

# Contents

## GitHub & Azure Boards

[Connect Azure Boards to GitHub](#)

[Link GitHub commits and pull requests](#)

[Troubleshoot GitHub repository connection](#)

## Resources

[Get started with Azure Boards](#)

[Web portal navigation](#)

[Link work items](#)

[Work items](#)

[Process customization](#)

# GitHub & Azure Boards

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

## Azure Boards

Use this guide to connect Azure Boards with one or more GitHub repositories. If you need to sign up for Azure Boards, see our [Get started guide for Azure Boards](#).

By connecting Azure Boards with GitHub repositories, you enable linking between GitHub commits and pull requests to work items. You can use GitHub for software development while using Azure Boards to plan and track your work. Azure Boards provides the scalability to grow as your organization and business needs grow.

### NOTE

Azure Boards and GitHub integration is in Public Preview and supported only for Azure DevOps Services at this time.

Integration steps include:

- [Connect Azure Boards to GitHub](#)
- [Link GitHub commits and pull requests to work items](#)

### Additional resources

- [Web portal navigation](#)
- [Link work items](#)
- [Work items](#)
- [Process customization](#)

# Connect Azure Boards to GitHub

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

## Azure Boards

By connecting your Azure Boards project with GitHub repositories, you support linking between GitHub commits and pull requests to work items. You can use GitHub for software development while using Azure Boards to plan and track your work.

### NOTE

Azure Boards and GitHub integration is in Public Preview and supported only for Azure DevOps Services at this time.

## Prerequisites

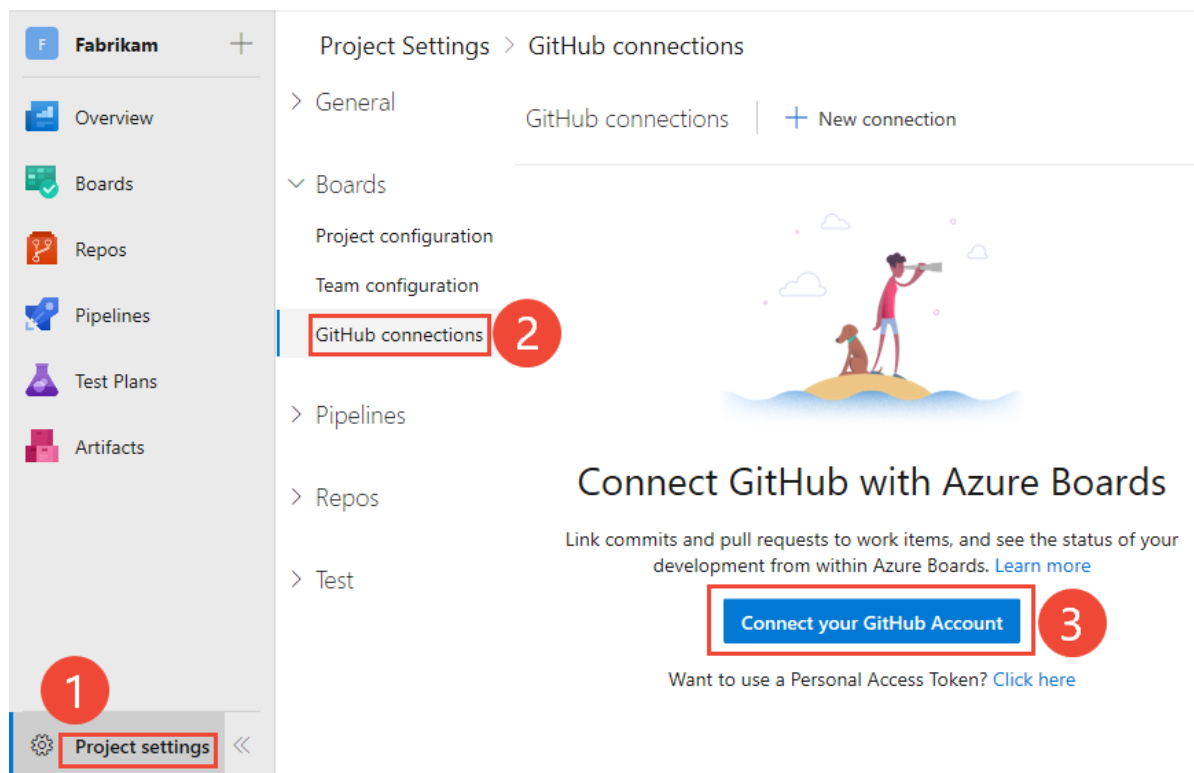
- You must connect to an Azure Boards or Azure DevOps project. If you don't have a project yet, [create one](#).
- You must be a member of the [Project Administrators group](#) and the project's [Contributors group](#). If you created the project, then you have permissions.
- You must be an administrator or owner of the GitHub repository you'll be connecting to.

### IMPORTANT

You can connect to multiple repositories so long as you are an administrator for those repositories.

## Add a GitHub connection and repository

1. Sign into Azure Boards. Make sure that you have [enabled New Navigation](#). You can only configure the GitHub repositories from the New Navigation user interface.
2. Choose (1) **Project Settings**, choose (2) **GitHub connections** and then (3) **Connect your GitHub Account**.



3. Enter your GitHub account credentials. Choose an account for which you are an administrator for the repositories you want to connect to.

The screenshot shows the GitHub sign-in page. At the top is the GitHub logo. Below it is a green checkmark icon. The text reads 'Sign in to GitHub to continue to Azure Boards'. There are two input fields: 'Username or email address' with the value 'JamalHart' and a clear button (X), and 'Password' with a masked password (dots) and a 'Forgot password?' link. A green 'Sign in' button is below the password field. At the bottom, there is a link: 'New to GitHub? [Create an account.](#)'.

4. If you have enabled two-factor authentication, enter the authentication code that GitHub sent you and choose **Verify**.



## Two-factor authentication

Authentication code

[What's this?](#)



Verify



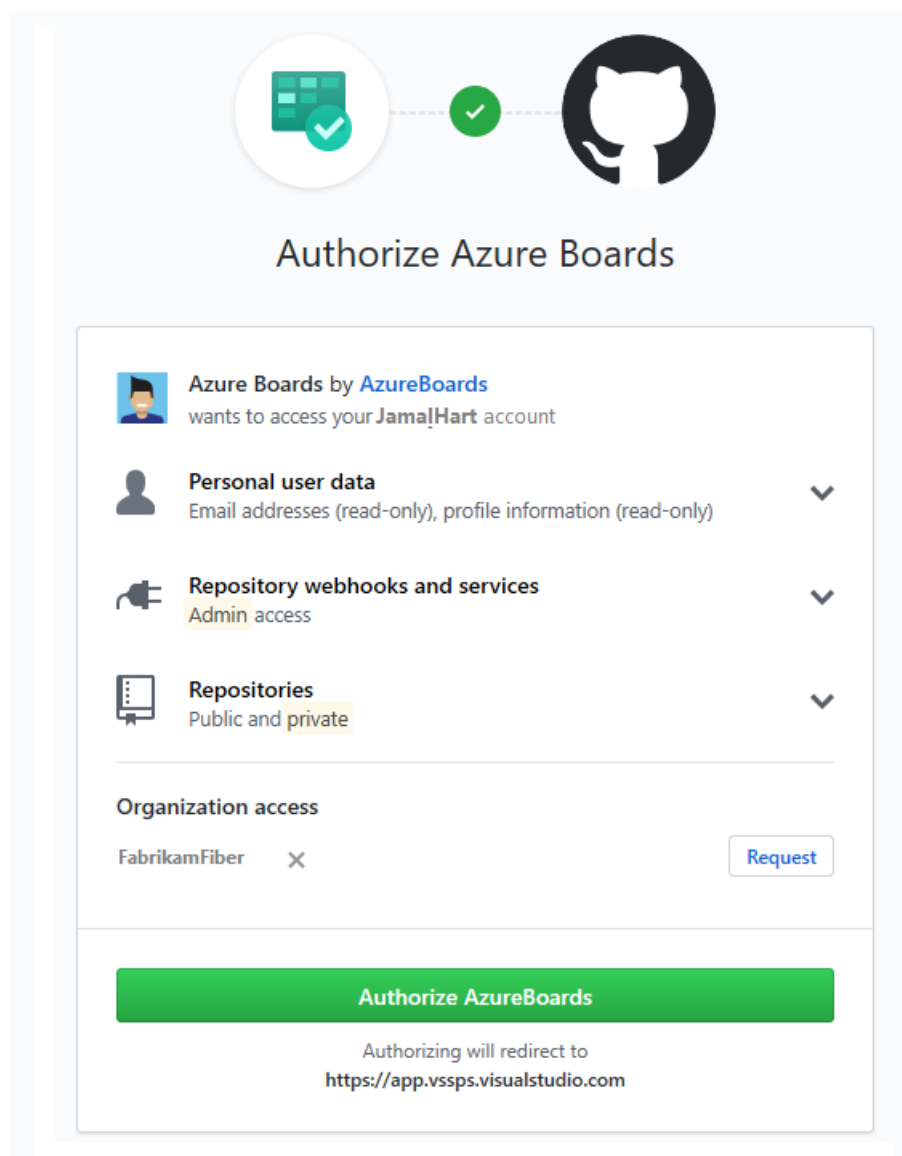
We just sent you a message via SMS with your authentication code. Enter the code in the form above to verify your identity.

