list-style-type: none"> <li><a href="#">Full access to manage settings</a><br/>To modify a setting, you must be a member of the corresponding security group or role: team administrator, Project Administrator, or Project Collection Administrator. Otherwise, you have read-only access to settings.</li> </ul>                                                                                      |

|                                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
|------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Advanced home page                             | <ul style="list-style-type: none"> <li><a href="#">Access to projects, work items, and pull requests defined across projects you work in</a></li> </ul> <p>Advanced home page allows you to configure and view the Project summary page in addition to team dashboards.</p>                                                                                                                                                                                                                           |
| Advanced backlog and sprint planning tools     | <ul style="list-style-type: none"> <li><a href="#">View, add, and modify items on backlogs</a><br/>Full access to all backlog tools. Can change the backlog priority order, assign items to an iteration using drag-and-drop, use the mapping pane to parent or reparent items, and use the forecasting tool.</li> <li><a href="#">View, and modify items on sprint backlogs and taskboards</a><br/>Full access to all sprint planning tools. Can view and set team capacity for a sprint.</li> </ul> |
| Advanced portfolio management                  | <ul style="list-style-type: none"> <li><a href="#">Define features and epics</a><br/>Can add features and epics from the Kanban board. Can change the backlog priority order or portfolio items, and use the mapping pane to parent or reparent items.</li> </ul>                                                                                                                                                                                                                                     |
| Team rooms                                     | <ul style="list-style-type: none"> <li><a href="#">Collaborate within a team room</a></li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                      |
| Analyze test results and manage machine groups | <ul style="list-style-type: none"> <li><a href="#">Track test status</a></li> <li><a href="#">Test different configurations</a></li> </ul>                                                                                                                                                                                                                                                                                                                                                            |

## Visual Studio Subscription access

Visual Studio subscribers are entitled to **Visual Studio Subscription** features as a subscriber benefit. When you add those users be sure to assign them **Visual Studio Subscription** access level and the system will automatically recognize their subscription and enable any other features that are included based on their subscription level.

## VS Enterprise access

In addition to the features listed for **Basic** access, the following features are available to users with **VS Enterprise** access from the web portal.

| FEATURE                               | SUPPORTED TASKS                                                                                                                                                                                                                     |
|---------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Web-based Test Case Management        | <ul style="list-style-type: none"> <li><a href="#">Create a test plan and test suite</a></li> <li><a href="#">Create manual test cases</a></li> <li><a href="#">Delete test artifacts</a></li> </ul>                                |
| Package Management                    | <ul style="list-style-type: none"> <li><a href="#">Azure Artifacts</a></li> </ul>                                                                                                                                                   |
| Microsoft published DevOps Extensions | <ul style="list-style-type: none"> <li>All Microsoft published DevOps <a href="#">Marketplace extensions</a> are included for Visual Studio Enterprise, MSDN Platforms, and Visual Studio Test Professional subscribers.</li> </ul> |
| FEATURE                               | SUPPORTED TASKS                                                                                                                                                                                                                     |

|                                    |                                                                                                                                                                                                                                    |
|------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Web-based Test Case Management     | <ul style="list-style-type: none"> <li>• <a href="#">Create a test plan and test suite</a></li> <li>• <a href="#">Create manual test cases</a></li> <li>• <a href="#">Delete test artifacts</a></li> </ul>                         |
| Microsoft published TFS Extensions | <ul style="list-style-type: none"> <li>• All Microsoft published TFS <a href="#">Marketplace extensions</a> are included for Visual Studio Enterprise, MSDN Platforms, and Visual Studio Test Professional subscribers.</li> </ul> |

With VS Enterprise access, users have access to any fee-based, Marketplace extension published by Microsoft Marketplace extension published by Microsoft that is included for active Visual Studio Enterprise subscribers. Examples include [Azure Artifacts](#) (which is also free for 5 users who are not Visual Studio Enterprise subscribers) and [Test Manager](#).

For TFS 2017.2 and later versions, assign **VS Enterprise** to those users for whom you've purchased Visual Studio Enterprise. These include a TFS CAL plus the rights to access VS Enterprise features. (For users with MSDN Platforms subscriptions or Test Professional, assign the Basic access level and the Test Manager extension for Azure Test Plans.) To learn more, see [Assign paid extension access to users](#). For example, for users with Visual Studio Test Professional or Visual Studio Enterprise, assign them [access to the Test Manager extension for Azure Test Plans](#).

## Advanced access

Users assigned Advanced access can manage test cases when you have [purchased Test Manager extension for Azure Test Plans and assigned to the user accounts](#) to gain full access to [Web-based test case management tools](#).

### NOTE

The **Advanced** access level is deprecated for TFS 2017 and later versions of TFS. Use the **VS Enterprise** access level only for active Visual Studio Enterprise subscribers. For MSDN Platforms and Visual Studio Test Professional with MSDN subscribers needing access to **Test**, assign them to the **Advanced** access level and the Test Manager extension for Azure Test Plans.

In addition to the features listed for **Basic** access, the following features are available to users with **Advanced** access from the web portal.

| FEATURE                        | SUPPORTED TASKS                                                                                                                                           |
|--------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------|
| Web-based Test Case Management | <ul style="list-style-type: none"> <li>• <a href="#">Create a test plan and test suite</a></li> <li>• <a href="#">Create manual test cases</a></li> </ul> |

For TFS 2017 and earlier versions, you should assign the **Advanced** level to those users for whom you've purchased the full Test feature set. Here are the purchasing options:

- Higher-level Visual Studio subscriptions: Visual Studio Test Professional, Visual Studio Enterprise, or MSDN Platforms subscriptions. These include a TFS CAL plus the rights to access the full set of Test features.
- A paid Azure DevOps user (which includes a TFS CAL) plus the [Test Manager extension for Azure Test Plans](#).

For TFS 2017.2, Assign **Advanced** access to those users for whom you've purchased MSDN Platforms or Visual Studio Test Professional subscriptions. These include a TFS CAL plus the rights to access Test Manager. To learn more, see [Get extensions for TFS, Assign paid extension access to users](#).

#### **NOTE**

With TFS 2017.1, the Advanced access level was temporarily disabled. Updating to TFS 2017.2 will re-enable it. If you are on TFS 2017.1 and have users with Visual Studio Test Professional or MSDN Platforms subscriptions, you should assign them Basic access level. In addition, you need to open **Users** for the project collections in which they are a member and [assign them the Test Manager extension for Azure Test Plans](#). To learn more, see [Buy access to TFS or TFS Test](#).

## Test Plans, load testing, and Marketplace extensions

Full access to **Test Plans** and load testing features requires **VS Enterprise** access. Visual Studio Test Professional plus the test features in the web portal are managed through Azure DevOps, Azure billing services, and purchase of Test Manager extension for Azure Test Plans from the Marketplace.

To learn more, see [Start free trials for paid Azure DevOps Services features and extensions](#).

## Test features and Marketplace extensions

Full access to **Test** features requires **Advanced** (TFS 2017 or earlier versions) or **VS Enterprise** (TFS 2017.1 or later version) access. Visual Studio Test Professional plus the test features in the web portal are managed through Azure DevOps, Azure billing services, and purchase of Test Manager extension for Azure Test Plans from the Marketplace.

To learn how to grant access to an extension, see [Get extensions for TFS](#).

## What features can users access who are added to two different groups?

If a user belongs to a group that has **Basic** access and another group that has **VS Enterprise** access, the user has access to all features available through **VS Enterprise**, which is a superset of **Basic**.

## Service account access

Azure DevOps Server and TFS [service accounts](#) are added to the default access level. If you make Stakeholder the default access level, you must add the service accounts to Basic or Advanced/VS Enterprise access.

Service accounts don't require a TFS CAL or other purchase.

## Related articles

- [Manage users and access](#)
- [Export a list of users and their access levels](#)
- [Default permissions and access](#)
- [Change access levels](#)
- [Export a list of users and their access levels](#)
- [Default permissions and access](#)

# Keyboard shortcuts for Azure DevOps Services, TFS, and Team Explorer

1/31/2019 • 11 minutes to read • [Edit Online](#)

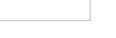
[Azure DevOps Services](#) | [Azure DevOps Server 2019](#) | [TFS 2018](#) | [TFS 2017](#) | [TFS 2015](#) | [TFS 2013](#)

You can use the keyboard shortcuts listed in this topic when you work within Azure DevOps Services, 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.

For specific guidance on navigating within the web portal, see [Web portal navigation](#).

## Web portal

You can use these keyboard shortcuts when working in the web portal for Azure DevOps or TFS.

| Navigate                                                                                             | Navigate within lists                                                                                      |
|------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------|
| <b>Ctrl+Alt,a</b>                                                                                    | Move focus to  admin link |
| <b>Ctrl+Alt,h</b>                                                                                    | Move focus to  help link  |
| <b>Ctrl+Alt,s</b>                                                                                    | Move focus to search box                                                                                   |
| <b>Ctrl+Alt,</b>  | Move focus to next section                                                                                 |
| <b>Ctrl+Alt,</b>  | Move focus to previous section                                                                             |
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?

- ? Show shortcuts
- p Projects and teams

g,h Go to [Projects home](#)

g,w Go to [Boards or Work](#)

g,c Go to [Repos or Code](#)

g,b Go to [Pipelines or Build and release](#)

g,t Go to [Test Plans or Test](#)

g,s Go to [\[Project Settings\]](#)  
(/azure/devops/organizations/settings/about settings)

f,n Focus next section

f,p Focus previous section

/ Move focus to search

Page-specific shortcuts only work when in a specific page. For example, type **g c** to open the **Code** page, 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

You can use the following keyboard shortcuts when working from a page under **Repos** or **Code**. To view the valid shortcuts, enter **Shift+?** to access Global and service-specific shortcuts..

### NOTE

The following shortcuts are available from the web portal for Azure DevOps Services 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 Items

You can use the following keyboard shortcuts when working from the **Repos>Work Items** or **Work>Work Items** page.

#### NOTE

The following shortcuts are available from the web portal for Azure DevOps Services.

#### Work

- l** Open [backlog](#)
- b** Open [board](#)
- i** Open [current iteration](#)
- t** Open [task board](#)
- q** Open [queries](#)
- z** Toggle full screen

#### Work items

- |                     |                   |
|---------------------|-------------------|
| <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.

#### NOTE

**Feature availability:** The following shortcuts are available from Azure DevOps Services.

#### Work Item Form

- |                     |                          |
|---------------------|--------------------------|
| <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) |

## Rich text field shortcuts

:: moniker range="azure-devops"◆◆

The rich text editor tool bar displays below the text entry area when you click your cursor within the each text box that can be formatted.

