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# Boards (Kanban)

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

Collaborate with others by adding, updating, and reviewing your work items as cards on a Kanban board.

If you're a project administrator just getting started, review the [Configure settings and manage your Azure Boards project](#) to learn more about defining area and iteration paths and customizing your work item types. If you want to add another Kanban board, you do that by adding a team. For details, see [About teams and Agile tools](#).

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# About boards and Kanban

1/31/2019 • 5 minutes to read • [Edit Online](#)

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

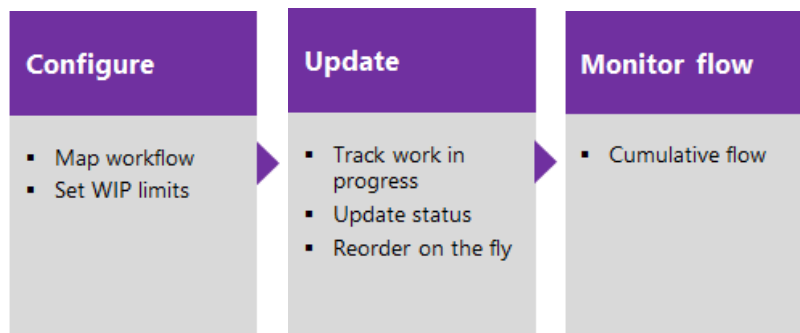
Your Kanban board provides you with a visual interactive space for you and your team to plan and show progress. With it, your team can track the critical information they need by seeing which work items are in progress, where the bottlenecks are, who work is assigned to, and more.

Boards present work items as cards and support quick status updates through drag-and-drop, similar to sticky notes on a physical whiteboard.

### In a nutshell you use boards to:

- Implement [Kanban methods](#)
- Define work your team is tasked with by [defining user stories, product backlog items, or requirements](#)
- Monitor progress and update the status of work items by [drag-and-drop to a column](#)
- [Add details and estimates](#) to your backlog items
- Quickly [define tasks for backlog items](#)
- [Add, run, and update inline tests](#)

To get started, you'll want to follow the steps outlined below.

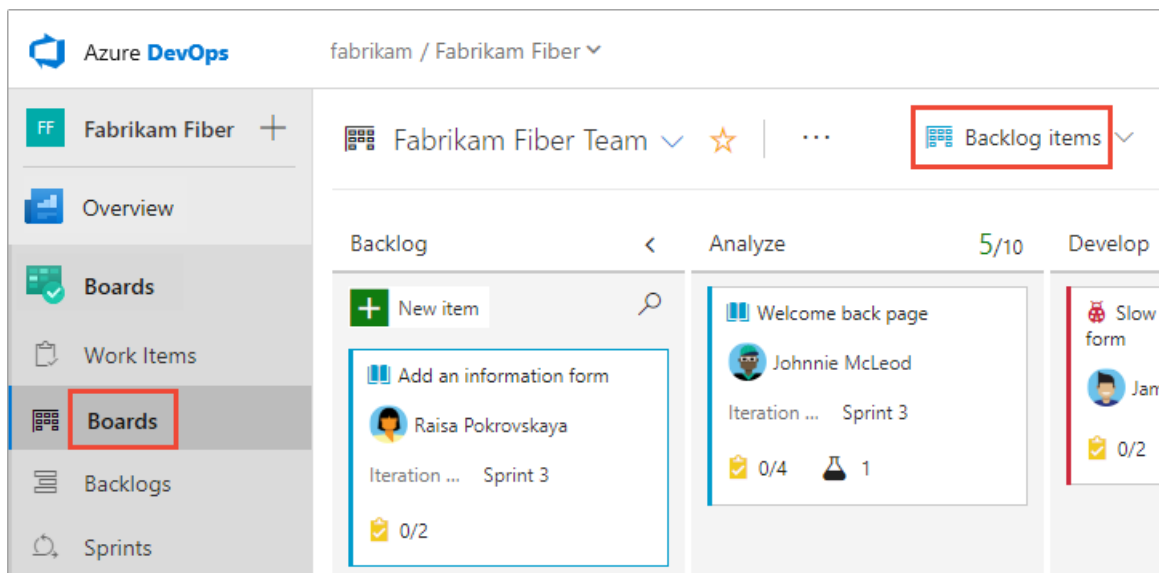


## Product and portfolio boards

Each [product and portfolio backlog](#) has a corresponding Kanban board. Both backlogs and boards are associated with a team, and display work items based on the area and iteration paths selected by the team as described in [Define iteration paths \(aka sprints\) and configure team iterations](#).

Each board supports many Kanban practices such as defining columns and swimlanes, setting Work-in-Progress (WIP) limits, defining the Definition of Done, and more. To get started, see [Kanban quickstart](#).