[Re-send the code](#)

**Don't have your phone?**

[Enter a two-factor recovery code](#)

5. Review the GitHub authorization dialog that appears which indicates the information you'll allow Azure Boards to access from GitHub. Choose **Authorize AzureBoards** when ready.



6. In the Add GitHub repositories dialog, you'll see the list of repositories for which you are an administrator.

## Add GitHub repositories



Add the GitHub repositories you want to use with your Azure Boards.

[Learn more](#)

Filter by keywords All

Jama!Hart /fabrikam-apps

Jama!Hart /fabrikam-demo

Jama!Hart /fabrikam-open-source




Jama!Hart /fabrikam-suite

Can't find a repository? [Add manually](#)

Cancel

Save

Check the ones that you want to add and then choose **Save**. When done, you should see the new connection with the selected repository listed.

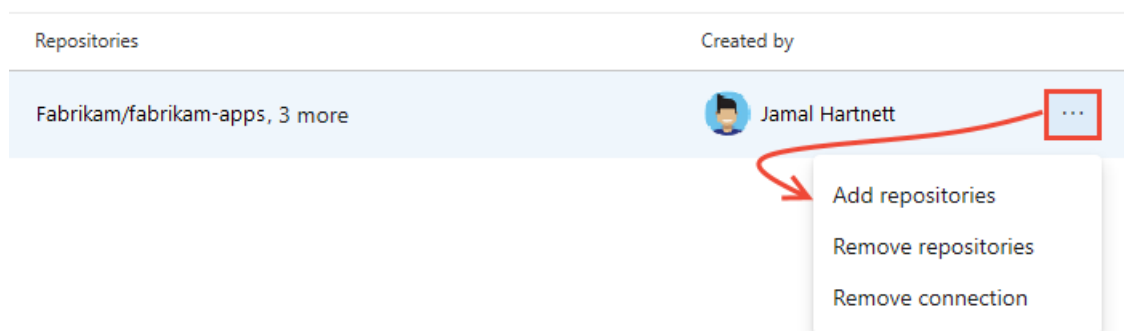
GitHub connections		+ New connection	
Connection	Auth type	Repos	Created by
 <b>Fabrikam</b>  GitHub	OAuth	JamalHart/fabrikam-apps	 Jamal Hartnett

#### TIP

We recommend that you only connect a GitHub repo to projects defined in a single Azure DevOps organization. Connecting the same GitHub repo to projects defined in two or more Azure DevOps organizations can lead to unexpected AB# mention linking. For details, see [Troubleshoot GitHub & Azure Boards integration](#).

## Add or remove repositories, or remove a connection

1. To add or remove repositories, open the **...** for the connection and choose **Add repositories** or **Remove repositories** from the menu.



2. To remove all repositories and the connection, choose the **Remove connection** option. Then, choose **Remove** to confirm.

### Confirmation



Are you sure you want to remove the 'Fabrikam' connection and all its repositories?

Cancel

Remove

## Use a Personal Access Token (PAT)

We recommend that you use OAuth to connect to your GitHub repository. However, if you need to use a PAT, you can by following these procedures.

#### TIP

When creating your GitHub PAT, make sure that you include these scopes:

```
repo, read:user, user:email, admin:repo_hook .
```

1. To choose a PAT when connecting a GitHub repository, choose **+ New Connection** and then choose the **Click here** link.

### Add GitHub Connection



Link another GitHub account to Azure Boards. [Learn more](#)

Connect your GitHub Account

Want to use a Personal Access Token? [Click here](#)

To create a GitHub PAT, go to [GitHub Developer Settings > Personal access tokens](#).

2. Enter the PAT and choose **Connect**.

### Add GitHub Connection



First you need to link your GitHub account to Azure Boards. [Learn more](#)

Personal Access Token

Ensure your token has the following scopes:  
repo, read:user, user:email, admin:repo\_hook

[View your personal access tokens in GitHub.](#)

Cancel

Connect

## Resolve connection issues

See [Troubleshoot GitHub repository connection](#).

## Try this next

[Link GitHub commits and pull requests to work items](#)

## Related articles

- [What is Azure Boards?](#)
- [Troubleshoot GitHub & Azure Boards integration](#)



# Link GitHub commits and pull requests to work items

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

## Azure Boards

When using GitHub with Azure Boards, it's easy to keep all of your work connected. Links can be added using the **#mention** syntax familiar to GitHub users or from the Azure Boards work item.

### NOTE

Azure Boards and GitHub integration is in Public Preview and supported only for Azure DevOps Services at this time.

## Prerequisites

- Your Azure Boards project must be connected to the GitHub repository where the commits and pull requests you want to link to/from exist. For details, see [Connect Azure Boards to GitHub](#).
- You must be a Contributor to Azure Boards.
- You must be a Contributor to the GitHub repository.
- If your organization uses the Hosted XML process model to customize the work tracking experience, you'll need to update the work item types to link to and view the GitHub link types from the Development section in the work item form. For details, see [Update XML definitions for select work item types](#).

## Use AB# mention to link from GitHub commits and pull requests

From a GitHub commit or pull request, use the following syntax to create a link to your Azure Boards work item. Enter the `AB#ID` within the text of a commit message, for a pull request, enter the `AB#ID` within the pull request title or description (not a pull request comment).

`AB#{ID}`

For example, `AB#125` will link to work item ID 125.

In addition, you can enter a commit or pull request message to transition the work item. The system will recognize `fix`, `fixes`, `fixed` and apply it to the #-mention item that follows. Some examples are provided as shown.

Examples:

COMMIT MESSAGE	ACTION
<code>Fixed AB#123</code>	Links and transitions the work item to the "done" state.
<code>Adds a new feature, fixes AB#123.</code>	Links and transitions the work item to the "done" state.
<code>Fixes AB#123, AB#124, and AB#126</code>	Links to Azure Boards work items 123, 124, and 126. Transitions only the first item, 123 to the "done" state.
<code>Fixes AB#123, Fixes AB#124, Fixes AB#125</code>	Links to Azure Boards work items 123, 124, and 126. Transitions all items to the "done" state.

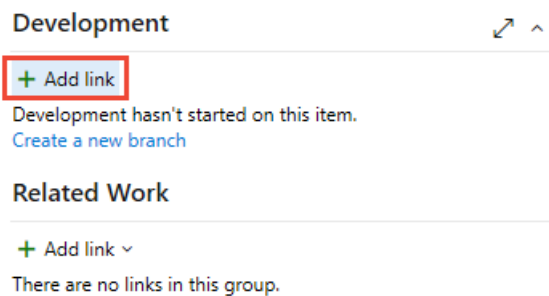
COMMIT MESSAGE	ACTION
Fixing multiple bugs: issue #123 and user story AB#234	Links to GitHub issue 123 and Azure Boards work item 234. No transitions.

#### NOTE

If you have connected the same GitHub repo to projects defined in two or more Azure DevOps organizations, you may see unexpected **AB#** mention linking. For details, see [Troubleshoot GitHub & Azure Boards integration](#). For this reason, we recommend that you only connect a GitHub repo to projects defined in a single Azure DevOps organization.

## Add link from work items to GitHub commits and pull requests

1. Open the work item and choose **Add Link** under the Development section.



2. From the Add link dialog, select the **GitHub Commit** or **GitHub Pull Request** link type, enter the URL to the commit or pull request, and then choose **OK**.

Here, we add a link to a GitHub pull request.

×

### Add link

You are adding a link from:

78 Upload initial files  
Updated 2 minutes ago, ● New

Link type

GitHub Pull Request

▼

GitHub pull request url \*

https://github.com/Fabrikam/fabrikam-apps/pull/2482


Comment

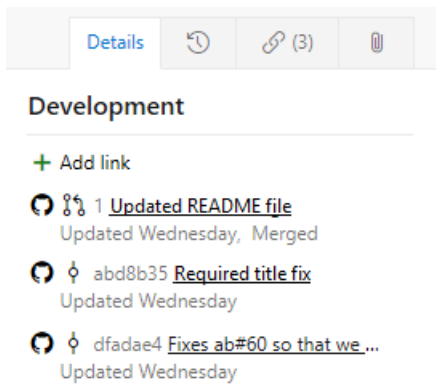
OK

Cancel

Azure Boards performs a check to ensure that you've entered a valid link. The linked-to GitHub repository [must be integrated with the project](#) or the validation will fail.