You can use the following keyboard shortcuts when working in a web browser on one of the following operating systems. (**Command=⌘**)

| WINDOWS OS SHORTCUTS               | MAC OS SHORTCUTS                      |
|------------------------------------|---------------------------------------|
| <b>Ctrl + b</b> = Bold             | <b>Command + b</b> = Bold             |
| <b>Ctrl + c</b> = Copy text        | <b>Command + c</b> = Copy text        |
| <b>Ctrl + i</b> = Italics          | <b>Command + i</b> = Italics          |
| <b>Ctrl + k</b> = Insert hyperlink | <b>Command + k</b> = Insert hyperlink |
| <b>Ctrl + s</b> = Save             | <b>Command + s</b> = Save             |
| <b>Ctrl + u</b> = Underline        | <b>Command + u</b> = Underline        |
| <b>Ctrl + v</b> = Paste text       | <b>Command + v</b> = Paste text       |
| <b>Ctrl + y</b> = Redo             | <b>Command + Z</b> = Redo             |
| <b>Ctrl + z</b> = Undo             | <b>Command + z</b> = Undo             |
| <b>Ctrl + .</b> = Bullet list      | <b>Command + .</b> = Bullet list      |
| <b>Ctrl + /</b> = Numbered list    | <b>Command + /</b> = Numbered list    |
| <b>Shift + :</b> = Emoji library   | <b>Shift + :</b> = Emoji library      |

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:: moniker range=">= tfs-2017 <= azure-devops-2019"

The rich text formatting toolbar appears above each text box that can be formatted. It only becomes active when you click within the text box.



You can use the following keyboard shortcuts when working in the editor from a web browser running on a Windows operating system.

**Ctrl + b** = Bold  
**Ctrl + c** = Copy text  
**Ctrl + i** = Italics  
**Ctrl + k** = Insert hyperlink  
**Ctrl + s** = Save  
**Ctrl + u** = Underline  
**Ctrl + v** = Paste text  
**Ctrl + y** = Redo  
**Ctrl + z** = Undo  
**Ctrl + .** = Bullet list  
**Ctrl + /** = Numbered list  
**CTRL+Spacebar** = Remove formatting

:: moniker-end◆◆

## Backlogs

You can use the following keyboard shortcuts when working from a **Boards>Backlogs** page. 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>Ins</b> Add child                      |
|  | <b>Ctrl+Shift+f</b> Filter results        |

You can use the following keyboard shortcuts when working from a **Work>Backlogs** page. 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                |

## Boards

You can use the following keyboard shortcuts from any Kanban board, that is, when working from **Repos>Boards** or **Work>Board** page.

### NOTE

The following shortcuts are available from the web portal for Azure DevOps Services and TFS 2015.2 and later versions.

|  |                                                                                                                                                                                                                       |
|--|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|  | <b>Kanban Board</b>                                                                                                                                                                                                   |
|  | <p><b>n</b> Add new item<br/> <b>c</b> Add new child item</p>                                                                                                                                                         |
|  | <p><b>Home</b> Select first item<br/> <b>Enter</b> Open item</p>                                                                                                                                                      |
|  | <b>Ctrl+Shift+f</b> Filter results                                                                                                                                                                                    |
|  | <p><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</p>                                                                  |
|  | <p><b>Ctrl+Home</b> Move item to top of column<br/> <b>Ctrl+End</b> Move item to bottom of column<br/> <b>Ctrl+Shift+ [ ]</b> Move item to swimlane above<br/> <b>Ctrl+Shift+ [ ]</b> Move item to swimlane below</p> |
|  | <p><b>F2</b> Rename item<br/> <b>e</b> Show/hide empty fields<br/> <b>o</b> Expand all swimlanes<br/> <b>u</b> Collapse all swimlanes</p>                                                                             |
|  | <p><b>Shift+Pageup</b> Select first/next swimlane above<br/> <b>Shift+Pagedown</b> Select last/next swimlane below</p>                                                                                                |

## Queries

You can use the following keyboard shortcuts when [working with queries](#) in the web portal. To view the valid shortcuts, enter **Shift+?** from **Boards>Queries** or **Work>Queries**.

|                                                                                                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                       |  |                |  |                                 |  |                                               |  |                                                                                                                                       |  |                                    |
|---------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|----------------|--|---------------------------------|--|-----------------------------------------------|--|---------------------------------------------------------------------------------------------------------------------------------------|--|------------------------------------|
|                                                                                                   | <b>NOTE</b>                                                                                                                                                                                                                                                                                                                                                                                                                                           |  |                |  |                                 |  |                                               |  |                                                                                                                                       |  |                                    |
| The following shortcuts are available from Azure DevOps Services or TFS 2015.2 or later versions. |                                                                                                                                                                                                                                                                                                                                                                                                                                                       |  |                |  |                                 |  |                                               |  |                                                                                                                                       |  |                                    |
|                                                                                                   | <table border="1"> <tr> <td></td> <td><b>Queries</b></td> </tr> <tr> <td></td><td> <p><b>c q</b> Add new query</p> </td></tr> <tr> <td></td><td> <p><b>r</b> or <b>Alt+r</b> Refresh query</p> </td></tr> <tr> <td></td><td> <p><b>Alt+q</b> Return to query<br/> <b>j</b> or <b>Alt+n</b> Select next item<br/> <b>k</b> or <b>Alt+p</b> Select previous item</p> </td></tr> <tr> <td></td><td><b>Ctrl+Shift+f</b> Filter results</td></tr> </table> |  | <b>Queries</b> |  | <p><b>c q</b> Add new query</p> |  | <p><b>r</b> or <b>Alt+r</b> Refresh query</p> |  | <p><b>Alt+q</b> Return to query<br/> <b>j</b> or <b>Alt+n</b> Select next item<br/> <b>k</b> or <b>Alt+p</b> Select previous item</p> |  | <b>Ctrl+Shift+f</b> Filter results |
|                                                                                                   | <b>Queries</b>                                                                                                                                                                                                                                                                                                                                                                                                                                        |  |                |  |                                 |  |                                               |  |                                                                                                                                       |  |                                    |
|                                                                                                   | <p><b>c q</b> Add new query</p>                                                                                                                                                                                                                                                                                                                                                                                                                       |  |                |  |                                 |  |                                               |  |                                                                                                                                       |  |                                    |
|                                                                                                   | <p><b>r</b> or <b>Alt+r</b> Refresh query</p>                                                                                                                                                                                                                                                                                                                                                                                                         |  |                |  |                                 |  |                                               |  |                                                                                                                                       |  |                                    |
|                                                                                                   | <p><b>Alt+q</b> Return to query<br/> <b>j</b> or <b>Alt+n</b> Select next item<br/> <b>k</b> or <b>Alt+p</b> Select previous item</p>                                                                                                                                                                                                                                                                                                                 |  |                |  |                                 |  |                                               |  |                                                                                                                                       |  |                                    |
|                                                                                                   | <b>Ctrl+Shift+f</b> Filter results                                                                                                                                                                                                                                                                                                                                                                                                                    |  |                |  |                                 |  |                                               |  |                                                                                                                                       |  |                                    |

## Plans

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 **Boards>Plans** or **Work>Plans** page.

## NOTE

The following shortcuts are available from the web portal for TFS 2017.2 and later versions. Type **?** to access Global and service-specific shortcuts.



| Work                                                                                                                                                                     | Delivery plan                                                                                                                                                                                                           |                                                                                                                                                                                                                                                                                       |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>a</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 Plans, Parameters, and Runs

You can use the following keyboard shortcuts when working in **Test Plans** or **Test**.

## NOTE

The following shortcuts are available from the web portal for Azure DevOps Services and TFS 2015.2 or later versions.

|  |                                                                                                                                                                                                                                                                                                                                                                      |
|--|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|  | <b>Test</b><br><br><b>n</b> Open test plans<br><b>m</b> Open shared parameters<br><b>r</b> Open runs<br><br><b>h</b> Open machines                                                                                                                                                                                                                                   |
|  | <b>Test plan</b><br><br><b>1</b> Open tests<br><b>2</b> Open charts<br><br><b>e</b> Execute tests<br><br><b>t,b</b> Mark selected tests as blocked<br><b>t,f</b> Fail selected tests<br><b>t,n</b> Mark selected tests as NA<br><b>t,p</b> Pass selected tests<br><b>t,r</b> Reset tests to active<br><br><b>Ctrl+Shift+f</b> Filter results<br><b>v,g</b> View grid |

|  |                                                                                                                                                                                                         |
|--|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|  | <p><b>Parameters</b></p> <p><b>1</b> View parameter set grid<br/> <b>2</b> Open properties</p> <p><b>c,s</b> Add parameter set<br/> <b>c,t</b> Add test case<br/> <b>v,t</b> Toggle test cases pane</p> |
|  | <p><b>Test runs</b></p> <p><b>1</b> Test runs<br/> <b>2</b> Filter</p>                                                                                                                                  |

## Wiki

### 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 a **Wiki** page.

### NOTE

The following shortcuts are available from the web portal for Azure DevOps Services and TFS 2018.2 and later versions.

|  |                                                                                                                                                                                                                                                                                              |
|--|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|  | <p><b>Wiki (manage)</b></p> <p><b>n</b> Add new page<br/> <b>e</b> Edit page<br/> <b>c</b> Add new sub-page</p> <p><b>Ctrl+ [ ]</b> Move page up the order<br/> <b>Ctrl+ [ ]</b> Move page down the order</p> <p><b>Ctrl+P</b> Print page<br/> <b>Ctrl+Shift+f</b> Filter page</p>           |
|  | <p><b>Wiki edit</b></p> <p><b>Ctrl+b</b> Bold text<br/> <b>Ctrl+i</b> Italicize text<br/> <b>Ctrl+k</b> Insert hyperlink<br/> <b>Ctrl+c</b> Copy text<br/> <b>Ctrl+v</b> Paste copied text</p> <p><b>Ctrl+s</b> Save changes<br/> <b>Ctrl+Enter</b> Save and Close<br/> <b>Esc</b> Close</p> |