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



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

## Configure and customize your Kanban board

Your Kanban board is highly configurable to support your team's workflow. Each team can configure each board in the following areas:

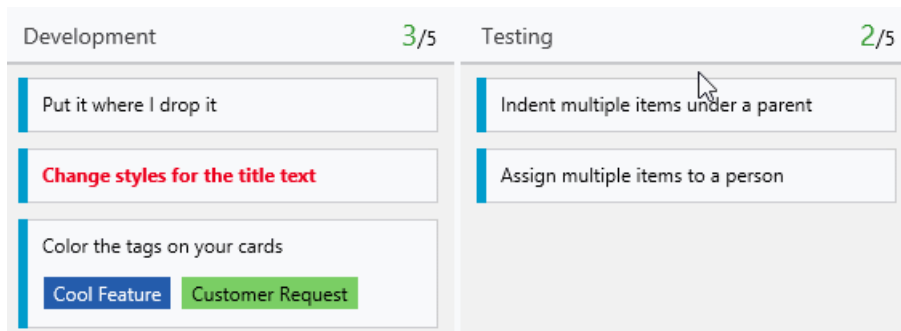
- Configure boards:
  - [Add columns](#)
  - [Set WIP limits](#)
  - [Set Definition of Done](#)
  - [Add swimlanes](#)
  - [Define card reordering](#)
  - [Enable backlog and board levels](#)
  - [Working with bugs](#)
- Configure card displays:
  - [Add or remove fields from cards](#)
  - [Define card styles](#)
  - [Apply tag colors](#)
  - [Enable/disable annotations](#)
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- Configure boards:
  - [Add columns](#)
  - [Set WIP limits](#)
  - [Set Definition of Done](#)
  - [Add swimlanes](#)
  - [Define card reordering](#)
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- Configure card displays:
  - [Add or remove fields from cards](#)
  - [Define card styles](#)
  - [Apply tag colors](#)

- [Add columns](#)
- [Set WIP limits](#)
- [Set Definition of Done](#)
- [Working with bugs](#)

In addition to these team configurations, you can [customize a project](#) by adding or modifying work item types, the workflow, and add customized portfolio backlogs and boards.

## Update work item status

Once you've configured your Kanban board, you can add work items directly to the board. You can then update the status of work by dragging a card to another column on the Kanban board. You can even change the order of items as you move a card to a new column. For additional information, see [Workflow states and state categories](#).



Once you've configured your Kanban board, you can add work items directly to the board. You can then update the status of work by dragging a card to another column on the Kanban board.

## Display of leaf node work items

When a product or portfolio backlog contains same-category, nested work items, only the last child item within the nested set displays on the Kanban board.

While you can create a hierarchy of backlog items, tasks, and bugs—we don't recommend that you create same-category hierarchies. That is, don't create parent-child links among work items of the same type, such as story-story, bug-bug, task-task. The reason is that the Kanban board, sprint backlog, and taskboard only show the last node in a same-category hierarchy, called the leaf node. For example, if you link items within a same-category hierarchy that is four levels deep, only the items at the fourth level appear on the Kanban board, sprint backlog, and taskboard.

Instead of nesting requirements, bugs, and tasks, we recommend that you maintain a flat list. In other words, only create parent-child links one level deep between items that belong to a different category.

To learn more, see [Fix "Ordering backlog items is disabled"](#).

## Limitations of multi-team Kanban board views

While the management teams you configure can use the Kanban board to monitor feature progress by turning on the Features backlog, there are limitations inherent within these views. Even if the management team and the feature teams configure their Feature [Kanban board columns](#) with identical workflow mapping, updating the Features on one team's Kanban board won't be reflected on another team's Kanban board. Only when the work item state changes does the card column reflect the same on all boards.

### IMPORTANT

Work items that appear on more than one team's Kanban board can yield query results that don't meet your expectations. Because each team can customize the Kanban board columns and swimlanes, the values assigned to work items which appear on different boards may not be the same. The primary work around for this issue is to maintain single ownership of work items by [Defining area paths and assign to a team](#). Another option is to add custom workflow states which all teams can use. For details, see [Customize your work tracking experience](#).

## Permissions and access

As a member added to the Contributors group of a project, you can use most features provided under **Boards** or **Work**. Users with Basic access have full access to all features. Users with Stakeholder access are limited to certain features. For details, see [Work as a Stakeholder](#).

To learn more about permissions and access, see [Permissions and access for work tracking](#) and [About access levels](#).

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

## Customize your project and boards

If you need more than three board levels, you can add more. To learn how, see [Customize your backlogs or boards for a process](#).

You can also add or modify the fields defined for a work item type (WIT), add a custom WIT, or modify the workflow. To learn more, see [Customize an inheritance process](#).

If you need more than three board levels, you can add more. To learn how, see [Add portfolio backlogs](#).

You can also add or modify the fields defined for a work item type (WIT), add a custom WIT, or modify the workflow. To learn more, see [Customize the On-premises XML process model](#).

## Try this next

Take these tools for a test run by [signing up for free](#). From there, you're ready to add items to your Kanban board and customize it.

[Kanban quickstart](#)

## Related articles

- [Kanban key concepts](#)
- [Web portal navigation](#)
- [Backlogs, portfolios, and Agile project management](#)
- [About work items](#)



# Tasks supported by Backlogs, Boards, Taskboards, and Delivery plans

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

What can you do from a backlog view versus a board view? How do these differ from plans? How do changes you make in one show up on the other? What customizations can you make for each?

## Backlogs and boards

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

What can you do from a backlog view versus a board view? How do changes you make in one show up on the other? What customizations can you make for each?

Which view should you use to work with Agile methods?

### In a nutshell...

- Backlogs display work items as a list and boards display them as cards
  - You use your product backlog to quickly plan and prioritize your work
  - You use your sprint backlogs and taskboards when you work in Scrum
  - You use your Kanban board to update work status and when you employ Kanban methods
  - Each backlog is associated with a board, changes to priority order you make in one are reflected in its corresponding board
  - Plans allow you to review the deliverables for several teams across sprints and a calendar schedule
  - Backlogs, boards, and plans are configurable for each team.
- 
- Backlogs display work items as a list and boards display them as cards
  - You use your product backlog to quickly plan and prioritize your work
  - You use your sprint backlogs and taskboards when you work in Scrum
  - You use your Kanban board to update work status and when you employ Kanban methods
  - Each backlog is associated with a board, changes to priority order you make in one are reflected in its corresponding board
  - Each backlog and board is configurable for each team.