# View or open links from the Development section

The Development section within the work item form lists the links created to GitHub commits and pull requests with the  GitHub icon.



Choose the link provided to open the commit or pull request in GitHub.

## Related articles

- [Connect Azure Boards to GitHub](#)
- [Linking, traceability, and managing dependencies](#)
- [Troubleshoot GitHub & Azure Boards integration](#)

# Troubleshoot GitHub & Azure Boards integration

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

## Azure Boards

When you create a GitHub connection, you are granted access to GitHub as an OAuth app or by using a Personal Access Token (PAT).

The access by Azure Boards to the GitHub repo can be revoked in one or more ways. If the user who created the connection PAT is revoked or the permission scope changes, then the Azure Boards access is revoked. Or the OAuth app's authorization can be revoked entirely for a given repo.

### NOTE

Azure Boards and GitHub integration is in Public Preview and supported only for Azure DevOps Services at this time.

## Unexpected results when linking to projects defined in two or more Azure DevOps organizations

If you connect your GitHub repository to two or more projects that are defined in more than one Azure DevOps organization, such as dev.azure.com/Contoso and dev.azure.com/Fabrikam, you may get unexpected results when using **AB#** mentions to link to work items. This problem occurs because work item IDs are not unique across Azure DevOps organizations, so **AB#12** can refer to a work item in either the Contoso or Fabrikam organization. So, when a work item is mentioned in a commit message or pull request, both organizations will attempt to create a link to a work item with a matching ID (if one exists).

In general, a user intends an **AB#** mention to link to a single work item in one of the projects. However, if a work item of the same ID exists in both accounts, then links are created for both work items, likely causing confusion.

Currently, there is no way to work around this issue, so we recommend that you connect a single GitHub repository only to a single Azure DevOps organization.

## Resolve connection issues

When the Azure Boards connection to GitHub no longer has access, it shows an alert status in the user interface with a red-X that has a tooltip such as, *Unable to connect to GitHub*.

To resolve the problem, consider the following:

- **If the connection is using OAuth:**

- The Azure Boards application had its access denied for one of the repositories.
- GitHub might be unavailable/unreachable. This could be due to an outage in either service or an infrastructure/network issue on-prem. You can check service status from the following links:
  - [GitHub](#)
  - [Azure Devops](#)

To resolve the first issue, delete and recreate the connection to the GitHub repository. This will cause GitHub to prompt to reauthorize Azure Boards.

- **If the connection is using a PAT:**

- The PAT may have been revoked or the required permission scopes changed and are insufficient.
- The user may have lost admin permissions on the GitHub repo.

To resolve, recreate the PAT and ensure the scope for the token includes the required permissions:

```
repo, read:user, user:email, admin:repo_hook .
```

## Update XML definitions for select work item types

If your organization uses the Hosted XML process model to customize the work tracking experience and you want to link to and view the GitHub link types from the Development section in the work item forms, you'll need to update the XML definitions for the work item types.

For example, if you want to link user stories and bugs to GitHub commits and pull requests from the Development section, then you need to update the XML definitions for user stories and bugs.

Follow the sequence of tasks provided in [Hosted XML process model](#) to update the XML definitions. For each work item type, find the `<Group Label="Development">` section, and add the following two lines in the following code syntax to support the external links types: **GitHub Commit** and **GitHub Pull Request**.

```
<ExternalLinkFilter Type="GitHub Pull Request" />
<ExternalLinkFilter Type="GitHub Commit" />
```

When updated, the section should appear as shown.

```
<Group Label="Development">
  <Control Type="LinksControl" Name="Development">
    <LinksControlOptions ViewMode="Dynamic" ZeroDataExperience="Development" ShowCallToAction="true">
      <ListViewOptions GroupLinks="false">
      </ListViewOptions>
      <LinkFilters>
        <ExternalLinkFilter Type="Build" />
        <ExternalLinkFilter Type="Integrated in build" />
        <ExternalLinkFilter Type="Pull Request" />
        <ExternalLinkFilter Type="Branch" />
        <ExternalLinkFilter Type="Fixed in Commit" />
        <ExternalLinkFilter Type="Fixed in Changeset" />
        <ExternalLinkFilter Type="Source Code File" />
        <ExternalLinkFilter Type="Found in build" />
        <ExternalLinkFilter Type="GitHub Pull Request" />
        <ExternalLinkFilter Type="GitHub Commit" />
      </LinkFilters>
    </LinksControlOptions>
  </Control>
</Group>
```

# Start using Azure Boards (Basic process)

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

## Azure Boards

Use this guide to sign up and start using Azure Boards.

### 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](https://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](#)

Start with [Sign up and invite some teammates](#).

Then, read [Track issues and tasks](#) to start adding and tracking issues on the Kanban board. To add columns, swimlanes, or fields to your board, see [Customize your boards](#).

### NOTE

This quickstart guide illustrates how to sign up, create a project based on the Basic process, and start tracking issues and tasks. If you want more information on working with other processes which offer other work item types, such as user stories and bugs, then see [Choose a process](#).

If you use GitHub and want to track your issues in Azure Boards, see [GitHub & Azure Boards](#).

If you are tasked with managing Azure Boards settings, review [Manage your Azure Boards project](#) for additional configurations and resources that you may want to make.

## Reference

- [Basic fields reference](#)
- [Key concepts](#)
- [Best tool for the job](#)
- [Default permissions & access \(Security\)](#)
- [Why use Azure Boards?](#)
- [Connect a project to GitHub](#)

## Additional resources

- [Web portal navigation](#)
- [Work items](#)
- [Sprints \(Scrum\)](#)
- [Process customization](#)

# 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.

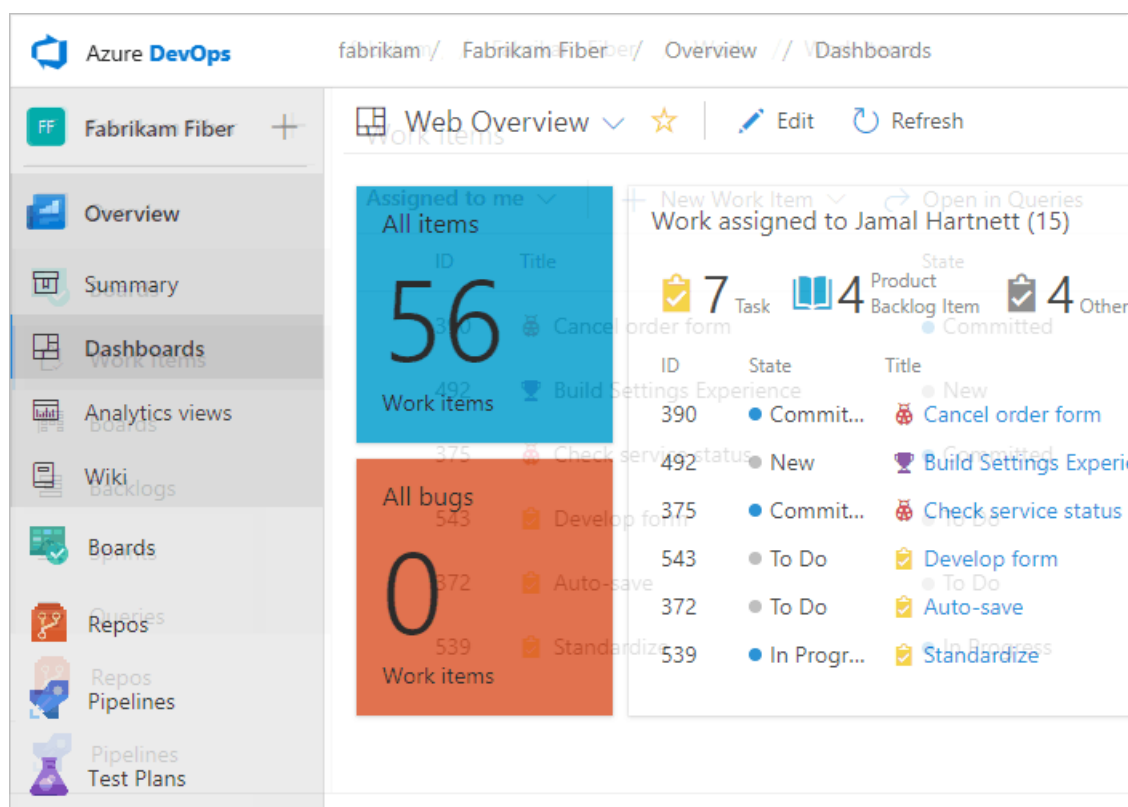
Choose the **Previous navigation** tab for guidance. **New navigation** isn't supported for TFS 2018 and earlier versions.