## 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 <a href="#">Build</a>                  | <b>Esc</b> Dismiss a context menu                                                                                                                                                         |
| <b>Ctrl+0,c</b> Open <a href="#">Connect</a>                |   Move focus left/right |
| <b>Ctrl+0,d</b> Open <a href="#">Documents</a>              |   Move focus up/down    |
| <b>Ctrl+0,e</b> Open <a href="#">Branches (Git)</a>         | <b>Enter</b> Choose Context menu                                                                                                                                                          |
| <b>Ctrl+0,g</b> Open <a href="#">Changes (Git)</a>          |                                                                                                                                                                                           |
| <b>Ctrl+0,h</b> Open Home                                   |                                                                                                                                                                                           |
| <b>Ctrl+0,m</b> Open <a href="#">My Work (TFVC)</a>         |                                                                                                                                                                                           |
| <b>Ctrl+0,p</b> Open <a href="#">Pending changes (TFVC)</a> |                                                                                                                                                                                           |
| <b>Ctrl+0,r</b> Open <a href="#">Reports</a>                |                                                                                                                                                                                           |
| <b>Ctrl+0,s</b> Open <a href="#">Settings</a>               |                                                                                                                                                                                           |
| <b>Ctrl+0,w</b> Open <a href="#">Work items</a>             |                                                                                                                                                                                           |
| <b>Ctrl+0,y</b> Open <a href="#">Synchronization (Git)</a>  |                                                                                                                                                                                           |
| <br>                                                        |                                                                                                                                                                                           |
| <b>Ctrl+`</b> Move focus to search box                      |                                                                                                                                                                                           |
| <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           |                                                                                                                                                                                           |
|                                                             |                                                                                                                                                                                           |
|                                                             | <b>Work item commands</b>                                                                                                                                                                 |
|                                                             | <b>Alt+m,g</b> Open work item                                                                                                                                                             |
|                                                             | <b>Alt+m,i</b> <a href="#">Add a work item</a>                                                                                                                                            |
|                                                             | <b>Alt+m,q</b> <a href="#">Add a query</a>                                                                                                                                                |
|                                                             | <b>Shift+Alt,c</b> Copy selected work item                                                                                                                                                |
|                                                             | <b>Shift+Alt,l</b> Link to new work item                                                                                                                                                  |
|                                                             | <b>Enter</b> Open selected work item                                                                                                                                                      |

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   |
| <b>Shift+</b>  | Move focus left one field at a time        | <b>Shift+Alt,n</b>                                                                                 | Move focus to next item      |
| <b>Shift+</b>  | 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                       | +/-                                                                                                | 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](#)
- [Web portal navigation](#)

## 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](#).

# Navigate in Visual Studio Team Explorer

2/6/2019 • 7 minutes to read • [Edit Online](#)

**Visual Studio 2019 | Visual Studio 2017 | Visual Studio 2015**

You use Team Explorer to coordinate your code efforts with other team members to develop a software project. In addition, you can manage work and that is assigned to you, your team, or your projects. Team Explorer is a plug-in that installs with Visual Studio and Team Explorer Everywhere is a plug-in that installs with Eclipse. Developers can effectively collaborate using Team Explorer connected to projects hosted on Azure DevOps Services or an on-premises Azure DevOps Server (previously named Team Foundation Server (TFS)).

## TIP

You can install the latest version of Visual Studio clients from the [Visual Studio downloads page](#).

Additional options for connecting to Azure DevOps Services or TFS include:

- [Team Explorer Everywhere](#)
- [Azure DevOps Plugin for Android Studio](#)
- [Azure DevOps Plugin for IntelliJ](#)
- [Visual Studio Code](#)

For information about compatibility among client and server versions, see [Requirements and compatibility](#).

If you don't need Visual Studio, but want to connect to a project in Azure DevOps, you can install the free [Visual Studio Community](#).

## Prerequisites

- You must have a project in Azure DevOps. If you need to add a project, see [Create a project](#).
- You must be a member of the project you connect to. To get added, see [Add users to a project or team](#).

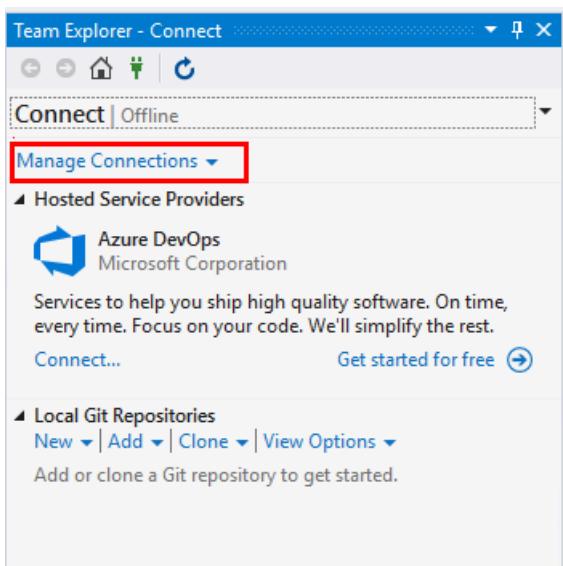
## Connect to a project or repository

Team Explorer connects Visual Studio to projects in Azure DevOps. You can manage source code, work items, and builds. The operations available to you depend on which source control option—Git or Team Foundation version control (TFVC) —was selected to manage source code when the project was created.

## TIP

If you open Visual Studio and the Team Explorer pane doesn't appear, choose the **View>Team Explorer** menu option from the tool bar.

From the **Connect** page, you can select the projects you want to connect to and quickly switch connection to a different project and or repository. For details, see [Connect to a project](#).



The Git and TFVC repos support different pages and functions. For a comparison of the two version control systems, see [Choosing the right version control for your project](#).

## Git version control and repository

The following images show the pages available when you connect to a Git repository from Team Explorer.

| VISUAL STUDIO 2019                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | VISUAL STUDIO 2017                                                                                                                                                                                                                                                                                                                                                                                       | VISUAL STUDIO 2015                                                                                                                                                                                                                                                                                                                                     |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p>This screenshot shows the Visual Studio 2019 Team Explorer - Home. It features a main menu with icons for back, forward, home, and search. Below the menu is a navigation bar with 'Home   Fabrikam Fiber'. The main area contains sections for 'Azure DevOps' (Fabrikam Fiber/Fabrikam Fiber) and 'Project' (Web Portal   Task Board). Under 'Project', there are links for 'Changes', 'Branches', 'Pull Requests', 'Sync', 'Tags', 'Work Items', 'Builds', and 'Settings'.</p> | <p>This screenshot shows the Visual Studio 2017 Team Explorer - Home. It has a similar layout to 2019, with a main menu, navigation bar, and sections for 'Visual Studio Team Services' (Fabrikam Git/Fabrikam...) and 'Project' (Web Portal   Task Board). The 'Project' section includes links for 'Changes', 'Branches', 'Pull Requests', 'Sync', 'Tags', 'Work Items', 'Builds', and 'Settings'.</p> | <p>This screenshot shows the Visual Studio 2015 Team Explorer - Home. It displays a main menu, navigation bar, and sections for 'Project' (Clone Repository   Web Portal   Task Board   Team Room) and 'Changes'. The 'Project' section includes links for 'Changes', 'Branches', 'Pull Requests', 'Sync', 'Work Items', 'Builds', and 'Settings'.</p> |

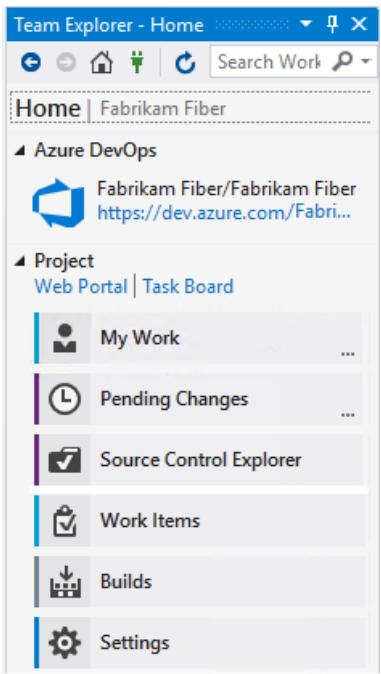
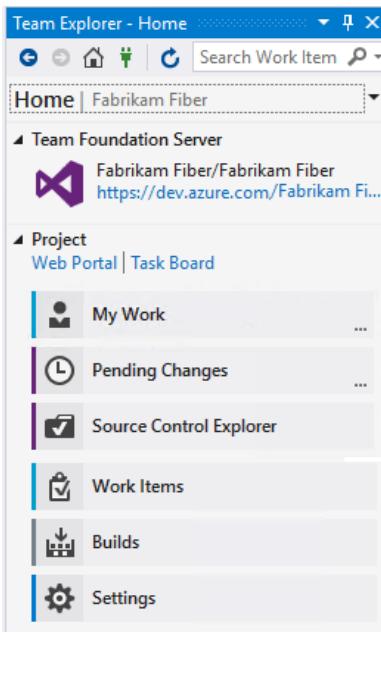
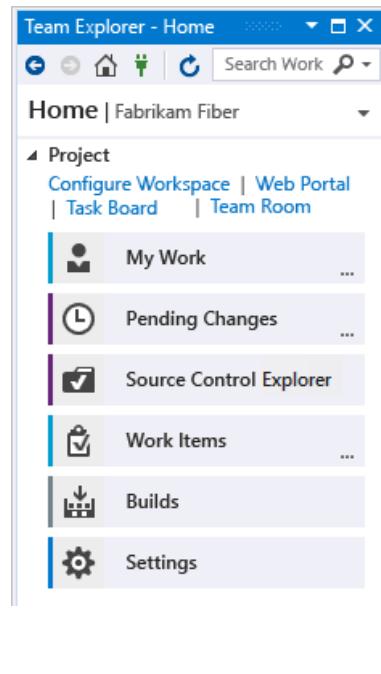
To learn more about each page, see the following articles.

| HOME & BUILDS | GIT VERSION CONTROL | WORK ITEMS |
|---------------|---------------------|------------|
|---------------|---------------------|------------|

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p><b>Home</b></p> <ul style="list-style-type: none"> <li>• <a href="#">Web portal</a></li> <li>• <a href="#">Task Board</a></li> <li>• <a href="#">Team Room</a></li> </ul> <p><b>Builds</b></p> <ul style="list-style-type: none"> <li>• <a href="#">Create build pipelines</a></li> <li>• <a href="#">View and manage builds</a></li> <li>• <a href="#">Manage the build queue</a></li> <li>• <a href="#">Install Continuous Delivery (CD) Tools for Visual Studio</a></li> <li>• <a href="#">Configure and execute Continuous Delivery (CD) for your app</a></li> </ul> | <ul style="list-style-type: none"> <li>• <a href="#">Create a new repo</a></li> <li>• <a href="#">Clone an existing repo</a></li> <li>• <b>Changes:</b> <a href="#">Save work with commits</a></li> <li>• <b>Branches:</b> <a href="#">Create work in branches</a></li> <li>• <b>Pull Requests:</b> <a href="#">Review code with pull requests</a></li> <li>• <b>Sync:</b> <a href="#">Update code with fetch and pull</a></li> <li>• <b>Tags:</b> <a href="#">Work with Git tags</a></li> <li>• <a href="#">Git preferences</a></li> <li>• <a href="#">Git command reference</a></li> </ul> | <p><b>Default experience</b> (Visual Studio 2019 only)</p> <ul style="list-style-type: none"> <li>• <a href="#">View and add work items</a></li> <li>• <a href="#">Set the Work Items experience in Visual Studio</a></li> </ul> <p><b>Legacy experience</b> (All versions of Visual Studio)</p> <ul style="list-style-type: none"> <li>• <a href="#">Add work items</a></li> <li>• <a href="#">Query editor</a></li> <li>• <a href="#">Query folders</a></li> <li>• <a href="#">Query permissions</a></li> <li>• <a href="#">Open query in Excel</a></li> <li>• <a href="#">Open query in Project</a></li> <li>• <a href="#">Email query results using Outlook</a></li> <li>• <a href="#">Create reports from query in Excel (TFS only)</a></li> </ul> |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