With list backlogs you can quickly develop your project plan; group and prioritize work; and perform bulk updates on selected work items. With boards, you can quickly update status and fields displayed for each work item.

And with plans, you can monitor progress, deliverables, and dependencies across several teams.

You access your backlogs and boards from a web portal. When you work from the Stories (Agile) or Backlog items (Scrum) pages, you have access to the product backlog and Kanban board. When you work from a sprint page, you have access to the sprint backlog and taskboard. For an overview of working in Scrum or Kanban, see [What is Azure Boards?](#).

#### 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](#).

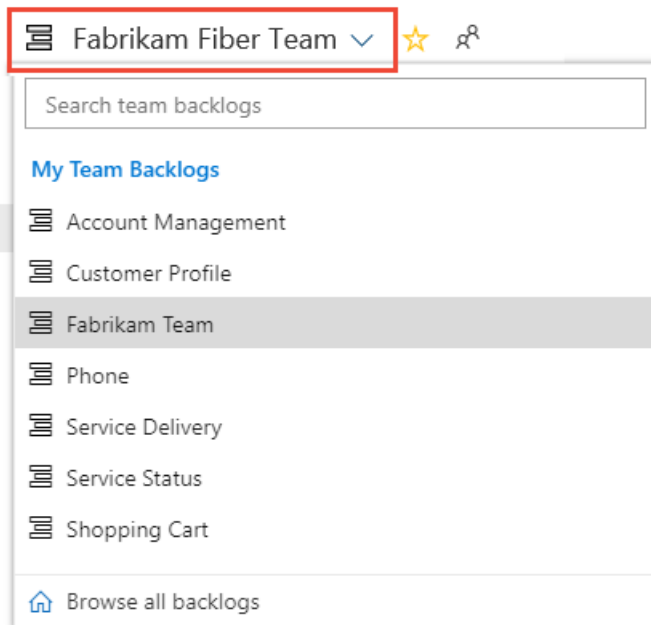
- [New navigation](#)
- [Previous navigation](#)

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



The screenshot shows the Azure DevOps web portal interface. The top navigation bar displays the project name 'fabrikam / Fabrikam Fiber' with a dropdown arrow, marked with a red circle and the number 1. The left sidebar contains navigation options: Overview, Boards, Work Items, Backlogs, Sprints, and Queries. The 'Backlogs' option is highlighted with a red box and a red circle with the number 2. The main content area shows the 'Fabrikam Fiber Team' selector with a dropdown arrow, marked with a red circle and the number 3. Below the team selector, there are buttons for 'New Work Item', 'Backlog items Board', and 'Backlog items'. A table of backlog items is displayed with columns for Order, Assigned To, State, and Title.

Order	Assigned To	State	Title
1	Jamal Hartnett	Committed	Hello World Web Site
2	Jamal Hartnett	Committed	Slow response on inform:
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.



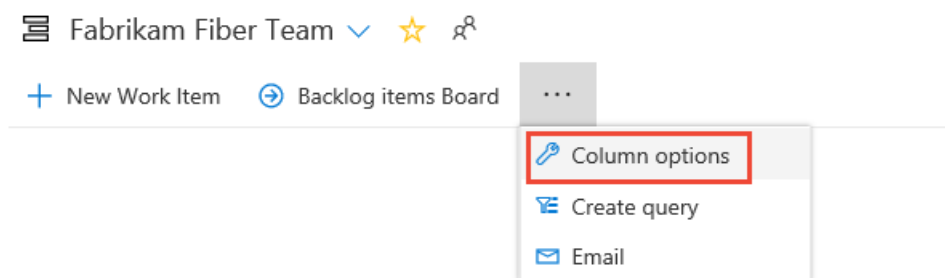
#### TIP

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.



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](#).



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

## Three classes of backlogs, two types of boards

To manage work, you have access to three classes of backlogs—portfolio, product, and sprint—and two types of boards—Kanban and task. Backlogs list work items, boards display work items as cards. Backlog and board views provide similar and distinct features to support planning and tracking.

You use work items to share information, assign work to team members, track dependencies, organize work, and more. You can apply different filters to your backlogs and boards to just show those items of interest.

## Portfolio, product, and sprint backlogs

Portfolio backlogs typically track high-level features, scenarios, or epics. Your product backlog contains a prioritized list of user stories, deliverables, or work you plan to build or fix. Portfolio backlogs help you organize your product backlog into a hierarchy of elements. Sprint backlogs contain just those items that each team is working on during a scheduled sprint or iteration period.

For details about working in each type of backlog, see [Create your backlog](#), [Define features and epics](#), and [Sprint planning \(sprint backlogs\)](#).

### TIP

You can't sort a backlog by column. However, you can use the Create Query option on each backlog to create a query that you can sort on any field column you choose. To learn more about queries, see [Use the query editor to list and manage queries](#).

## Kanban and Taskboards

Kanban and Taskboards support visualizing the flow of work and monitoring metrics to optimize that flow. Kanban boards track requirements, are sprint-independent, and you monitor the flow through the cumulative flow chart. Taskboards track tasks defined for a sprint and you monitor the flow via the sprint burndown chart.