#### 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.



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>• Web-based Test Management</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](#)

# Link user stories, issues, bugs, and other work items

1/31/2019 • 10 minutes to read • [Edit Online](#)

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

You can add a link to a work item from within the work item form or from a backlog or query results list. From a backlog or query results list, you can [select multiple work items](#) and then link them to a new or existing work item. In general, use the bulk edit to update several work items to link to the same work item, either new or existing.

Use this article to learn how to:

- Link one or more work items to an existing work item
  - Link one or more work items to a new work item that you add when linking
  - Add a link to a remote work item
  - Link several work items to a new git branch
  - Find work items that you want to link to
  - Bulk modify link relationships
- 
- Link one or more work items to an existing work item
  - Link one or more work items to a new work item that you add when linking
  - Link several work items to a new git branch
  - Find work items that you want to link to
  - Bulk modify link relationships

For a list of all link types and supported link relationships, see [Linking, traceability, and managing dependencies](#).

## Prerequisites

- You must connect to a project. If you don't have a project yet, [create one](#).
- You must be added to a project as a member of the **Contributors** or **Project Administrators** security group. To get added, [Add users to a project or team](#).
- To add or modify work items, you must be granted **Stakeholder** access or higher. For details, see [About access levels](#).
- To view or modify work items, you must have your **View work items in this node** and **Edit work items in this node** permissions set to **Allow**. By default, the **Contributors** group has this permission set. To learn more, see [Set permissions and access for work tracking](#).

### NOTE

Users with **Stakeholder** access for a public project have full access to backlog and board features just like users with **Basic** access. For details, see [About access levels](#).

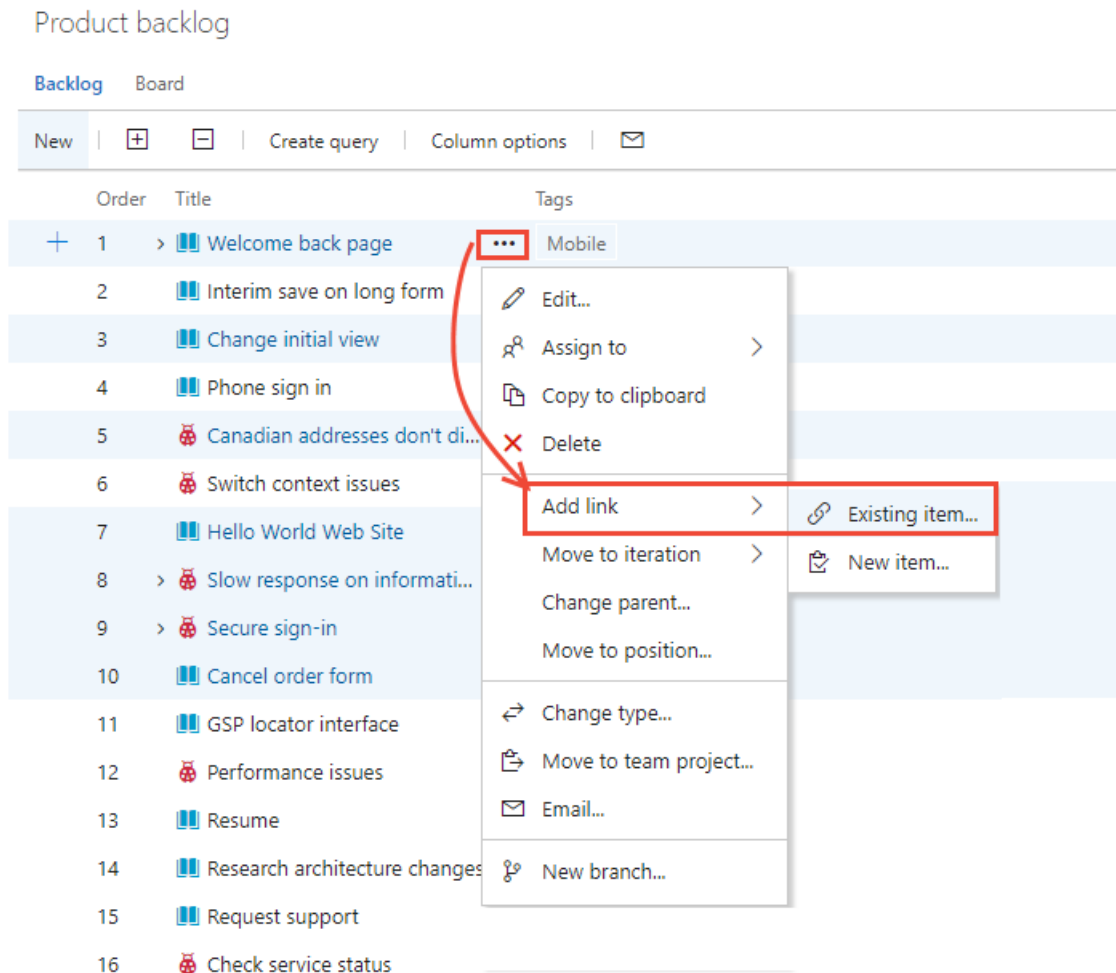
- You must connect to a project. If you don't have a project yet, [create one](#).
- You must be added to a project as a member of the **Contributors** or **Project Administrators** security group. To get added, [Add users to a project or team](#).
- To add or modify work items, you must be granted **Stakeholder** access or higher. For details, see [About access levels](#).
- To view or modify work items, you must have your **View work items in this node** and **Edit work items in this node** permissions set to **Allow**. By default, the **Contributors** group has this permission set. To learn more,

see [Set permissions and access for work tracking](#).

## Link several work items

1. From the web portal, open a [backlog](#) or [query results](#) page, and [multi-select the work items](#) you want to add a link to.
2. Open the **...** actions icon menu of one of the selected work items, choose **Add link**, and then choose **Existing item...** or **New item....**

Here we multi-select from the product backlog and choose **Existing item....**



1. From the web portal, open a query results page, and [multi-select the work items](#) you want to add a link to.
2. Open the ... context menu of one of the selected work items, and then choose **Link to a new item...** or **Link to an existing item....**

Here we multi-select from the Queries page and choose **Link to a new item....**

Product Planning

Results Editor Charts

Save query ↺ ↻ ⏏ 🔗 📧 | 📄 📁 | Column options Copy query URL

ID	State	Title
31	● New	Convert all client service calls from using experimental OData to the supported
32	● New	Scan all code base and identify the affected code in suite apps.
33	● New	Identify the affected code in service apps.
34	● New	code base affected by the vulnerability.
35	● New	code base affected by the vulnerability.
36	● New	
37	● New	
38	● New	box to checkin sequence
39	● New	ion
40	● New	or code analysis
41	● New	ecture
1	● New	tions to all devices
2	● New	ort Rest API
3	● New	
4	● New	with popular email clients
5	● New	ice interfaces to Rest API
6	● New	table frameworks
7	● New	M clients

⏏ Open

Open in new window

✎ Edit...

📌 Assign to >

Move to iteration >

✖ Delete

📁 Templates >

Clone work item

📄 Create copy of work item...

🔗 Link to a new work item...

+ Link to an existing item...