## Team Foundation version control

The following images show the pages available when you connect to a Git repository from Team Explorer.

| VISUAL STUDIO 2019                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | VISUAL STUDIO 2017                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | VISUAL STUDIO 2015                                                                                                                                                                                                                                                                                                                                                                                         |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|  <p>Team Explorer - Home</p> <p>Home   Fabrikam Fiber</p> <p>▲ Azure DevOps</p> <p>Fabrikam Fiber/Fabrikam Fiber <a href="https://dev.azure.com/Fabri...">https://dev.azure.com/Fabri...</a></p> <p>▲ Project</p> <p>Web Portal   Task Board</p> <ul style="list-style-type: none"> <li>My Work</li> <li>Pending Changes</li> <li>Source Control Explorer</li> <li>Work Items</li> <li>Builds</li> <li>Settings</li> </ul> |  <p>Team Explorer - Home</p> <p>Home   Fabrikam Fiber</p> <p>▲ Team Foundation Server</p> <p>Fabrikam Fiber/Fabrikam Fiber <a href="https://dev.azure.com/Fabrikam Fi...">https://dev.azure.com/Fabrikam Fi...</a></p> <p>▲ Project</p> <p>Web Portal   Task Board</p> <ul style="list-style-type: none"> <li>My Work</li> <li>Pending Changes</li> <li>Source Control Explorer</li> <li>Work Items</li> <li>Builds</li> <li>Settings</li> </ul> |  <p>Team Explorer - Home</p> <p>Home   Fabrikam Fiber</p> <p>▲ Project</p> <p>Configure Workspace   Web Portal   Task Board   Team Room</p> <ul style="list-style-type: none"> <li>My Work</li> <li>Pending Changes</li> <li>Source Control Explorer</li> <li>Work Items</li> <li>Builds</li> <li>Settings</li> </ul> |

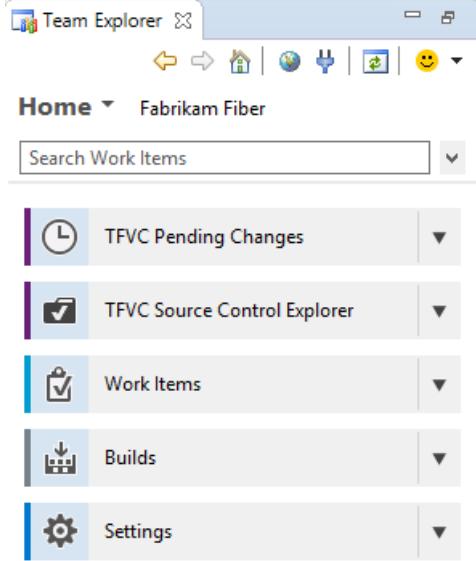
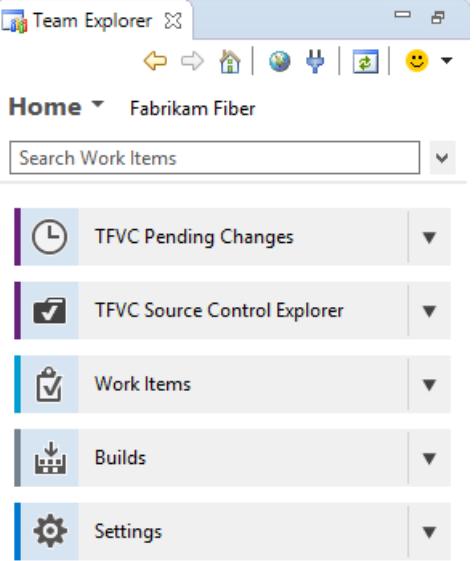
To learn more about each page, see the following articles.

|               |      |            |
|---------------|------|------------|
| HOME & BUILDS | TFVC | WORK ITEMS |
|---------------|------|------------|

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p><b>Home</b></p> <ul style="list-style-type: none"> <li>• <a href="#">Web portal</a></li> <li>• <a href="#">Task Board</a></li> <li>• <a href="#">Team Room</a></li> </ul> <p><b>Builds</b></p> <ul style="list-style-type: none"> <li>• <a href="#">Create build pipelines</a></li> <li>• <a href="#">View and manage builds</a></li> <li>• <a href="#">Manage the build queue</a></li> <li>• <a href="#">Install Continuous Delivery (CD) Tools for Visual Studio</a></li> <li>• <a href="#">Configure and execute Continuous Delivery (CD) for your app</a></li> </ul> | <ul style="list-style-type: none"> <li>• <a href="#">Configure workspace</a></li> <li>• <b>My Work:</b> <a href="#">Suspend/resume work</a>   <a href="#">Code review</a></li> <li>• <b>Pending Changes:</b> <a href="#">Manage pending changes</a>   <a href="#">Find shelvesets</a>   <a href="#">Resolve conflicts</a></li> <li>• <b>Source Control Explorer:</b> <a href="#">Add/view files and folders</a></li> <li>• <a href="#">Add Check-In Policies</a></li> <li>• <a href="#">Version control commands</a></li> </ul> | <p><b>Default experience</b> (Visual Studio 2019 only)</p> <ul style="list-style-type: none"> <li>• <a href="#">View and add work items</a></li> <li>• <a href="#">Set the Work Items experience in Visual Studio</a></li> </ul> <p><b>Legacy experience</b> (All versions of Visual Studio)</p> <ul style="list-style-type: none"> <li>• <a href="#">Add work items</a></li> <li>• <a href="#">Query editor</a></li> <li>• <a href="#">Query folders</a></li> <li>• <a href="#">Query permissions</a></li> <li>• <a href="#">Open query in Excel</a></li> <li>• <a href="#">Open query in Project</a></li> <li>• <a href="#">Email query results using Outlook</a></li> <li>• <a href="#">Create reports from query in Excel (TFS only)</a></li> </ul> |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

## 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 Azure DevOps Services or TFS using [Git](#) or [TFVC](#).

|                                                                                                                                |                                                                                                                                  |
|--------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------|
| <p><b>HOME PAGE WITH GIT (ECLIPSE)</b></p>  | <p><b>HOME PAGE WITH TFVC (ECLIPSE)</b></p>  |
|--------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------|

To learn more about each page, see the following articles.

| HOME & BUILDS | VERSION CONTROL | WORK ITEMS |
|---------------|-----------------|------------|
|---------------|-----------------|------------|

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                                                                                                                                                                                                  |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p><b>Home</b></p> <ul style="list-style-type: none"> <li>• <a href="#">Web portal</a></li> </ul> <p><b>Builds</b></p> <ul style="list-style-type: none"> <li>• <a href="#">Create build pipelines</a></li> <li>• <a href="#">View and manage builds</a></li> <li>• <a href="#">Manage the build queue</a></li> <li>• <a href="#">Install Continuous Delivery (CD) Tools for Visual Studio</a></li> <li>• <a href="#">Configure and execute Continuous Delivery (CD) for your app</a></li> </ul> | <p><b>Git repo</b></p> <ul style="list-style-type: none"> <li>• <a href="#">Share your code</a></li> <li>• <a href="#">Git preferences</a></li> <li>• <a href="#">Git command reference</a></li> </ul> <p><b>TFVC repo</b></p> <ul style="list-style-type: none"> <li>• <a href="#">Share your code</a></li> <li>• <a href="#">Pending changes</a></li> <li>• <a href="#">Source Control Explorer</a></li> <li>• <a href="#">Add Check-In Policies</a></li> <li>• <a href="#">Version control commands</a></li> </ul> | <ul style="list-style-type: none"> <li>• <a href="#">Add work items</a></li> <li>• <a href="#">Query editor</a></li> <li>• <a href="#">Query folders</a></li> <li>• <a href="#">Query permissions</a></li> </ul> |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

## Reports

### NOTE

Some pages, such as **Reports**, only appear when an on-premises TFS is configured with the required resources, such as SQL Server Reporting Services and SharePoint.

The **Reports** page opens the [Reporting Services report site](#). This page appears only when your 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 project.

If your project is missing one or more pages, you may be able to [add functionality to your on premises TFS deployment](#).

## Reports and Documents

### 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.

The **Reports** page opens the [Reporting Services report site](#). This page appears only when your 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 project.

From the **Documents** page, you can [open project portal](#) and [manage documents and document libraries](#). This page appears only if your project has been configured with a SharePoint Products portal.

If your project is missing one or more pages, you may be able to [add functionality to your on premises TFS deployment](#).

## Settings

From the **Settings** page, you can configure administrative features for either a project or project collection. To learn more about each page, see the following articles. Most of the links open to a web portal administration page. Not all settings are available from the Team Explorer plug-in for Eclipse.

| PROJECT | PROJECT COLLECTION | OTHER |
|---------|--------------------|-------|
|---------|--------------------|-------|

|                                                                                                                                                                                                                                           |                                                                                                                                                     |                                                                                                            |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------|
| <ul style="list-style-type: none"> <li>• Security, Group Membership</li> <li>• Security, Source Control (TFVC)</li> <li>• Work Item Areas</li> <li>• Work Item Iterations</li> <li>• Portal Settings</li> <li>• Project Alerts</li> </ul> | <ul style="list-style-type: none"> <li>• Security, Group Membership</li> <li>• Source Control (TFVC)</li> <li>• Process Template Manager</li> </ul> | <ul style="list-style-type: none"> <li>• Git Global Settings</li> <li>• Git Repository Settings</li> </ul> |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------|

To learn more about settings, see [About team, project, and organizational-level settings](#).

## Refresh Team Explorer or Team Explorer Everywhere

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 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 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 pipeline is added or deleted.
- A team or project is added or deleted.