For details about working in each type of board, see [Kanban basics](#) and [taskboard](#).

## Feature support across backlogs and boards

The following table indicates those elements or tasks associated with each type of backlog and board.

ASSOCIATED ELEMENT OR TASK	BACKLOG TYPE: PORTFOLIO	BACKLOG TYPE: PRODUCT	BOARD TYPE: KANBAN	BACKLOG TYPE: SPRINT	BOARD TYPE: TASK
Corresponding backlog or board type	Kanban	Kanban	Portfolio or product	Task	Sprint
Add items and child items (see notes 1, 2)	Yes	Yes	Yes	Yes	Yes
Reorder items	Yes	Yes	Yes	Yes	Yes
Map items	Yes (except the top-level portfolio backlog)	Yes	No	No	No
Filter	Text or tags	Text or tags	Text or select fields	Text	Backlog items or people
Show/hide parents	Yes (except the top-level portfolio backlog)	Yes	No	No	No
Show/hide in progress items (see note 3)	Yes	Yes	No	No	No
Forecast	No	Yes	No	No	No

Customize: show bugs (see note 1)	No	Yes	Yes	Yes	Yes
Customize: Columns	Yes, see <a href="#">Column options</a>	Yes, see <a href="#">Column options</a>	Yes, see <a href="#">Add columns</a>	Yes, see <a href="#">Column options</a>	Yes, see <a href="#">Customize workflow</a>
Customize: Add more backlog or board views	Yes, see <a href="#">Select backlog navigation levels</a>	Yes, when you add another team (see note 4)	Yes, see <a href="#">Select backlog navigation levels</a>	Yes, see <a href="#">Schedule sprints</a>	Yes, see <a href="#">Schedule sprints</a>
<a href="#">Customize: cards</a>	n/a	n/a	Yes	n/a	Yes
Charts	<a href="#">Cumulative flow Velocity</a>	<a href="#">Cumulative flow Velocity</a>	<a href="#">Cumulative flow Velocity</a>	<a href="#">Sprint burndown</a>	<a href="#">Sprint burndown</a>
Duration (see note 5)	Project or release	Project	Project	Sprint	Sprint

#### Notes:

1. Each team can determine how they want to track bugs: as requirements, as tasks, or not at all. When tracked as requirements, they appear in your product backlog, sprint backlogs, and Kanban board. When tracked as tasks, they appear in your sprint backlogs and taskboards. For details, see [Show bugs on backlogs and boards](#).
2. Work items that appear on each team backlog and board meet the criteria defined for the [team selected area and iteration paths](#).
3. The **In progress items Show/Hide** control is another filter you can apply to your product and portfolio backlogs. This control essentially shows or hides those work items where work has begun. It's useful to show/hide In Progress items when [forecasting sprint work](#).
4. When you [add a team](#), you essentially add another product backlog associated with that team. Each team can then manage their own set of sprint backlogs and portfolio backlogs. See [Manage teams and configure team tools](#) for details.
5. Duration refers to how you use your backlog or board to plan and track work over time. Once you change the State of a work item to done or completed, it no longer appears on a portfolio or project backlog. As you complete each sprint, the system maintains a history of your activity. You can review past sprints and sprint burndown charts by choosing the sprint listed under the Past section. For more information, see [Sprint burndown](#).

## Product backlog "In Progress" filter

The In progress items **Show/Hide** filter causes some backlog items to display or not display. Bugs and other backlog items aren't listed when **In progress items=Hide** and their assigned State corresponds to an In Progress state category. Bugs in a New state will display, however, bugs in an Assigned state won't. To learn more about state categories, see [Workflow states and state categories](#).

On your [backlog](#), set **In progress items** to **Show** to see all active bugs and other items on your backlog.