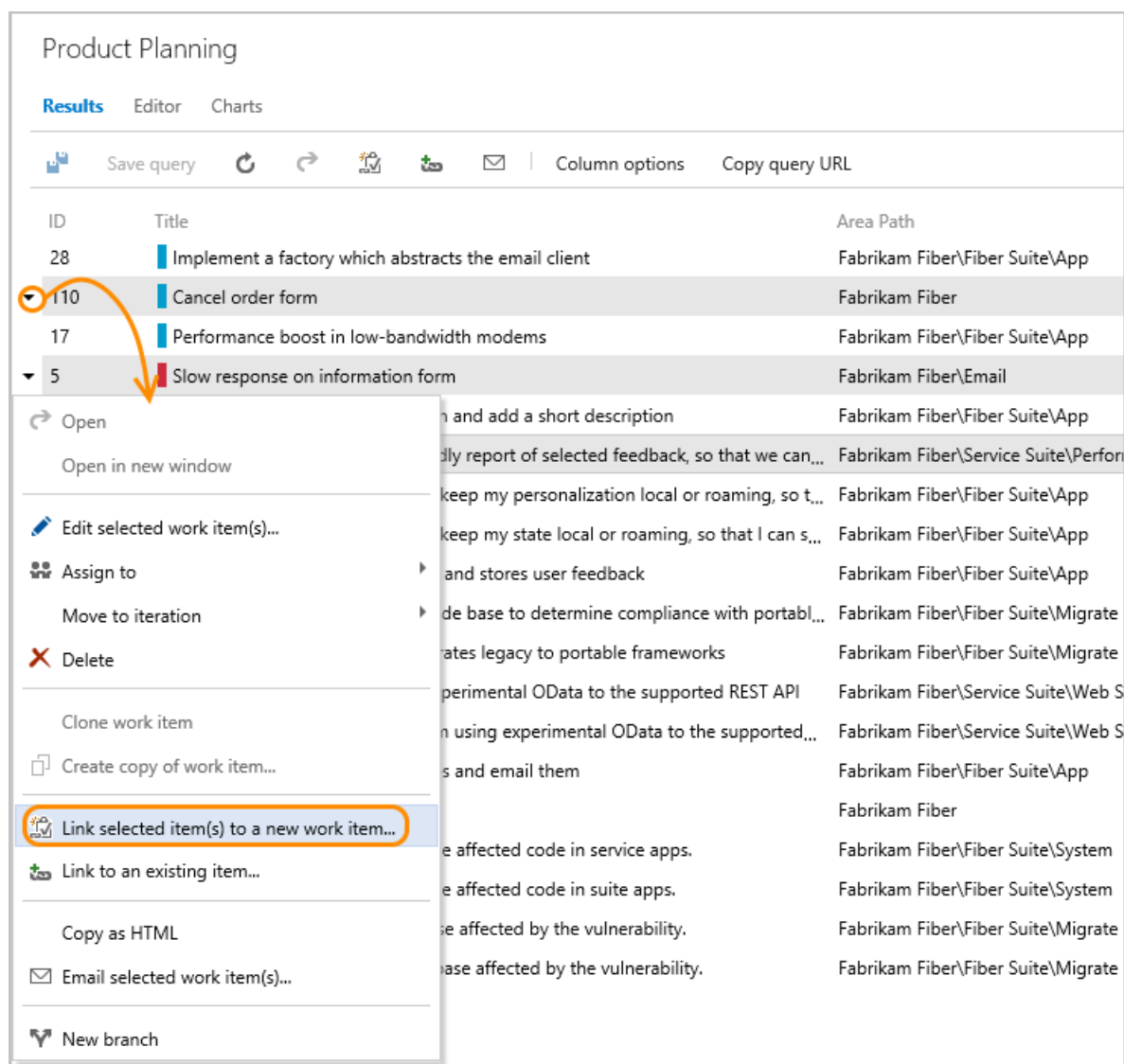
📄 Copy as HTML

📧 Email...

🔗 New branch...

1. From the web portal, open a query results page, and [multi-select the work items](#) you want to add a link to.
2. Open the context menu of one of the selected work items, and then choose **Link selected item(s) to a new work item...** or **Link to an existing item....**

Here we multi-select from the Queries page and choose **Link selected item(s) to a new work item....**



## Link to an existing work item

When you link work items, you select a link type. In general, use the following link types as indicated. To learn more about each link type, see [Link type reference](#).

- Use the **Duplicate** link type when two work items have been created that essentially capture the same information; close one of the work items and keep the other one active
  - Use the **Parent/Child** link types when you want to break down work items into smaller items—for example, break down features into stories, or stories into tasks
  - Use **Predecessor-Successor** link types when you want to track tasks that must be completed before others can be started; this link type is most often used when you plan work using Project
  - Use the **Related** link type when the work items being linked are at the same level—such as two user stories that define features that overlap one another—or to link work items that are defined in different projects or managed by different teams.
- [Browser](#)
  - [Visual Studio](#)



From the Add link dialog, select the link type, enter a work item ID, and then choose OK.

For example, here we use the **Related** link type to link three items to the bug with ID of 400.

## Add link



You are adding a link from:

 3 items 

Link type




Related



☒ Work items to link

Enter ID or search for work items



  400 Canadian addresses don't display correctly  
Updated 3/28/2018,  Approved

Comment

OK

Cancel



To link to multiple work items, you can use inline add which finds work items based on your recent activity or keyword searches. Simply select one or more of the work items displayed automatically based on your recent activity, or enter a keyword. Keyword searches will display work items based on work items that include that keyword in their title.

### NOTE

You need to add each link one at a time. (You can no longer enter their IDs separated by commas or spaces.) To quickly find work items of interest, you can also use [work item search](#).

×

## Add link

You are adding a link from:

3 items

Link type

Related

☒ Work items to link
 

400

...

400 Canadian addresses don't display correctly  
 Updated 9/15/2017, ● Approved

Comment

OK

Cancel

To link to multiple work items, enter their IDs separated by commas or spaces. If you don't know the IDs or you want to link to an item in a different project, you can choose the ... context menu to open a dialogue that will support you in [choosing work items based on IDs, a query, or title keyword](#).

To view the work items selected for linking, you can choose the .

×

## Add link

You are adding a link from:

3 items

Link type

Related

☒ Work items to link
 

400

360 Change initial view  
 Updated 9/15/2017, ● New

361 Interim save on long form  
 Updated 10/20/2017, ● Approved

363 Welcome back page  
 Updated 10/20/2017, ● Approved

If you are working from the Query Results page, you'll need to bulk save the work items you've modified. When you work from a backlog, work items are automatically saved.



State	Assigned To	Title
New	Jamal Hartnett	Cancel order form
New	Jamal Hartnett	Hello World web site
New	Jamal Hartnett	Change background color
New	Jamal Hartnett	Change page layout
New	Jamal Hartnett	Develop about page
New	Christie Church	Slow response on form
New	Jamal Hartnett	Welcome back page

Save items

Column options

Email query

Copy query URL

Product Planning

Results Editor Charts

Save query Refresh Undo Redo Link Copy Column options Copy query URL

ID	Title	State	Iteration Path
398	Cancel order form	Active	Fabrikam Agile Project
468	Customer account history	Active	Fabrikam Agile Project
350	Update and retest service code	New	Fabrikam Agile Project\Iteration 3
345	As a <user>, I can select a number of elements	Active	Fabrikam Agile Project\Iteration 1
346	Add animated emoticons	New	Fabrikam Agile Project\Iteration 3
347	Implement a service that receives alerts	New	Fabrikam Agile Project\Iteration 3
344	Implement a factory which abstracts	Active	Fabrikam Agile Project\Iteration 1

## Link to a new work item

Here, we have selected to add a link to the selected work items.

1. Specify the link type, work item type, and title of the new work item. Choose **OK**.

×

Add link

You are adding a link from:

3 items

i

Link type

Related

▼

Work item type

Issue

▼

Title

Review security issues prior to deployment

Comment

OK

Cancel

×

Add New Linked Work Item to Multiple Items

Select the link type and the details.

Link type

Related

▼

Work item type

Issue

▼

Title

Review security issues prior to deployment

×

(New work item)

→

User Story 346 (New):  
Add animated emoticons

Comment

OK

Cancel

2. A work item of the type selected opens. Enter additional information and save the work item.

NEW ISSUE \*
↗ ✕

Review security issues prior to development

Jamal Hartnett
0 comments
Add tag
Save & Close
↺ ↻ ⋮

State	Active	Area	Fabrikam Fiber
Reason	New	Iteration	Fabrikam Fiber

Details
Related Work items
↺
(3)
📎

3. If you are working from the Query Results page, you'll need to bulk save the work items you've modified as shown in the previous procedure.

## Link to a remote work item

You can link work items to objects defined in other Azure DevOps organizations as long as both organizations use the same Azure Active Directory to manage users.

Choose from one of the following two remote link types supported.

- Use the **Consumes From/Produces For** link types when you want to track dependencies of work items that are defined in different organizations and managed by different teams.
- Use the **Remote Related** link type when the work items being linked are defined in different organizations and managed by different teams, but don't have strong inter-dependencies.

From the Add link dialog, select the link type, enter the URL of the remote work item, and then choose OK.

For example, here we use the **Remote Related** link type to link to work item ID 350 that exists in the *remotelinkingtest2* organization, *RemoteLinking* project.