### Resolve images that don't display in Team Explorer

If an inline image isn't displayed in a work item form that you view in Visual Studio Team Explorer, but the image is displayed in the web portal, your credentials might have expired. You can resolve this by completing the following steps:

1. In Visual Studio, select **View > Other Windows > Web Browser** (or use the shortcut **Ctrl+Alt+R**).
2. In the web browser, locate your organization.
3. Sign in with your credentials.
4. Refresh your work item in Team Explorer.

## Related articles

- [Troubleshoot connection](#)
- [Create a project](#)

### Additional tools provided with TFS Power Tools

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.

# What are frequently asked questions about Azure DevOps?

1/25/2019 • 2 minutes to read • [Edit Online](#)

[Azure DevOps Services](#) | [Azure DevOps Server 2019](#) | [TFS 2018](#) | [TFS 2017](#) | [TFS 2015](#) | [TFS 2013](#)

## How do I get started?

### To get started in the cloud or on-premises

- To get started with Azure DevOps Services, begin by [creating a user](#). See step-by-step instructions in [Sign up for Azure DevOps Services](#).
- To get started with an on-premises Team Foundation Server (TFS), download and install the [latest version of TFS](#). See [Install and configure TFS](#) for details.
- If you need to create a project, create one in [Azure DevOps Services](#), or set one up in an [on-premises TFS](#).
- If you don't have access to the project, [get invited to the team](#).
- If it's your first time connecting to a project, see [Connect to a project](#).

### 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 supports connecting to a project:

- [Visual Studio](#)
- [Eclipse/Team Explorer Everywhere](#)
- [Android Studio with the Azure DevOps Services Plugin for Android Studio](#)
- [IntelliJ with the Azure DevOps Services Plugin for IntelliJ](#)
- [Visual Studio Code](#)

### To get started with sharing code, work item tracking, builds, or other tasks

See [Software development roles](#).

## What compatibility issues exist between client and server versions?

See [Requirements and compatibility](#).

## Can stakeholders who don't use Visual Studio participate on our team?

Yes. You can provide access to stakeholders who have no client access license 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](#).

## Are there other clients that connect to Azure DevOps Services or TFS?

## Are there other tools I can use?

Yes. You can connect to a project from one of these clients:

- [Excel](#) (requires Team Foundation add-in)
- [Project](#) (requires Team Foundation add-in)
- [Project Professional](#)
- [PowerPoint Storyboarding](#) (requires Team Foundation add-in)
- [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](#). This 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 articles

- [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](#).

# Data protection overview

1/31/2019 • 25 minutes to read • [Edit Online](#)

## Azure DevOps

Azure DevOps is a cloud-hosted application for your development projects, from planning through deployment. Based on the capabilities of Team Foundation Server, with additional cloud services, Azure DevOps manages your source code, work items, builds, tests, and much more. Azure DevOps uses Azure's Platform as a Service infrastructure and many of Azure's services, including Azure SQL databases, to deliver a reliable, globally available service for your development projects. Because important data is at stake, this white paper discusses the steps that Microsoft takes to keep your projects safe, available, secure, and private. In addition, it describes the role you play in keeping your projects safe and secure.

This white paper is part of our effort to illuminate how we manage and protect your data and is intended for organization administrators and IT professionals who manage their project assets daily. It will be most useful to individuals who are already familiar with Azure DevOps and want to know more about how Microsoft protects the assets that are stored in Azure DevOps.

## Our commitment

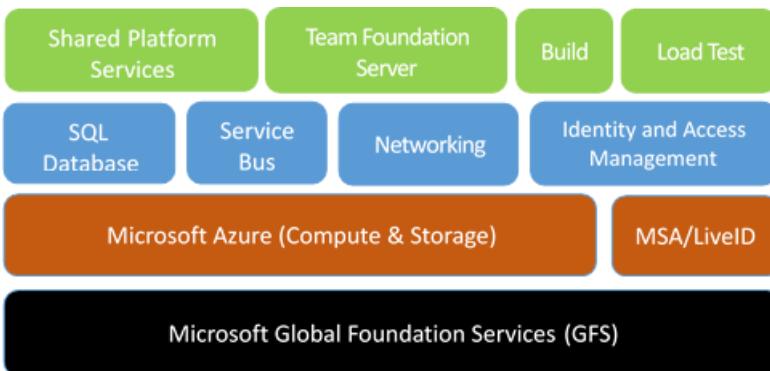
Microsoft is committed to ensuring that your projects remain safe and secure, without exception. When stored in Azure DevOps, your projects benefit from multiple layers of security and governance technologies, operational practices, and compliance policies. We enforce data privacy and integrity both at rest and in transit.

As we look at the broader landscape of threats facing Azure DevOps customers, they boil down to four basic categories: data availability, service availability, service security, and data privacy. We will investigate each of these categories to explore specific threats and explain what Azure DevOps does to address them through both the technology that we use and the way we put it into practice. However, we will first describe how data is stored and how Azure DevOps manages access to your data.

Because proper data protection also requires active engagement of customer administrators and users, we also discuss steps you should take to protect your project assets from unauthorized disclosure and tampering. Much of this has to do with being explicit about granting permissions to user access points in order to have confidence that only the right people are accessing data within Azure DevOps.

Regardless of your approach, you should consider all data potentially "at risk" no matter where it is or how it is being used; this is true for both data in the cloud as well as data stored in a private data center. Thus, it is important to classify your data, its sensitivity / risk horizon, and the damage it could do if it is compromised. You should also categorize your data relative to an overall information security management policy.

## Built on Azure



Azure DevOps is hosted entirely in Azure data centers and uses many of the core Azure services including Compute, Storage, Networking, SQL Database, Identity and Access Management Services, and Service Bus. This lets us focus on the unique aspects of running Azure DevOps while taking advantage of the state-of-the-art capabilities, protection, and industry certifications available from the Azure platform.

Azure DevOps uses Azure Storage as the primary repository for service metadata and customer data. Depending on the type of data and the storage and retrieval needs, we use Azure Blob (binary large objects) storage and Azure SQL data storage. To provide a seamless experience, we work hard to abstract these details from the end user. However, to discuss the details surrounding Azure DevOps approach to data protection, some background in these elements is important.

**Azure Blob storage** is generally used to store large chunks of unstructured data. All projects use the Azure Blob storage service. This data includes potentially sensitive or private information such as the contents of source files and the attachments on work items. For most projects, the majority of storage in use is this type of unstructured blob storage. For more information, see documentation on [Azure Blob Storage](#).

**Azure SQL database storage** is used to store the structured and transactional aspects of your organization, including project metadata, the versioned source control history, and work item details. Database storage gives you fast access to the important elements of your project and provides indexes into the blob storage to look up files and attachments. For more information, see documentation on [Azure SQL Database](#).

Administrators can manage access to resources by [granting or restricting permissions](#) on user identities or groups. Azure DevOps uses federated authentication of user identities [via Azure Active Directory](#) (Azure AD) and Microsoft Accounts (MSA, formerly LiveID). During authentication, the user is routed to the authentication provider (Azure AD or MSA) where they provide their credentials. Once the authentication provider has verified the user's credentials, Azure DevOps issues an authentication cookie to the user, which allows them to remain authenticated against Azure DevOps. In this way, the user's credential information is never shared directly with Azure DevOps. For each Azure DevOps resource that the user attempts to access, permissions are validated based on the user's explicit permissions as well as permissions inherited through group membership. Administrators can leverage access controls to protect [access to organization](#), project collection, team project, and team scoped data and functionality, as well as to more specific assets like version control folders and work item area paths.

## Data availability

Azure DevOps leverages many of the Azure storage features to ensure data availability in the case of hardware failure, service disruption, or region disaster. Additionally, the Azure DevOps team follows procedures to protect data from accidental or malicious deletion.

### Data redundancy

To protect data in the case of hardware or service failures, Microsoft Azure storage geo-replicates customer data between two locations within the same region that are hundreds of miles apart; for instance, between North and West Europe or between North and South United States (except Brazil). For Azure blobs, customer data is replicated three times within a single region and is replicated asynchronously to a second region hundreds of

miles away. As such, Azure always maintains the equivalent of six copies of your data. This enables us to failover to a separate region in the case of a major outage or disaster while also providing local redundancy for hardware failures within a region. For Azure SQL database storage, daily backups are maintained offsite in the case of a regional disaster.

#### **NOTE**

Please note the following regarding data redundancy and fail over:

- There is an inherent delta measured in minutes when we replicate your data between the primary and secondary region
- Fail over to the secondary region is a decision that we must make centrally as it impacts all customers on the affected scale unit. Except in extreme circumstances, we'll opt to not fail over so that customer data is not lost
- Azure DevOps offers a 99.9% uptime SLA guarantee and will refund portion of the monthly charges if we miss the SLA in a specific month
- Because there is only one region in Brazil, customer data in Brazil is replicated to South Central US for disaster recovery purposes

#### **Mistakes happen**

To protect against accidental deletion of data, either by our customers or by our operation team, we also take point-in-time backups of both the Azure blob and the SQL databases. Our approach to these backups varies based on the storage type. For blobs, we have a separate copy of all blobs and regularly append new changes to each storage account. Since this data is immutable, we don't need to rewrite any existing storage as part of our backup procedures. SQL Azure, on the other hand, handles backups as a standard part of their service which we rely on. In both cases, these backups are also replicated in a paired region to ensure we can recover from a regional outage.

In addition, we perform a "soft delete" for organization deletion operations. This lets us recover entire organizations for up to 30 days after deletion.

#### **Practice is critical**

Having multiple, redundant backups of your data is good but without practice, restoring can be unpredictable. It's been said that "backups never fail, it's the restores that do". While technically incorrect, the sentiment is right. The good news is that we regularly practice restoring various data sets from backup. The geo-redundant storage that we get from Azure is tested regularly. In addition, from time to time we restore from backups to recover from human error, such as when a customer has inadvertently deleted a project in Azure DevOps. We have the capability of restoring your organization's data to any point in time over the last 30 days. While our turnaround time sometimes takes more than day, we have always been able to restore the customer's data given enough time. Since there are many permutations of disaster and data corruption scenarios, we continue to plan and execute new tests on a regular basis to ensure our systems and associated process are up to the challenge.

## **Service availability**

Ensuring that Azure DevOps is available for you to access your organization and associated assets is of utmost importance to us.

#### **DDoS protections**

In some cases, a malicious distributed denial-of-service (DDoS) attack can affect service availability. Azure has a DDoS defense system that helps prevent attacks against our service. It uses standard detection and mitigation techniques such as SYN cookies, rate limiting and connection limits. The system is designed not only to withstand attacks from the outside but also from within Azure. For application-specific attacks that can penetrate the Azure defense systems, Azure DevOps establishes application and organization level quotas and throttling to prevent any overuse of key service resources during an attack or accidental misuse of resources.