## Delivery plans display team deliverables

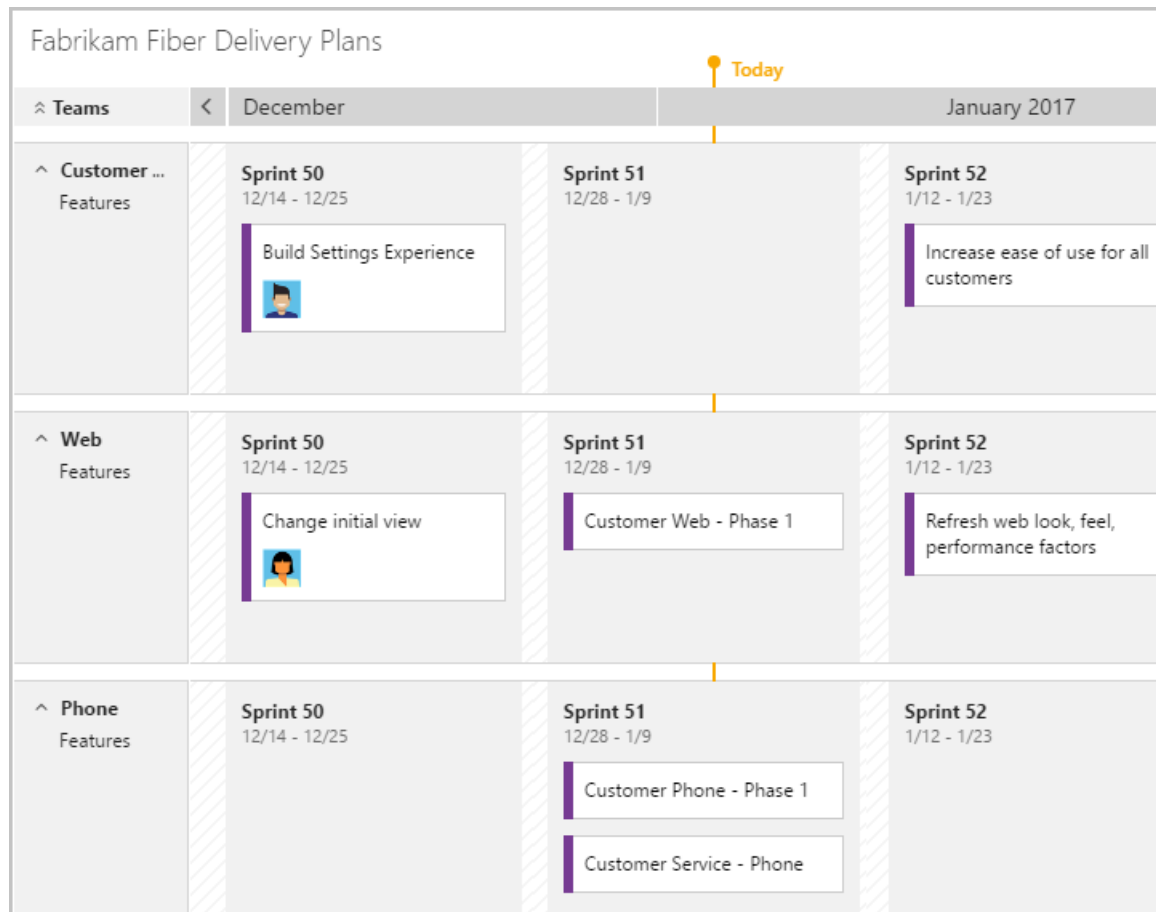
With Delivery Plans, you gain tailor-made views across several teams and their development backlogs—stories, features, or epics. You can use these views to drive alignment across teams by overlaying several backlogs onto your delivery schedule. All users with [basic access](#) can view, add, and configure Delivery Plans. Stakeholders,

however, don't have access to Delivery Plans.

You install Delivery Plans from the [Visual Studio Marketplace](#), in the Azure DevOps tab. All users with [basic access](#) can view, add, and configure Delivery Plans. Stakeholders, however, don't have access to Delivery Plans.

Delivery Plans is available for TFS 2017.2 and later versions.

When you configure a plan, you select the team or teams and backlog levels of interest. To learn more about Delivery Plans, see [Review team plans](#).



## Taskboard items versus query list items

You may notice and wonder why the items shown on the taskboard may differ from those listed in a query created from its corresponding sprint backlog.

It's possible to assign tasks to an iteration but not have them linked to a parent backlog item. These items will show up in the created query, but might not show up on the taskboard itself. The system runs the query and then applies a few background processes before displaying the taskboard items.

These reasons can cause work items that belong to the Task Category to not appear on a sprint backlog or taskboard:

- The task hasn't been linked to a parent backlog item. Only those bugs and tasks that you have linked to a parent product backlog item (Scrum), user story (Agile), or requirement (CMMI) whose iteration path is set to the sprint will appear on the sprint backlog page.
- The task is a parent of another task, or the user story is a parent of another user story. If you've created a hierarchy of tasks or user stories, [only the child-level tasks or the child-level stories at the bottom of the hierarchy appear](#).
- The task's linked parent corresponds to a backlog item defined for another team. Or, the area path of the task's parent backlog item differs from the task's area path.

# Customize backlog and board levels

If you need more than three backlog and board levels, you can add more. To learn how, see [Customize your backlogs or boards for a process](#).

If you need more than three backlog levels and board levels, you can add more. You can also add or modify the fields defined for a work item type (WIT) or add a custom WIT. To learn how, see the following articles based on the process model used to update your project:

## Inheritance process model:

- [Customize your backlogs or boards for a process](#).
- [Customize an inheritance process](#)

## On-premises XML process model:

- [Add portfolio backlogs](#)
- [Customize the On-premises XML process model](#)

If you need more than three backlog and board levels, you can add more. To learn how, see [Add portfolio backlogs](#).

## Related articles

Now that you understand how backlogs, boards, and plans work, [get started using them to plan and track your work](#).

Now that you understand how backlogs and boards work, [get started using them to plan and track your work](#).

A few things to keep in mind...

- Every team owns their own backlog, to add a new set of backlogs and boards, you [add a new team](#)
- To have work performed by several teams roll up to a portfolio backlog, you'll want to [setup the team hierarchy](#)
- Every backlog has a corresponding [Kanban board](#) you can use to track progress and update status
- Each team can control how [bugs show up on their backlogs](#)
- When you add child items they're linked to their parent using parent-child links which support hierarchical views and [tree queries](#)

Additional articles of interest:

- [About teams and Agile tools](#)
- [Add work items](#)
- [Dashboards](#)

## Additional tools from the Marketplace

You may find additional tools to help plan and track your work from the [Visual Studio Marketplace](#), Azure DevOps tab.