Add link
✕

You are adding a link from:

📍 649 Hello World  
Updated 21 hours ago, ● New

Link type

Remote Related

Remote work item url \*

https://dev.azure.com/remotelinkingtest2/RemoteLinking/\_workitems/edit/350 ✕

📍

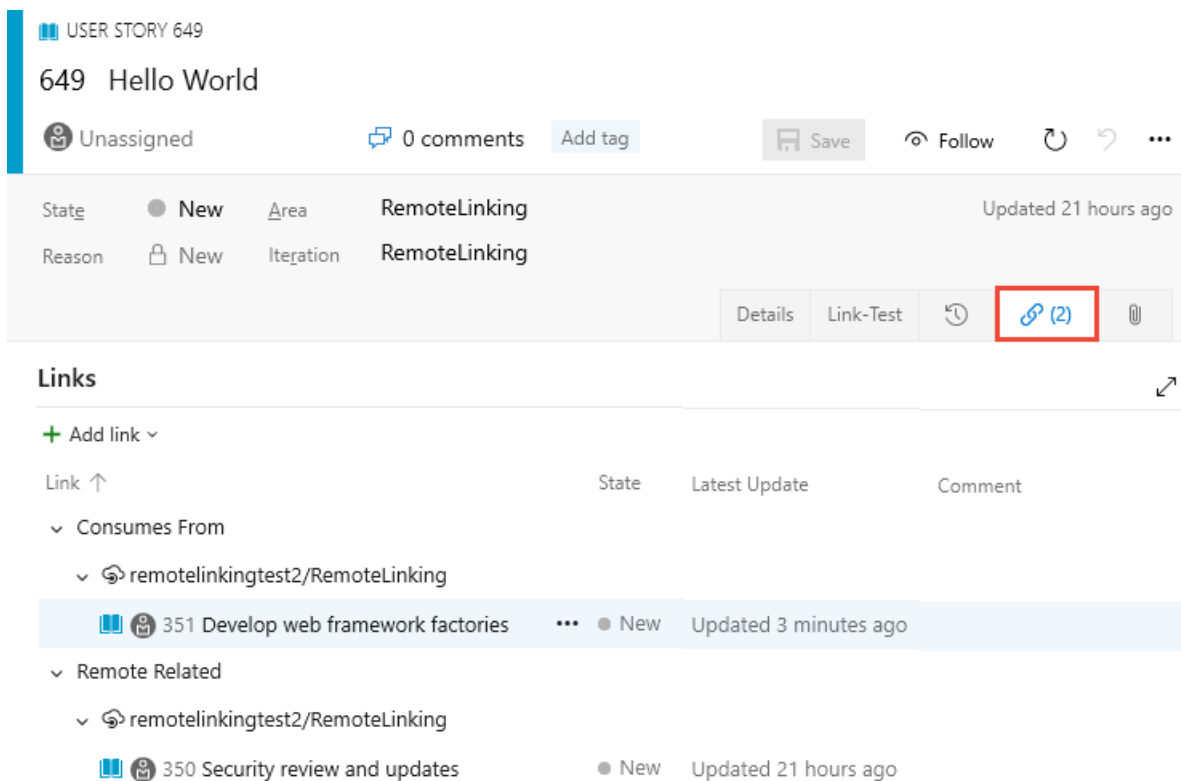
🎯 350 Security review and updates  
Updated 21 hours ago, ● New

Comment

OK Cancel

The link tab maintains a count of all links to the work item. The [Remote Link Count field](#) maintains a count of the number of links added to a work item that link to a work item defined in another project or organization.

The following image shows an example of two remote links, indicated by the  cloud icon, added to a user story.



The screenshot displays a Jira user story titled "649 Hello World". The story is in the "New" state, assigned to "Unassigned", and is located in the "RemoteLinking" area. It has 0 comments and was updated 21 hours ago. The "Links" tab is active, showing two remote links. The first link is "351 Develop web framework factories" (New, Updated 3 minutes ago). The second link is "350 Security review and updates" (New, Updated 21 hours ago). Both links are marked as "Remote" with a cloud icon. The "Links" section is titled "Links" and includes a "+ Add link" button. The "Links" table has columns for "Link", "State", "Latest Update", and "Comment".

Link	State	Latest Update	Comment
Consumes From			
remotelinkingtest2/RemoteLinking			
351 Develop web framework factories	New	Updated 3 minutes ago	
Remote Related			
remotelinkingtest2/RemoteLinking			
350 Security review and updates	New	Updated 21 hours ago	

## Link several work items to a new git branch

You can add a new git branch and link them to existing work items at the same time.

From a backlog or query results page, [multi-select the work items](#) you want to link to a new git branch, choose the **...** actions icon, and then **New branch...** To learn more, see [Link work items to Git development objects](#).

## Product backlog

Backlog

Board

New



Create query

Column options



Order	Title	Tags
+ 1	> Welcome back page	... Mobile
2	Interim save on long form	...
3	Change initial view	...
4	Phone sign in	...
5	Canadian addresses don't disp	...
6	Switch context issues	...
7	Hello World Web Site	...
8	> Slow response on information	...
9	> Secure sign-in	...
10	Cancel order form	...
11	GSP locator interface	...
12	Performance issues	...
13	Resume	...
14	Research architecture changes	...
15	Request support	...
16	Check service status	...

- Edit...
- Assign to >
- Copy to clipboard
- Delete
- Templates >
- Add link >
- Move to iteration >
- Change parent...
- Move to position...
- Change type...
- Move to team project...
- Email...
- New branch...

## Stories

Backlog

Board

Forecast

New



Create query

Column options



Order	Story Points	State	Title	Iteration Path
1		New	Resume	Fabrikam Fiber
		ew	> Hello World Web Site	... Fabrikam Fiber\Iteration 2
		ew	> Show response on welcome page	Fabrikam Fiber\Iteration 2
		ew	Change the initial view	... Fabrikam Fiber
		ew	> Add an information form	Fabrikam Fiber\Iteration 2
		ew	Secure sign on	... Fabrikam Fiber\Iteration 2
		ew	Welcome back page	Fabrikam Fiber
		ew	Check issues with permissions	Fabrikam Fiber
		ew	Log on	Fabrikam Fiber
		ew	Interim save on long forms	Fabrikam Fiber
		ew	Search on phone	Fabrikam Fiber
		ew	Resume stories	Fabrikam Fiber
		ew	Design page	Fabrikam Fiber

- Add link >
- Edit...
- Copy to clipboard
- Change type...
- Move to team project...
- Email...
- Change position...
- Move to iteration >
- Assign to >
- New branch...

## Find work items to link to

From the Add link dialog you can open a secondary dialog to help you choose one or more work items to link to. If

you are going to find and list work items to link to by using a saved query, first [define the query](#) that you want to use.

1. From the Add link dialog, choose the ... context menu or **Browse** button (Visual Studio) to open the following dialog.

Choose Linked Work Items

Project  
Fabrikam Fiber

Select one of the following methods to find available work items:

☐ Query <Select a Query>

☐ IDs

☒ Title contains welcome

and type All Work Item Types

Find

Select items to add to the work item list

ID	Work Item...	Title
40	User Story	Welcome back page
46	Bug	Slow response on welcome page

2 work item(s) found.

Select All Unselect All Reset

OK Cancel

If the work items are defined in another project, then first select the Project. Then, make your selections:

- **Query.** Use this method when you have defined a query that you know contains the set or superset of the work items that you want.
- **IDs.** Use this method when you know the IDs of the work items that you want to link to. In the **IDs** box, type the IDs of the work items that you want to find, separated by commas or spaces.
- **Title contains.** Use this method to find work items that have a common word or phrase in the title field. In the **and type** list, click the type of work item that you want to retrieve.

**NOTE**

To minimize the time required to run the query, narrow the filter criteria of the search.

2. Click the **Find** button.

Only those work items defined for the selected project and specified work item type are listed. To sort on a column field, choose the column title.

3. In the list of returned work items, select one or more work items.



- From the web portal: To select several items in a sequence, hold down the shift key. To select several

non-sequential items, use the Ctrl key.

- For Visual Studio, select each work item that should link to the current work item. You can also press the SHIFT key while clicking to select a range of work items, or press the CTRL key while clicking to select multiple work items.

## Additional bulk-modify link options

Additional features you can use to quickly link or change links that use the parent-child link type (some features are version dependent, see the linked topic for details):

- To quickly link backlog items to portfolio backlog items with parent-child links, [use the mapping pane to organize your backlog](#). Or, you can choose to Show Parents and [drag-and-drop items within the tree hierarchy](#).
- To create and link tasks to backlog items, [use the sprint backlog page](#).
- To indent () , outdent () , and change the tree hierarchy, use a tree query in Visual Studio.
- To add or delete work items or change the link structure, you can use Excel or Project. See [Bulk add or modify work items with Excel](#) and [Create your backlog and tasks using Project](#).

## Related articles

- [Map backlog items to portfolio backlog items](#)
  - [Link work items to Git development objects](#)
  - [Link GitHub commits and pull requests to work items](#)
  - [Use Excel to edit parent-child links](#)
  - [Use Project to edit parent-child and predecessor-successor links](#)
  - [Linking, traceability, and managing dependencies](#)
- 
- [Map backlog items to portfolio backlog items](#)
  - [Link work items to Git development objects](#)
  - [Use Excel to edit parent-child links](#)
  - [Use Project to edit parent-child and predecessor-successor links](#)
  - [Linking, traceability, and managing dependencies](#)

# Work items

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

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

Track the features and requirements you're developing, code defects or bugs, and other particulars using work items.