#### **Live site response**

While we strive for the service to be available 100% of the time, sometimes things happen that prevent us from meeting that goal. If this happens, we provide transparency to our users throughout the incident. Our 24x7 operations team is always on hand to rapidly identify the issue and to engage the necessary development team resources. Those resources then address the problem. They also aim to update the service status page and blog within minutes of detecting an issue that affects the service. Once the team has addressed an issue, our "live-site incident" process continues as we identify the root cause of the issue and track the necessary changes to ensure we prevent similar issues in the future.

Azure DevOps live-site management processes are crafted to ensure a deep focus on service health and customer experience. Our processes minimize our time to detect, respond to, and mitigate impacting issues. Ownership for Live site is shared across all engineering disciplines, so there are continual improvements evolving out of direct experience. This means that monitoring, diagnostics, resiliency, and quality assurance processes are improved over time. Live-site management in Azure DevOps is broken into three distinct tracks, shown as follows:

| Telemetry                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | Incident Management                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | Live-site Review                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <ul style="list-style-type: none"><li>▪ <b>Alerts</b> –Define health alerts for failure modes</li><li>▪ <b>Diagnostics</b> – Deliver instrumentation data and operational reports</li><li>▪ <b>Troubleshooting Guides</b> – Guidance for investigating an alert is defined by the feature and then refined by the Service Engineer.</li><li>▪ <b>Failure Mode Testing</b> –The Service Delivery (SD) team performs failure testing to ensure alerts fire as expected</li><li>▪ <b>Onboarding</b> –The Feature team works with their Service Engineer (SE) to onboard new alerts to the 24 x 7 team.</li></ul> | <ul style="list-style-type: none"><li>▪ <b>Detection</b> – Product alerts detect health issues and start the Live Site Incident (LSI) process</li><li>▪ <b>Triage</b> – The 24 x 7 team receives all critical alerts and confirms impact using TFS guidance</li><li>▪ <b>Escalation</b> – Both Dev and Ops have individuals in an on-call rotation. SE is initial escalation path. The SE will call Dev as needed</li><li>▪ <b>Incident Management</b> – A bridge is managed by the SE who engages Dev. and Partners to troubleshoot</li><li>▪ <b>Resolution</b> –Communication and service restoration are actively driven until customer impact is eliminated</li></ul> | <ul style="list-style-type: none"><li>▪ <b>Goal</b> – Weekly review of LSI ensures that leadership has visibility into live site health and repeat issues</li><li>▪ <b>Cadence</b> – Incident from prior week have root cause documented then reviewed on weekly basis</li><li>▪ <b>Audience</b> – VS Leadership. Partner team when they drive impact. Developer attends to provide details on Service incident</li><li>▪ <b>Ownership</b> -Dev. owns reviews for App and Deploy issues. SD owns for Platform issues</li><li>▪ <b>Driving Improvements</b> – Bugs and problem work items are logged for gaps (e.g. – missing alerts) and repeat root cause</li></ul> |

The operations team also monitors the availability metrics for individual organizations. These metrics provide insights into specific conditions that might affect only some of our customers. Investigations into this data can often result in targeted improvements to address customer-specific issues. In some cases, we will even contact the customer directly to understand their experience and work with them to improve the service from their vantage point.

We understand that availability of our service is an integral part of your team's success. Because of this, we publish a service level agreement (SLA) and provide a financial guarantee to ensure we meet this agreement each month. For more specifics on our SLA and financial guarantees, please see [Azure DevOps SLAs](#).

Sometimes our partner teams or dependencies have incidents that affect Azure DevOps. All our partner teams follow similar approaches to identifying, resolving, and learning from these service outages.

## Service security

Ensuring a secure service requires constant vigilance, from proper design and coding techniques, all the way through to the way we operate the service. Along those lines, we actively invest in the prevention of security holes and in breach detection. In the event of a breach, we use security response plans to minimize data leakage, loss or corruption. To learn more about how security and identity are managed, see [About security and identity](#).

### Secure by design

To implement industry best practices and stay on the forefront of information security, we engage with various teams within Microsoft including Azure, Global Foundation Services (GFS), and Trustworthy Computing. Microsoft's Security Development Lifecycle (SDL) is at the core of our development process and Microsoft's Operational Security Assurance (OSA) program guides our cloud operation procedures. The SDL and OSA methodologies address security threats throughout the development process and operation of Azure DevOps.

They specify requirements that include threat modeling during service design, following design and code best practices, verifying security with standard tooling and testing, limiting access to operational and customer data, and gating rollout of new features through a rigid approval process.

Because the security landscape is continually changing, it is important for our team to keep current with the latest in best practices. We have annual training requirements for all engineers and operations personnel working on Azure DevOps. In addition, we sponsor informal "brownbag" meetings. These meetings are hosted by our own engineers. After they've solved an issue, they share what they've learned with the rest of the team.

A cloud service is only as secure as the host platform. Azure DevOps uses Azure's Platform as a Service (PaaS) offering for much of our infrastructure. PaaS automatically provides regular updates for known security vulnerabilities. When we host virtual machines in Azure using their Infrastructure as a Service (IaaS) offering, such as for our [hosted build service](#), we regularly update those images to include the latest security patches available from Windows Update. The same update rigor applies for our on-premises machines, including those used for deployment, monitoring, and reporting.

Our team conducts regular security-focused penetration testing of Azure DevOps. Using the same techniques and mechanisms as real malicious attackers, penetration testing tries to exploit the live production services and infrastructure of Azure DevOps. The goal is to identify real-world vulnerabilities, configurations errors or other security gaps in a controlled process. The team reviews the results to identify other areas of improvement and to increase the quality of the preventative systems and training.

### Credential security

Your credentials in Azure DevOps are stored using industry best practices. Learn more about [credential storage](#).

### Reporting security issues

If during your penetration testing you believe you have discovered a potential security flaw related to the Azure DevOps service, please report it to Microsoft within 24 hours by following the instructions on the [Report a Computer Security Vulnerability](#) page.

#### IMPORTANT

While notifying Microsoft of penetration testing activities is no longer required, customers must still comply with the [Microsoft Cloud Unified Penetration Testing Rules of Engagement](#).

### Restricting access

We maintain strict control over who has access to our production environment and customer data. Access is only granted at the level of least privilege required and only after proper justifications are provided and verified. If a team member needs access to resolve an urgent issue or deploy a configuration change, they must apply for "just in time" access to the production service. Access is revoked as soon as the situation is resolved. Access requests and approvals are tracked and monitored in a separate system. All access to the system is correlated against these approvals and if unapproved access is detected, an alert is raised for the operations team to investigate.

If the username and password for one of our developers or operation staff were ever stolen, data is still protected because we use two-factor authentication for all remote system access. This means that additional authentication checks via smart card or a phone call to a pre-approved number must take place before any remote access to the service is permitted.

In addition, secrets that we use to manage and maintain the service, such as RDP passwords, SSL certificates, and encryption keys are managed, stored, and transmitted securely through the Azure Management Portal. Any access to these secrets requires specific permission, which is logged and recorded in a secure manner. All secrets are rotated on a regular cadence and can be rotated on-demand in the case of a security event.

The Azure DevOps operations team uses hardened administrator workstations to manage the service. These machines run a minimal number of applications and operate in a logically segmented environment. Operations

team members must provide specific credentials with two-factor authentication to access the workstations and all access is monitored and securely logged. To isolate the service from outside tampering, applications such as Outlook and Office, which are often targets of spear-phishing and other types of attacks, are not permitted in this environment.

### Intrusion protection & response

To ensure data is not intercepted or modified while in transit between you and Azure DevOps, we encrypt via HTTPS / SSL.

In addition, data we store on your behalf in Azure DevOps is encrypted as follows:

- For data stored in Azure SQL databases, Azure DevOps adopted [Transparent Data Encryption \(TDE\)](#) to protect against the threat of malicious activity by performing real-time encryption of the database, associated backups, and transaction log files at rest.
- Azure Blob Storage connections are encrypted to protect your data in transit. To protect data at rest stored in our Azure Blob Storage, we have adopted [Azure Storage Service Encryption \(SSE\)](#).

To learn more about how we encrypt your data, please visit the following [blog post](#).

To ensure that activities within the service are legitimate, as well as to detect breaches or attempted breaches, we leverage Azure's infrastructure to log and monitor key aspects of the service. In addition, all deployment and administrator activities are securely logged, as is operator access to production storage. Real-time alerts are raised because the log information is automatically analyzed to uncover potentially malicious or unauthorized behavior.

In the case where a possible intrusion has been detected or high priority security vulnerability has been identified, we have a clear security incident response plan. This plan outlines responsible parties, steps required to secure customer data, and how to engage with security experts in Microsoft Security Response Center (MSRC), Global Foundation Services (GFS), Azure and members of the Azure DevOps leadership team. We will also notify any organization owners if we believe their data was disclosed or corrupted so that they can take appropriate steps to remedy the situation.

Finally, to help combat emerging threats, we employ an Assume Breach strategy. A highly specialized group of security experts within Microsoft, known as the Red Team, assumes the role of sophisticated adversaries. This team tests our breach detection and response, enabling us to accurately measure our readiness and the impacts of real-world attacks. This strategy strengthens threat detection, response, and defense of the service. It also allows us to validate and improve the effectiveness of our entire security program.

## Data privacy

We want you to have confidence that your data is being handled appropriately and for legitimate uses. Part of that assurance involves appropriately restricting usage so that your data is used only for legitimate reasons.

### The General Data Protection Regulation (GDPR)

The General Data Protection Regulation (GDPR) is the biggest change in data protection laws in Europe since the 1995 introduction of the European Union (EU) Data Protection Directive 95/46/EC. The GDPR's main objective is to strengthen the protection and security of your personal data and replaced the Directive and all local laws relating to it. Azure DevOps is relied upon as a system of record with strict integrity, traceability, and audit rules. We view all information within Azure DevOps to be business critical and therefore cannot be modified from its original state. These existing obligations affect our delete and retention obligations for GDPR. As such, we do not support GDPR delete requests from within Azure DevOps. We have ensured that when an entire organization is deleted that all associated data and telemetry about that organization and its members are removed from our system (after the requisite 30-day soft-delete period).

To learn more about how Azure DevOps honors Data Subject Requests (DSR), please visit the following [page](#). To learn more about the GDPR regulation, please visit the following page in [Microsoft's Trust Center](#).