# 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](#)

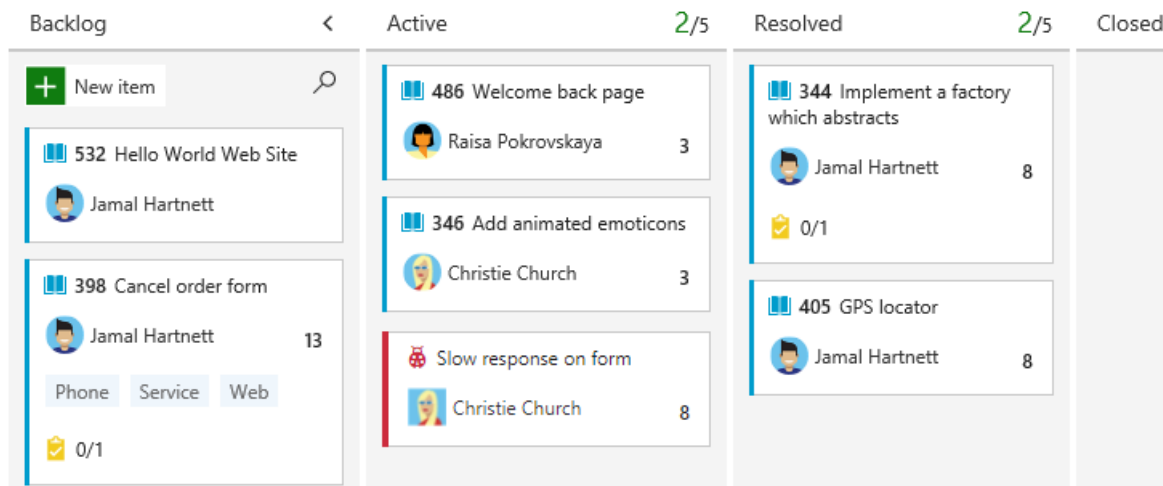


# Start using your Kanban board

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

Your Kanban board turns your backlog into an interactive signboard, which provides a visual flow of work. As work progresses from idea to completion, you update the items on the board. Each column represents a work stage. Each card represents a backlog item, user story, or bug at that stage of work.



User stories and bugs correspond to types of work items. You use [work items](#) to share information, assign work to team members, update status, track dependencies, and more.

## 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 work items and exercise all board features, you must be granted **Basic** 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 private project can't exercise these board features: add work items, drag-and-drop work items to update status, update fields displayed on cards. They can add tasks and change task status.

Users with **Stakeholder** access for a public project have full access to 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 work items and exercise all board features, you must be granted **Basic** 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 can't exercise these board features: add work items, drag-and-drop work items to update status, or update fields displayed on cards. They can add tasks and change task status.

- 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 work items and exercise all board features, you must be granted **Basic** 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 can't exercise these board features: add work items, drag-and-drop work items to update status or move to another sprint, update fields displayed on cards. They can add tasks and change task status.

## Add a Kanban board

Each Kanban board is associated with a team and a work item type. For the Agile process, the three boards are Stories, Features, and Epics.

When you add a team, you add a number of team assets. A team admin can configure the assets to support the way the team works. To add a set of Kanban boards to support a new team, [add a team](#).

To add a board to support an additional portfolio backlog, see [Customize your backlogs or boards](#).

To add a board to support an additional portfolio backlog level, see [Add a portfolio backlog level](#).

#### NOTE

Both Kanban boards and Taskboards support visualizing the flow of work and monitoring metrics to optimize that flow. Kanban boards track requirements, are sprint-independent, and provide a cumulative flow chart for monitoring progress. Each sprint is associated with a Taskboard that supports tracking tasks defined for the sprint. You can monitor progress through capacity charts and the sprint burndown chart. For guidance on using the Taskboard, see [Update and monitor your Taskboard](#).

## Open your Kanban board from the web portal

Your Kanban board is one of two types of boards available to you. The other is the sprint Taskboard. Kanban boards track requirements, are sprint-independent, and provide a cumulative flow chart for monitoring progress. Each sprint is associated with a Taskboard that supports tracking tasks defined for the sprint. You can monitor progress through capacity charts and the sprint burndown chart. For guidance on using the Taskboard, see [Update and monitor your Taskboard](#). For an overview of the features supported on each backlog and board, see [Backlogs, boards, and plans](#).

#### 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](#).



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. Check that you selected the right project, and select **Boards** > **Boards**. Then select the correct team from the team selector menu.

To select another team's board, open the selector. Then select a different team, or select 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.

#### TIP


Select the  star icon to make a team board a favorite. Favorite artifacts () appear at the top of the team selector list.

2. Check that you selected **Backlog items** for Scrum, **Stories** for Agile, or **Requirements** for CMMI as the backlog level.


To switch to the [product backlog](#), select **Stories backlog**. To switch to a Taskboard, see [Update and monitor your Taskboard](#).

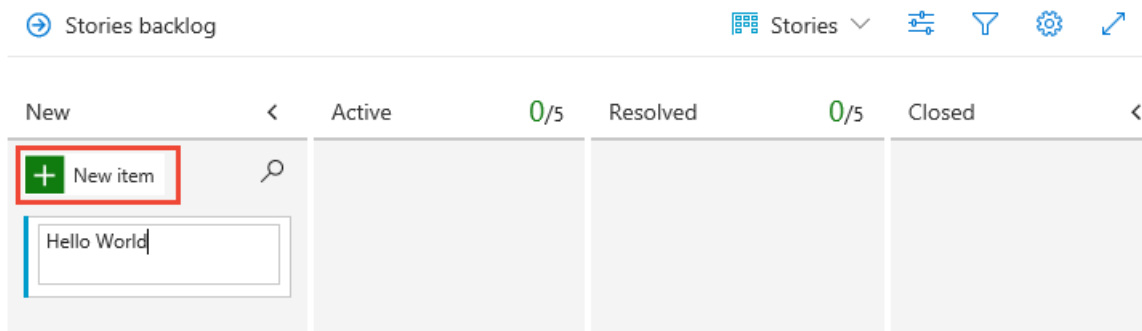
**New navigation** isn't supported on TFS at this time. Select **Previous navigation** for guidance.