## 5-Minute Quickstarts

- [View and add work items](#)
- [Add work items](#)
- [Drive Git development](#)
- [Add work items](#)
- [Drive Git development](#)
- [Add work items](#)

## Step-by-Step Tutorials

- [Follow work](#)
- [Manage bugs](#)
- [Manage issues](#)
- [Move, change, or delete items](#)
- [Link work items](#)
- [Bulk modify \(web\)](#)
- [Manage bugs](#)
- [Manage issues](#)
- [Remove or delete items](#)
- [Link work items](#)
- [Bulk modify \(web\)](#)

## Concepts

- [Choose a process](#)
- [Agile process guidance](#)
- [CMMI process guidance](#)
- [Scrum process guidance](#)
- [Agile glossary](#)

## How-to Guides

- [Use @mentions to further discussion](#)
- [Use #ID to link to work items](#)
- [Add tags to work items](#)
- [Use work item templates](#)



- [Add tags to work items](#)
- [Use work item templates](#)

## Reference

- [Permissions and access for work tracking](#)
  - [Work item form controls](#)
  - [Keyboard shortcuts for work item forms & the Work Items page](#)
  - [Work item field index](#)
- 
- [Permissions and access for work tracking](#)
  - [Work item field index](#)

## Resources

- [Backlogs](#)
- [Kanban](#)
- [Scrum](#)
- [Queries](#)
- [Customization](#)

# About process customization and inherited processes

1/31/2019 • 12 minutes to read • [Edit Online](#)

## Azure Boards | Azure DevOps Server 2019

To customize the work tracking system, you *customize* an inherited process through the administrative user interface for the organization. All projects that use an inherited process get the customizations made to that process. On the other hand, you *configure* your Agile tools—[Backlogs](#), [Sprints](#), [Kanban boards](#), and [Taskboard](#)—for each team.

### IMPORTANT



To customize an on-premises project or update XML definition files to support customization, see [On-premises XML process model](#). This article applies to Azure DevOps Services and Azure DevOps Server 2019 only.

There are a number of customizations you can make. The primary ones are adding custom work item types (WITs) or modifying an existing WIT to add custom fields, modify the layout, or change the workflow.

Below you'll find an index to those tasks you can perform to customize an inherited process. Some options of inherited elements are locked and can't be customized.

## System versus inherited processes

You'll see two types of processes:

-  System processes —[Scrum](#), [Agile](#), and [CMMI](#)—which are locked from being changed.
-  Inherited processes, which you can customize and that inherit definitions from the system process from which they were created. System processes are owned and updated periodically by Microsoft. Any updates made to a system process will automatically update your inherited process.

In addition, all processes are shared. That is, one or more projects can use a single process. Instead of customizing a single project, you customize a process. Changes made to the process automatically update all projects that use that process.

Once you've created an inherited process, you can customize it, create projects based on it, make a copy of it, and change existing projects to use it.

For example, as shown in the following image, you see a list of projects defined for the *fabrikam* organization. The second column shows the process used by each project. To change the customizations of the *Fabrikam Fiber* project, you need to modify the *MyAgile* process (which inherits from the *Agile* system process). Any changes you make to the *MyAgile* process will also update the *Test Agile* project. You can't customize the *Scrum Project*, on the other hand, until you change it to a process which inherits from Scrum.

OverviewSettingsSecurityProcessBuildAgent PoolsNotificationsExtensionsUsage

Account / fabrikamProjects

Description

New team project... | ↺

Project name	Process	Status
Custom Scrum Project	Custom scrum	Online
Fabrikam Fiber	MyAgile	Online
Scrum Project	Scrum	Online
Test Agile	MyAgile	Online

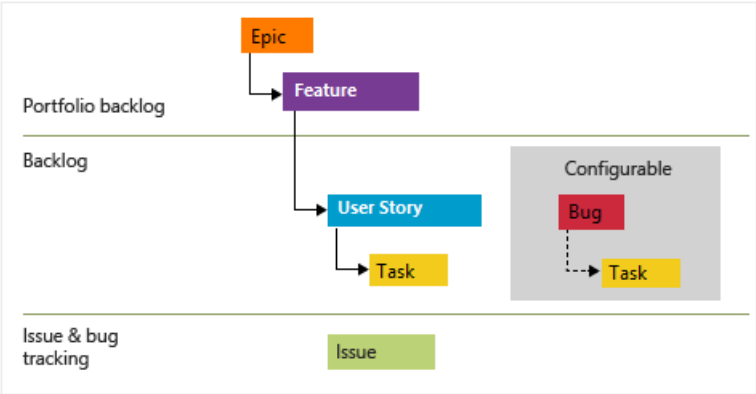
**Process name restrictions**

Process names must be unique and 128 Unicode characters or less. Also, names can't contain the following characters: `. , ; ' ` : ~ \ / \ * | ? " & % $ ! + = ( ) [ ] { } < > .`

To rename a process, open the ... context menu for the process and choose **Edit**.

## Inherited objects versus custom objects

Each inherited process you create inherits the WITs defined in the system process—Agile, Scrum, or CMMI. For example, the Agile process provides bug, task, user story, feature, epic, issue and test-related WITs.



You can add fields and modify the workflow and work item form for all inherited WITs that display on the **Work Item Types** page. If you don't want users to create a WIT, you can disable it. In addition, you can add custom WITs.

## Field customizations

Fields defined in the system process appear with an inherited icon, indicating that you can make limited modifications to it in your inherited process.

Fields are defined for all projects and processes in the organization. That means that any custom field you defined for a WIT in one process can be added to any other WIT defined for another process.

FIELD TYPE	CUSTOMIZATION SUPPORT
Inherited fields	<ul style="list-style-type: none"><li>Change the field label</li><li>Show/Hide field on form</li></ul>

Custom fields	<ul style="list-style-type: none"> <li>• <a href="#">Add a custom field</a></li> <li>• <a href="#">Add picklist (drop-down menu)</a></li> <li>• <a href="#">Add person-name/Identity</a></li> <li>• <a href="#">Add a rich-text (HTML) field</a></li> <li>• <a href="#">Add a checkbox (Boolean) field</a></li> <li>• <a href="#">Add a custom control</a></li> <li>• <a href="#">Add custom rules to a field</a></li> <li>• <a href="#">Change the field label</a></li> <li>• <a href="#">Set Required/Default options</a></li> <li>• <a href="#">Move the field within the layout</a></li> <li>• <a href="#">Remove field from form</a></li> <li>• <a href="#">Delete field</a></li> </ul>
---------------	--

When adding custom fields, note the following limits:

- A maximum of 64 fields can be defined for each WIT
- A maximum of 512 fields can be defined per process

In addition, you can [add an existing field](#) to another WIT within the process. For example, you can add Due Date to the user story or bug WITs.

### What you can't customize

- You can't change the field name or data type once you've defined it
- With regards to picklists, you currently can't perform these operations:
  - Change the picklist of an inherited field, such as the Activity or Discipline field
  - Change the picklist order, picklists display in alphabetic order
- Import or define a global list as supported by the Hosted XML and On-premises XML process models. To learn more, see [Define global lists](#).

#### NOTE

With the inherited process, you can't modify the picklists of pre-defined fields—such as [Activity](#), [Automation Status](#), [Discipline](#), [Priority](#), plus others.

### Configurable picklists

The following picklists are configured for each project and not customizable through an inherited process.

- [Area paths](#)
- [Iteration paths](#)

Picklists associated with person-name fields, such as Assigned To and Changed By, are managed based on the users you add to a [project or team](#).

### Can a field be renamed or its field type changed?

Renaming a field or changing the field type aren't supported actions.

However, you can change the label that appears for a field on the work item form from the Layout tab. When selecting the field in a query you need to select the field name and not the field label.

### What is a field? How are field names used?

Each [work item type](#) is associated with 31 system fields and several more type-specific fields. You use work items to plan and track your project.

Each field supports tracking a piece of information about the work to perform. Values you assign to a field are

stored in the work tracking data store which you can create queries to determine status and trends.

For descriptions and usage of each field defined for the core system processes—[Scrum, Agile, and CMMI system processes](#)—see [Work item field index](#).

#### Field names

A work item field name uniquely identifies each work item field. Make sure your field names fall within these guidelines:

- Field names must be unique within the organization or project collection
- Field names must be 128 or fewer Unicode characters
- Field names can't contain any leading or trailing spaces, nor two or more consecutive spaces
- Field names must contain at least one alphabetic character
- Field names can't contain the following characters: `. , ; ' ` : ~ \ / \ * | ? " & % $ ! + = ( ) [ ] { } < > .`

Because all fields are defined for the organization, you can't add a custom field with the same field name that already exists in the organization or was added to a WIT in another inherited process.

#### NOTE

When you change a project to use an inherited process, you may find one or more Agile tools or work items appear in an invalid state. For example:

- If you make a field required, work items with that field undefined will show an error message. You'll need to resolve the errors to make additional changes and save the work item.
- If you add or remove/hide workflow states of a WIT that appears on the Kanban board, you'll need to update the Kanban board column configurations for all teams defined in the project.

## Custom rules and system rules

Each WIT—bug, task, user story, etc.—has several system rules already defined. Some are simple, like making the Title field required or setting a default for the Value Area field. In addition, a number of system rules define actions to take when a workflow state changes.