## **Data residency and sovereignty**

We know our customers care deeply about data security and privacy. Azure DevOps is available in the following 7 geographies across the world: United States, Canada, Europe, India, Australia, Asia Pacific, and Brazil. While we default your organization to your closest region, you have the option to choose a different region. If you change your mind later, our CSS team can help you migrate your organization to a different region. Azure DevOps will not move or replicate customer data outside of the chosen geography. Our backup procedures geo-replicate customer data between a second region within the same geography except for organizations located in Brazil, these are replicated to South Central US for disaster recovery purposes.

To learn more about data location, please visit the Azure DevOps page in [Microsoft's Trust Center](#).

## **Law enforcement access**

In some cases, third parties such as law enforcement entities may approach us to obtain access to customer data stored within Azure DevOps. By policy, we will attempt to redirect the requests to the organization owner for resolution. When we are compelled by court order to disclose customer data to a third party, we will make a reasonable effort to notify the organization owner in advance unless we are legally prohibited from doing so.

Some customers require that their data be stored in a particular geographic location to ensure a specific legal jurisdiction for any law enforcement activities. At this time, Azure DevOps can host organizations in 7 geographies across the world: United States, Canada, Europe, India, Australia, Asia Pacific, and Brazil. All customer data such as source code, work items, test results as well as the geo-redundant mirrors and offsite backups are maintained within the selected geography.

## **Microsoft access**

From time to time, Microsoft employees need to obtain access to customer data stored within Azure DevOps. As a precaution, all employees who have or may ever have access to customer data must pass a background check, which verifies previous employment and criminal convictions. In addition, we permit access to the production systems only when there's a live site incident or other approved maintenance activity, which is logged and monitored.

Since not all data within our system is treated the same, data is classified to distinguish between customer data (what you upload to Azure DevOps), organization data (information used when signing up for or administering your organization), and Microsoft data (information required for or collected through the operation of the service). Based on the classification we control usage scenarios, geolocation requirements, access restrictions and retention requirements.

## **Microsoft promotional use**

From time to time, we want to contact customers to let them know about additional features and services that might be useful. Since not all customers want to be contacted about these offers, we allow you to opt-in and opt-out of marketing email communications. We never use customer data to target specific offers for specific users or organizations. Instead, we leverage organization data and aggregate usage statistics at the organization level to determine groups of organizations that should receive specific offers.

# **Building confidence**

In addition to these protections, we have also taken steps outside of the service itself to help you decide to move forward with Azure DevOps. These include Microsoft's own internal adoption policies, the level of transparency that we provide into the state of our service, and our progress towards receiving certification of our information security management systems. All these efforts are designed to build your confidence in Azure DevOps.

# **Internal adoption**

Teams across Microsoft have begun adopting Azure DevOps internally. The Azure DevOps team moved into an organization in 2014 and uses it extensively. More broadly, we have established guidelines to enable the adoption

plans for other teams. Obviously, large teams move more gradually than smaller ones, given their investments in existing DevOps systems. For teams able to move quickly, we have established a project classification approach. It assesses our risk tolerance, based on project characteristics, to determine if the project is appropriate for Azure DevOps. For larger teams, the adoption typically occurs in phases with more planning. Additional requirements for internal projects include associating the organization with the Microsoft.com Azure Active Directory to ensure proper user identity lifecycle and password complexity along with requiring the use of two-factor authentication for more sensitive projects.

### **Transparency**

We are convinced that transparency around how we design and operate our service is critical to establishing trust with our customers. This white paper is part of our effort to shed light on how we manage and protect your data. In addition, we maintain a [blog](#) that provides real-time updates whenever a service disruption, planned or unplanned, takes place so you can adjust your activities as needed. Furthermore, Brian Harry, the corporate vice-president in charge of Azure DevOps, maintains an active [blog](#) addressing, among other things, lessons learned by operating the service.

## **Compliance certifications**

For some customers, it is important to understand third-party evaluation of our data security procedures. Towards that end, we have achieved ISO 27001:2013, HIPAA (Health Insurance Portability and Accountability Act) BAA (Business Associate Agreement), EU Model Clauses, SOC 1 Type 2 and SOC 2 Type 2 certifications. The SOC audit for Azure DevOps covers controls for data security, availability, processing integrity, and confidentiality. Azure DevOps' SOC reports are available via the [Microsoft's Service Trust Portal](#). If you don't have access to Microsoft's Service Trust Portal, you can contact [Azure DevOps ServicesSOCReports](<mailto:Azure DevOps ServicesSOCReports@microsoft.com>) to request a copy of Azure DevOps' SOC Reports.

## **Steps you can take**

Proper data protection requires active engagement of customer administrators and users. Your project data stored within Azure DevOps is only as secure as the end user access points. So, it is important to match the level of permission strictness and granularity for those organizations with the level of sensitivity of your project.

### **Classify your data**

The first step is to classify your data based on its sensitivity / risk horizon, and the damage that could occur if it is compromised. Many enterprises have existing classification methods that can be reused when projects move to Azure DevOps. Refer to these [materials](#) for more information on how to classify your data.

### **Adopt Azure Active Directory**

Another action you can take to improve the security of your end users' credentials is to use Azure Active Directory (Azure AD) instead of Microsoft Accounts (MSA) to manage your organization's access to Azure DevOps. This allows your IT department to manage its end user access policy including password complexity, password refreshes and expiration if the user leaves your organization. Through Active Directory federation, you can directly link Azure Active Directory to your organization's central directory, so you have only one location to manage these details for your enterprise. See the following brief comparison between MSA and Azure AD characteristics relative to Azure DevOps access:

| PROPERTIES                                      | MSA  | AZURE AD     |
|-------------------------------------------------|------|--------------|
| Identity creator                                | User | Organization |
| Single user name / password for all work assets | No   | Yes          |

| Properties                             | MSA     | Azure AD                 |
|----------------------------------------|---------|--------------------------|
| Password lifetime & complexity control | User    | Organization             |
| Azure DevOps membership limits         | Any MSA | Organization's directory |
| Traceable identity                     | No      | Yes                      |
| Organization & IP ownership            | Unclear | Organization             |
| 2-factor authentication enrollment     | User    | Organization             |
| Device-based conditional access        | No      | Organization             |

You can learn more about how to [configure this support for your organization](#).

### Require two-factor authentication

In some cases, you might want to restrict access to your organization by requiring more than one factor to sign in. Azure AD lets you require multiple factors, such as phone authentication in addition to a username and password, for all authentication requests. You can [learn more](#) about turning on multifactor authentication for Azure AD.

### Use BitLocker

For sensitive projects, we also recommend use of BitLocker on your Windows laptop or desktop computer. BitLocker encrypts the entire drive on which Windows and your data reside, keeping everything safe. Once BitLocker is enabled, it automatically encrypts any file you save on that drive. If your laptop or desktop machine were to fall into the wrong hands, BitLocker prevents unauthorized access of local copies of data from your projects.

### Limit use of Alternate Authentication Credentials

The default authentication mechanism for Git related tooling is alternate authentication (sometimes referred to as Basic Authentication). This mechanism allows the end user to set up an alternate username and password for use during Git command line operations. This username and password combination can also be used to access any other data for which that user has permissions. By its nature, alternate authentication credentials are less secure than the default federated authentication. However, we have taken steps to help you make secure choices. For example, all communication is sent over HTTPS and there are password complexity requirements. Nevertheless, your organization should evaluate if additional policies are required to meet your project security requirements. You can [learn more](#) about disabling alternate authentication credentials altogether for your organization if it doesn't meet your security requirements.

### Secure access to your organization

Azure Active Directory (Azure AD) provides the capability for administrators to control access to Azure resources and applications such as Azure DevOps. With conditional access control in place, Azure AD checks for the specific conditions you set for a user to access an application. After access requirements are met, the user is authenticated and can access the application. Visit the [Azure documentation site](#) to learn more about conditional access policy (CAP). Azure DevOps now enforces conditional access policies for custom Azure DevOps authentication mechanisms including personal access tokens, alternate authentication, OAuth and SSH keys. If accessing Azure DevOps through a third party client, like git.exe, only IP based policies will be honored; any other policy will automatically fail as the client doesn't pass the necessary information to validate the policy. For example, if a policy requires MFA and the client can't support MFA, the policy will fail and the user will automatically be blocked.

## Additional resources

In addition to this white paper, there are other resources available for your review and education. These include:

- [Azure DevOps home page](#)
- [Azure DevOps status](#)
- [Azure DevOps credential storage](#)
- [Developer Services privacy statement](#)
- [Azure DevOps support](#)
- [Developer Services Agreement](#)
- [Azure trust center](#)
- [Microsoft Security Development Lifecycle](#)

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# Web portal navigation in Azure DevOps

1/31/2019 • 7 minutes to read • [Edit Online](#)

## Azure DevOps Services | Azure DevOps Server 2019 | TFS 2018 | TFS 2017

The web portal for Azure DevOps is organized around a set of services, as well as administrative pages and several task-specific features such as the search box. The service labels differ depending on the navigation selected:

- **New navigation:** [Overview](#), [Boards](#), [Repos](#), [Pipelines](#), [Test Plans](#), and [Artifacts](#)
- **Previous navigation:** [Dashboards](#), [Code](#), [Work](#), [Build and Release](#), [Test](#), [Wiki](#), and [Analytics views](#)

Each service provides you with one or more pages which support a number of features and functional tasks. Within a page, you may then have a choice of options to select a specific artifact or add an artifact.

The web portal for Azure DevOps Server is organized around a set of services—such as, [Overview](#), [Boards](#), [Repos](#), [Pipelines](#), [Test Plans](#), and [Artifacts](#)—as well as administrative pages and several task-specific features such as the search box. Each service provides you with one or more pages which support a number of features and functional tasks. Within a page, you may then have a choice of options to select a specific artifact or add an artifact.

Each service provides you with one or more pages which support a number of features and functional tasks. Within a page, you may then have a choice of options to select a specific artifact or add an artifact.

The web portal for Team Foundation Server (TFS) is organized around a set of applications—such as, [Dashboards](#), [Code](#), [Work](#), [Build and Release](#)—as well as administrative pages and several task-specific features such as the search box. Each service provides you with one or more pages which support a number of features and functional tasks. Within a page, you may then have a choice of options to select a specific artifact or add an artifact.

### NOTE

Your web portal uses either the **New navigation** or **Previous navigation** user interface. Choose the **New navigation** tab if the **New Navigation** feature is enabled. You'll see a vertical sidebar along with other navigational features when **New Navigation** has been enabled for the signed-in user or the organization. Choose **Previous navigation** when you see a top-level, blue-bar—indicating that **New navigation** isn't enabled.

### NOTE

Choose the **New navigation** tab for guidance. Azure DevOps Server 2019 supports the **New Navigation** user interface.

### NOTE

Choose the **Previous navigation** tab for guidance. TFS 2018 and earlier versions only support the previous navigation user interface.