## Add work items

1. To add a work item, select the  plus sign, enter a title, and then press Enter.

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

To add a work item, select the  plus sign, enter a title, and then press Enter.



The system automatically saves the work item with the title you entered. You can add as many work items you want by using this method.

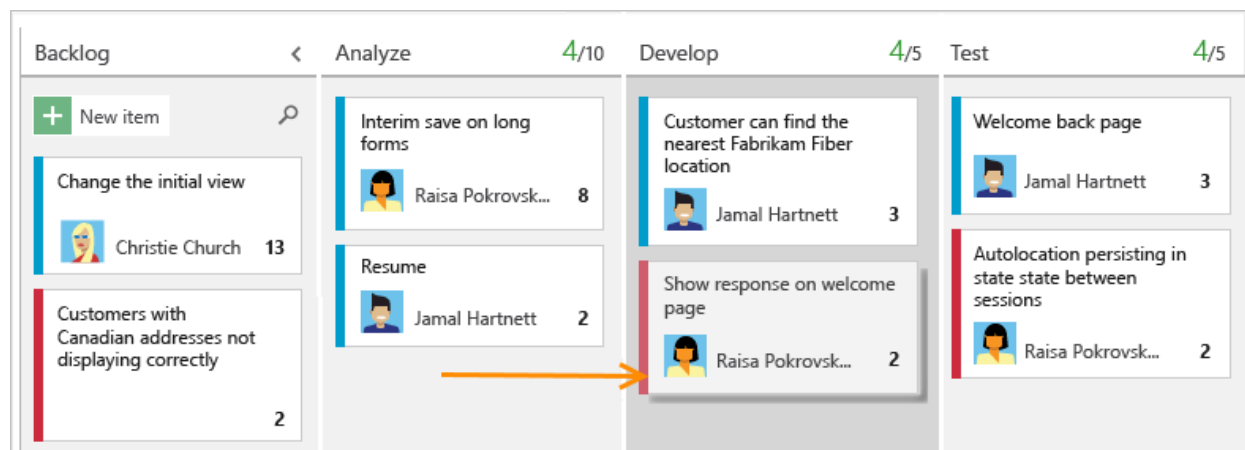
Choose the **Previous navigation** tab for guidance. **New navigation** isn't supported for TFS 2018 and earlier versions.

To add details to any work item, select the title. Or, you can directly modify any field that displays. For example, you can reassign a work item by selecting **Assigned To**. For a description of each field, see [Create your backlog](#), [Add details and estimates](#).

To customize the set of fields displayed on the card, see [Customize cards](#).

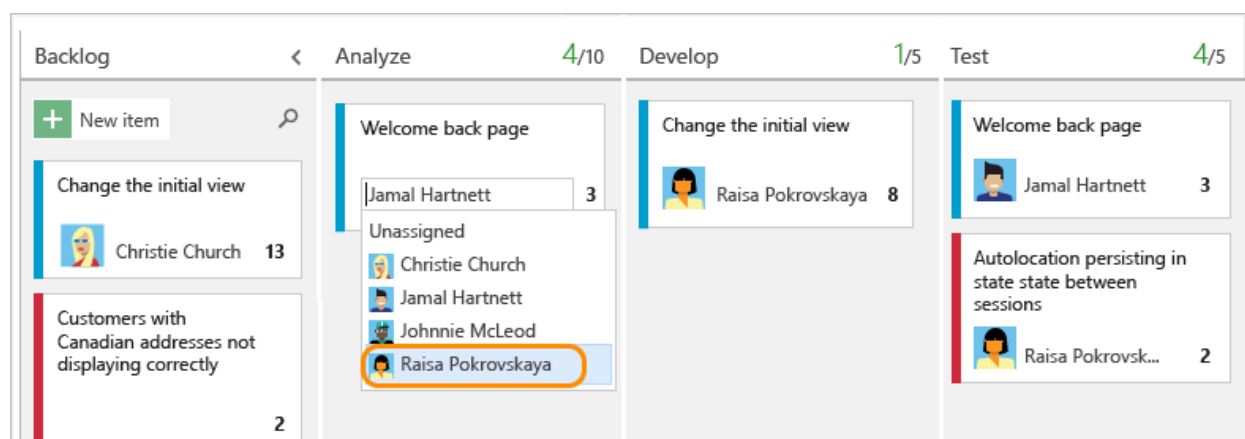
## Update status by dragging

As work completes in one stage, update the status of an item by dragging it to a downstream stage.