For example, several rules exist to copy the current user identity under the following conditions:

- When a work item is modified, copy the user identity to the Changed By field
- When the workflow state changes to Closed or Done, copy the user identity to the Closed By field.

#### IMPORTANT

Predefined system rules will take precedent over any custom rule that you define which would overwrite it.

Custom rules provide support for a number of business use cases, allowing you to go beyond setting a default value for a field or make it required. Rules allow you to clear the value of a field, copy a value into a field, and apply values based on dependencies between different fields' values.

With a custom rule, you can define a number of actions based on specific conditions. For example, you can apply a rule to support these types of scenarios:

- When a value is defined for Priority, then make Risk a required field
- When a change is made to the value of Release, then clear the value of "Milestone"
- When a change was made to the value of Remaining Work, then make Completed Work a required field
- When the value of Approved is True, then make Approved By a required field
- When a user story is created, make the following fields required: Priority, Risk, and Effort


**TIP**

You can't define a formula using a rule. However, you may find a solution that fits your needs via the [TFS Aggregator \(Web Service\) Marketplace extension](#). See also [Rollup of work and other fields](#).

For details on defining custom rules, see [Add a rule to a work item type](#).



## WIT customizations

Here are your customization options for inherited and custom WITs.

WIT TYPE	CUSTOMIZATION SUPPORT
 Inherited WITs	<ul style="list-style-type: none"><li>• <a href="#">Add custom rules to a WIT</a></li><li>• <a href="#">Add/remove custom fields</a></li><li>• <a href="#">Add/remove custom groups</a></li><li>• <a href="#">Add/remove custom pages</a></li><li>• <a href="#">Add/remove a custom control</a></li><li>• <a href="#">Enable/disable</a></li></ul>
Custom WITs	<ul style="list-style-type: none"><li>• <a href="#">Add custom WIT</a></li><li>• <a href="#">Change color or description</a></li><li>• <a href="#">Add/remove custom fields</a></li><li>• <a href="#">Add/remove custom groups</a></li><li>• <a href="#">Add/remove custom pages</a></li><li>• <a href="#">Add/remove a custom control</a></li><li>• <a href="#">Add custom rules to a wit</a></li><li>• <a href="#">Add, edit, or remove a workflow state</a></li><li>• <a href="#">Enable/disable</a></li><li>• <a href="#">Delete</a></li></ul>

### What you can't customize

- You can't add or remove an inherited WIT to or from a backlog
  - You can't change the position of an inherited field within the form layout (however, you can hide the field in one area of the form and add it elsewhere in the form)
  - You can't remove the inherited portfolio level from the product (but you can rename them)
  - You can't change the name of a custom WIT.
- ### Work item form customizations
- You can make the following customizations to a WIT form.

GROUP OR PAGE TYPE	CUSTOMIZATION SUPPORT
 Inherited groups	<ul style="list-style-type: none"><li>• <a href="#">Relabel</a></li><li>• <a href="#">Add/remove custom fields</a></li><li>• <a href="#">Show/hide fields</a></li></ul>
Custom groups	<ul style="list-style-type: none"><li>• <a href="#">Add, modify, re-sequence, delete</a></li><li>• <a href="#">Add/remove custom fields</a></li><li>• <a href="#">Add/Hide a group extension</a></li></ul>
 Inherited pages	<ul style="list-style-type: none"><li>• <a href="#">Relabel</a></li><li>• <a href="#">Add/remove custom fields</a></li><li>• <a href="#">Add/remove a custom group</a></li></ul>

Custom pages	<ul style="list-style-type: none"> <li>• <a href="#">Add, modify, re-sequence, delete</a></li> <li>• <a href="#">Add/delete custom fields</a></li> <li>• <a href="#">Add/hide a page extension</a></li> </ul>
--------------	---

### Layout and resizing

The web form layout is organized into three columns as shown in the image below.



If you only add groups and fields to the first two columns, then the layout reflects a two column layout. Likewise, if you only add groups and fields to the first column, then the layout reflects a one column layout.

The web form resizes depending on the width available and the number of columns in the layout. At maximum width, in most web browsers, each column within a page will display within its own column. As the display width decreases, each column resizes proportionally as follows:

- For three columns: 50%, 25%, and 25%
- For two columns: 66% and 33%
- For one column: 100%.


When the display width won't accommodate all columns, columns appear stacked within the column to the left.

## Workflow customizations

You can customize the workflow of any WIT by hiding inherited states or adding custom states. By default, each WIT is defined with three or four workflow states. Inherited states differ based on the system process —[Agile](#), [Scrum](#), or [CMMI](#)—you chose from which to create your custom process.

**NOTE**

Before adding a workflow state, review [Workflow states and state categories](#) to learn how workflow states are used to support several Agile tools.

STATE TYPES	CUSTOMIZATION SUPPORT
 Inherited states	<ul style="list-style-type: none"> <li>• <a href="#">View workflow states</a></li> <li>• <a href="#">Hide a state</a></li> </ul>
Custom states	<ul style="list-style-type: none"> <li>• <a href="#">Add a state</a></li> <li>• <a href="#">Edit a state (change color or category)</a></li> <li>• <a href="#">Remove a state</a></li> </ul>

### The workflow states must conform to the following rules:

- At least one state must be defined for either the *Proposed* or *In Progress* state categories
- At a minimum, there must be at least two workflow states defined

### What you can't customize

- You can't modify an inherited state (you can't change its name, color, or category), but you can hide it
- You can't modify the state assigned to the *Completed* state category for any WIT, custom or inherited
- You can't change the name of a custom state
- You can't change the order of states (states are listed in the order you add them within the States page, and they're listed alphabetically within the drop down list of a work item form)
- You can't specify a Reason for a state, instead, default reasons are defined such as *Moved to state Triaged*, *Moved out of state Triaged*
- You can't restrict transitions, all transitions are defined from any state to another state.

## Backlog and board customizations

Backlogs and boards are essential Agile tools for creating and managing work for a team. The standard backlogs—product, iteration, and portfolio—inherited from the system process are fully customizable. In addition, you can add two custom portfolio backlogs.

BACKLOG TYPES	CUSTOMIZATION SUPPORT
Standard backlogs	<ul style="list-style-type: none"> <li>• <a href="#">Add a custom WIT</a></li> <li>• <a href="#">Change the default WIT</a></li> <li>• <a href="#">Rename the requirement backlog</a></li> <li>• <a href="#">Rename a portfolio backlog</a></li> </ul>
Custom portfolio backlogs	<ul style="list-style-type: none"> <li>• <a href="#">Add a portfolio backlog which displays custom WITs</a></li> <li>• <a href="#">Edit or rename a portfolio backlog</a></li> <li>• <a href="#">Delete the top-level custom portfolio backlog</a></li> </ul>

When you change the default WIT for a backlog level, it causes that WIT to appear by default in the quick add panel. For example, *Customer Ticket* appears by default in the following quick add panel for the product backlog.

### What you can't customize

- You can't add or remove an inherited WIT to or from a backlog, for example, you can't add the Issue WIT to the product backlog
- You can't remove an inherited portfolio level from the product (but you can rename them)
- You can't insert a backlog level within the existing set of defined backlogs
- You can't reorder the backlog levels
- You can't create a custom task level, although you can add custom WITs to the iteration backlog
- You can't add the *Bug* WIT to any backlog level. Instead, the system allows each team to decide how they want to manage bugs. To learn more, see [Show bugs on backlogs and boards](#).

### Fields added to WITs associated with a backlog level

When you add a WIT to a backlog level, the following fields are added to the WIT definition as hidden fields (that is, they don't appear on the work item form) to support select Agile tool features.



BACKLOG LEVEL	FIELDS ADDED
Portfolio backlog	<ul style="list-style-type: none"> <li>- Stack rank (Agile, CMMI)</li> <li>- Backlog Priority (Scrum)</li> </ul>
Requirement backlog	<ul style="list-style-type: none"> <li>- Stack Rank, Story Points (Agile)</li> <li>- Stack Rank, Size (CMMI)</li> <li>- Backlog Priority, Effort (Scrum)</li> </ul>
Iteration backlog	<ul style="list-style-type: none"> <li>- Activity, Remaining Work, Stack Rank (Agile)</li> <li>- Discipline, Remaining Work, Stack Rank (CMMI)</li> <li>- Activity, Remaining Work, Backlog Priority (Scrum)</li> </ul>

The Stack Rank and Backlog Priority fields capture the relative priority of work items as they are reordered on a backlog or board. For details on it's usage, see [Behind the scenes: the Backlog Priority or Stack Rank field](#).

The Story Points, Size, and Effort fields capture the relative work required to complete a WIT assigned to the Requirement backlog. This value is used to compute [velocity](#).

And, lastly, Remaining Work is used [Sprint burndown and capacity charts](#).

## Object limits

For a list of limits placed on the number of fields, WITs, backlog levels, and other objects you can customize, see [Work tracking object limits](#).