Here's what you need to know to get up and running using the web portal.

- [New navigation](#)
- [Previous navigation](#)

- **Open a service, page, or settings:** use to switch to a different service or functional area
- **Add an artifact or team:** use to quickly add a work item, Git repo, build or release pipelines, or a new team
- **Open another project or repo:** use to switch to a different project or access work items and pull requests defined in different projects, or items you've favorited
- **Open team artifacts, use breadcrumbs, selectors and directories:** use to navigate within a service, to open other artifacts or return to a root function
- **Work with favorites:** favorite artifacts to support quick navigation
- **Search box:** use to find code, work items, or wiki content
- **Your profile menu:** use to set personal preferences, notifications, and enable preview features
- **Settings:** use to add teams, manage security, and configure other project and organization-level resources.

Choose the **Previous navigation** tab for guidance. **New navigation** isn't supported for TFS 2018 and earlier versions.

#### NOTE

Only those services that are enabled will appear in the user interface. For example, if **Boards** is disabled, then **Boards** or **Work** and all pages associated with that service won't appear. To enable or disable a service, see [Turn an Azure DevOps service on or off](#).

- [New navigation](#)
- [Previous navigation](#)

In **New navigation**, you select services—such as **Boards**, **Repos**, and **Pipelines**—from the sidebar and pages within those services.

| ID  | Title                     | State      | Product | Backlog Item | Other |
|-----|---------------------------|------------|---------|--------------|-------|
| 390 | Cancel order form         | Commit...  | New     |              |       |
| 492 | Build Settings Experience | New        |         |              |       |
| 375 | Check service status      | To Do      |         |              |       |
| 492 | Check service status      | New        |         |              |       |
| 375 | Develop form              | To Do      |         |              |       |
| 543 | Auto-save                 | To Do      |         |              |       |
| 372 | Standardize               | In Prog... |         |              |       |
| 539 |                           |            |         |              |       |

Choose the **Previous navigation** tab for guidance. **New navigation** isn't supported for TFS 2018 and earlier versions.

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 [Get started with Git](#) and [Manage bugs](#).

To start planning and tracking work, see [About Agile tools](#).

## Connect to the web portal, user accounts and licensing

You connect to the web portal through a supported web browser—such as the latest versions of Edge, Chrome, Safari, or Firefox. Only users who have been [added to a project](#) can connect. This is typically done by the organization 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 [Azure DevOps pricing](#).

Limited access is available to an unlimited number of stakeholders for free. For details, see [Work as a Stakeholder](#).

You connect to the web portal through a supported web browser—such as the latest versions of Edge, Chrome, Safari, or Firefox. Only users who have been [added to a project](#) can connect. This is typically done by a member of the Project Administrators group.

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 project is added or deleted

## 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"> <li>• <a href="#">Product backlog</a>, <a href="#">Portfolio backlogs</a>, <a href="#">Sprint backlogs</a>, <a href="#">Task boards</a>, <a href="#">Capacity planning</a></li> <li>• <a href="#">Kanban board</a></li> <li>• <a href="#">Dashboards</a>, <a href="#">Widgets</a>, and <a href="#">Charts</a></li> <li>• <a href="#">Team rooms</a></li> <li>• <a href="#">Request feedback</a></li> <li>• <a href="#">Web-based Test Management</a></li> <li>• Administration pages to administer accounts, team projects, and teams</li> </ul> | <ul style="list-style-type: none"> <li>• Task specific interfaces that integrate with Git and TFVC, such as: <ul style="list-style-type: none"> <li>◦ <b>Git:</b> <a href="#">Changes</a>   <a href="#">Branches</a>   <a href="#">Pull Requests</a>   <a href="#">Sync</a>   <a href="#">Work Items</a>   <a href="#">Builds</a></li> <li>◦ <b>TFVC:</b> <a href="#">My Work</a>   <a href="#">Pending Changes</a>   <a href="#">Source Control Explorer</a>   <a href="#">Work Items</a>   <a href="#">Builds</a></li> </ul> </li> <li>• Greater integration with work items and Office-integration clients. You can open a work item or query result in an office supported client.</li> </ul> |

## Resources

- [Manage projects](#)
- [Project & Organizational Settings](#)

# Manage projects in Azure DevOps

1/31/2019 • 2 minutes to read • [Edit Online](#)

**Azure DevOps Services | Azure DevOps Server 2019 | TFS 2018 | TFS 2017 | TFS 2015 | TFS 2013**

Structure your projects by adding area paths, iteration paths, and teams.

## 5-minute quickstarts

- [Get started as an administrator](#)
- [Share your project vision](#)
- [Define area paths](#)
- [Define iteration paths or sprints](#)
- [Add a team](#)
- [Add users to a project or team](#)
- [Add administrators or set permissions at the project or collection level](#)

## Step-by-step tutorials

- [Change individual permissions, grant select access to specific functions](#)
- [Grant or restrict permissions to select tasks](#)
- [Customize a project \(Azure DevOps Services\)](#)

## Concepts

- [Customize a project \(TFS\)](#)
- [About areas and iterations](#)
- [About teams and Agile tools](#)
- [Resources granted to project members](#)

## How-to guides

- [Create a project](#)
- [Rename a project](#)
- [Delete a project :: moniker range="azure-devops"](#)
- [Restore a project :: moniker-end](#)
- [Change service visibility](#)
- [Connect to projects](#)

## Reference

- [Default permissions and access](#)
- [Permission lookup guide \(Security\)](#)
- [Azure DevOps data protection overview](#)

## Resources

- [Azure DevOps Services user guide](#)

- [Public Projects](#)
- [Security & identity](#)
- [Migrate from TFS to Azure DevOps Services](#)

# Organization management in Azure DevOps

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**Azure DevOps Services | Azure DevOps Server 2019 | TFS 2018 | TFS 2017 | TFS 2015 | TFS 2013**

Sign up for an organization, add users, and manage permissions and access.

- [About managing organizations](#)
- [Access with Azure AD](#)

## 5-minute quickstarts

- [Create your organization](#)
- [Try extensions for free](#)
- [Set permissions at the project or collection level](#)
- [Add a team admin](#)

## Step-by-step tutorials

- [Connect Azure DevOps to Azure Active Directory](#)
- [Change individual permissions](#)
- [Grant or restrict permissions](#)

## Concepts

- [Plan your organizational structure in Azure DevOps](#)
- [Add subscription user to organization](#)
- [Resources granted to project members](#)
- [Glossary](#)

## How-to guides

- [Set your preferences](#)
- Manage your organization
  - [Change your organization owner](#)
  - [Rename your organization](#)
  - [Delete your organization](#)
  - [Recover your organization](#)
  - [Sign in with different credentials](#)
  - [Change organization location \(region\)](#)
  - [Add privacy URL](#)
- Manage access to your organization
  - [Add users to your organization](#)
  - [Manage users](#)
  - [Manage conditional access](#)
  - [Link work accounts to Visual Studio subscriptions](#)
  - [Authenticate with personal access tokens](#)

- [Change app access policies](#)
- [Delete users](#)
- [Add external users](#)
- Access with Azure AD
  - [Add Azure AD group to Azure DevOps group](#)
  - [Add Azure DevOps users to Azure AD](#)
  - [Disconnect your organization from Azure AD](#)
  - [Delete Azure DevOps users connected to Azure AD](#)
- Manage extensions
  - [Install extensions](#)
  - [Assign paid extensions access](#)
  - [Approve requests for extensions](#)
  - [Uninstall or disable extensions](#)
- Manage group-based licensing
  - [Assign access levels and extensions](#)
  - [Migrate to group-based resource management](#)
  - [Remove direct assignments](#)

## Reference

- [Permissions and access \(Security\)](#)
- [Permission lookup guide \(Security\)](#)
- [Permissions and groups reference \(Security\)](#)
- [Azure DevOps data protection overview](#)
- [Migrate from TFS to Azure DevOps](#)

## Resources

- [Start using Azure DevOps](#)
- [Manage projects](#)
- [Billing](#)
- [Security and identity](#)
- [Manage extensions](#)
- [Service hooks](#)

# Security & identity

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**Azure DevOps Services | Azure DevOps Server 2019 | TFS 2018 | TFS 2017 | TFS 2015 | TFS 2013**

For anyone to access a 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 organization owner or a project administrator](#)
- [Add users to a 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/Azure AD 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 \(Azure DevOps\)](#)
- [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 \(Azure DevOps\)](#)
- [Server Administration \(TFS\)](#)
- [Billing](#)
- [Authentication guidance for REST APIs](#)
- [Azure DevOps Data Protection Overview](#)
- [Technical Articles](#)

# Billing management for Azure DevOps

1/31/2019 • 2 minutes to read • [Edit Online](#)

[Azure DevOps Services](#) | [Azure DevOps Server 2019](#) | [TFS 2018](#) | [TFS 2017](#) | [TFS 2015](#) | [TFS 2013](#)

## Billing for Azure DevOps

All charges appear on your monthly Azure bill. Azure supports payment by credit card as well as invoiced billing through the Enterprise Agreement (EA), Cloud Solution Providers (CSP), and more.

- [Azure DevOps pricing](#)
- [Azure DevOps billing overview](#)

## Billing for Microsoft Team Foundation Server (TFS)

You can also make some purchases for TFS on your monthly Azure bill.

- [TFS pricing](#)
- [How to buy TFS CALs or access to the TFS Test Services page](#)

## 5-Minute quickstarts

- [Set up billing](#)
- [Pay for users](#)
- [Buy Azure Pipelines](#)
- [Start free trials for paid features and extensions](#)
- [Buy cloud-based load testing](#)

## Step-by-step tutorials

- [Connect your organization to Azure Active Directory](#)

## How-to guides

### Billing management

- [Add user to make purchases or backup billing manager](#)
- [Change the Azure subscription your organization uses for billing](#)
- [Change the number of paid users on your organization](#)
- [Billing FAQ](#)

### Marketplace extension management

- [Change the number of paid users for an extension](#)
- [Approve requests for extensions](#)
- [Assign paid extensions to users](#)
- [Uninstall or disable extensions](#)

### Guidance for Cloud Solution Providers

- [Set up your customer](#)

- [Buy Azure DevOps for your customers](#)
- [Buy and manage Visual Studio subscriptions](#)
- [Buy App Center resources](#)

## Reference

- [Permissions](#)
- [About access levels](#)
- [Default permissions & access](#)
- [Azure DevOps data protection overview](#)

## Other resources

- [Start using Azure DevOps](#)
- [Manage organizations](#)
- [TFS Server Administration documentation](#)
- [Buy Visual Studio cloud subscriptions](#)
- [Buy Xamarin University subscriptions](#)