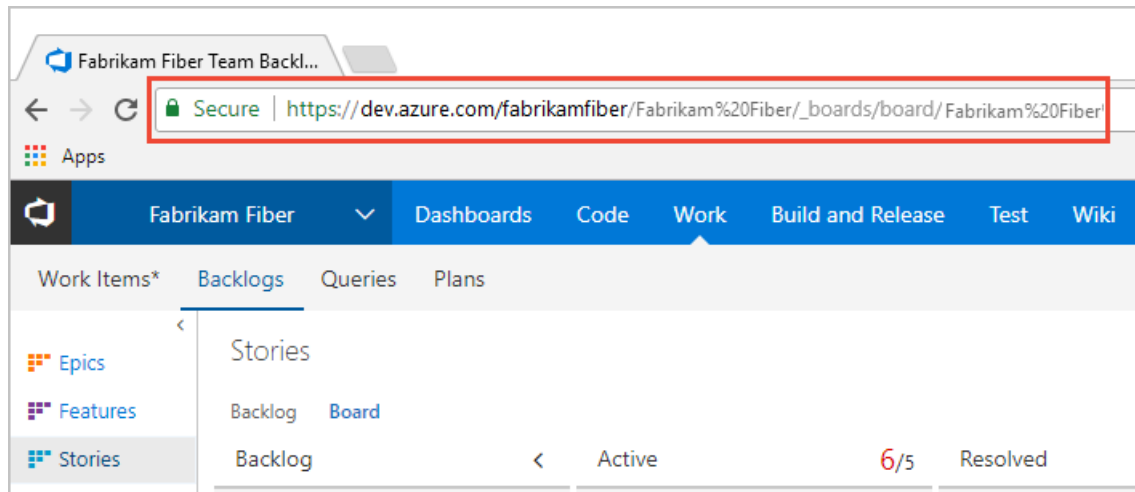
## Update fields from the card

You can quickly update a field or reassign ownership directly from the board. If the field you want to update isn't showing, then [customize the card to show it](#).



# Invite others to work on your Kanban board

All members of a project can view and contribute to your Kanban board. To invite users to contribute, copy the URL of your Kanban board and email it to people you want to invite to your project.



To add users to your project, see [Add users to a project](#).

## Try this next

To get the full power of the Kanban board, configure it to map the flow of work and set WIP limits for your team. To configure the Kanban board, you must be [added as a team administrator](#) or be a member of the Project Administrators group. If you're the organization owner or creator of the project, then you have these permissions.

[Kanban basics](#)

# Enable live updates

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

Enable live updates to automatically refresh your Kanban board when changes occur. As other team members move or reorder cards, your board will automatically update with the changes. With live updates enabled, you no longer have to press F5 to see the latest changes.

## 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 work items and exercise all board features, you must be granted **Basic** 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 private project can't exercise these board features: add work items, drag-and-drop work items to update status, update fields displayed on cards. They can add tasks and change task status.

Users with **Stakeholder** access for a public project have full access to 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 work items and exercise all board features, you must be granted **Basic** 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 can't exercise these board features: add work items, drag-and-drop work items to update status, or update fields displayed on cards. They can add tasks and change task status.

- 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 work items and exercise all board features, you must be granted **Basic** 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 can't exercise these board features: add work items, drag-and-drop work items to update status or move to another sprint, update fields displayed on cards. They can add tasks and change task status.

#### 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

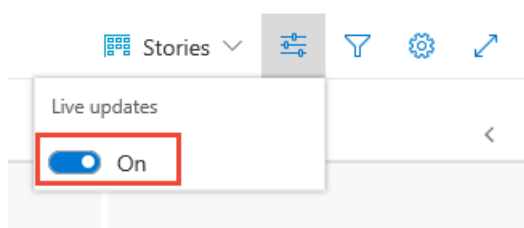
Choose the **New navigation** tab for guidance. Azure DevOps Server 2019 supports the **New Navigation** user interface. For more information, see [Web portal navigation](#).

#### 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](#)

Choose the  view options icon and move the slider for **Live updates** to On.



**New navigation** isn't supported on TFS at this time. Choose **Previous navigation** for guidance.

## Related articles

- [Filter your Kanban board](#)
- [Customize cards](#)

# Drive Git development from a work item

1/31/2019 • 7 minutes to read • [Edit Online](#)

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

One of the ways your team can drive their development and stay in sync is to link your work items to the objects created during development, such as branches, commits, pull requests, and builds. You can begin that linking by creating a branch from one or more work items. Later, you can create pull requests, quickly open commits, and maintain a record of development operations performed to complete specific work.

### IMPORTANT

This article addresses creating new branches and adding links to commits and pull requests to a Git repository hosted on Azure DevOps. To link to GitHub commits and pull requests, see [Link GitHub commits and pull requests to work items](#).

The Development section records all Git development processes that support completion of the work item. This section can show your team information needed to take the next development step and minimize navigational steps to accomplish common development tasks. It also supports traceability, providing visibility into all the branches, commits, pull requests, and builds related to the work item.

The screenshot shows the Azure DevOps work item interface for '398 Cancel order form'. The interface is divided into several sections:

- Header:** Displays the work item ID '398' and title 'Cancel order form'. It includes the user 'Jamal Hartnett', a 'Save & Close' button, and a 'Follow' button.
- Metadata:** Shows the state as 'Active', area as 'Fabrikam Fiber', and reason as 'Implementa...'. It also indicates the item was updated by Jamal Hartnett 18 hours ago.
- Description:** Contains a rich text editor with the text: 'Provide a **cancellation order form** similar to the screen shown. See the attached storyboard for details.' Below the text is a storyboard image showing a form titled 'Order details here' with a green input field and an orange 'Cancel' button.
- Development:** A section titled 'Development' with a '+ Add link' button. It contains a list of development activities, with one item highlighted by an orange box: 'Added file' (Created 33 minutes ago, Completed) for the path 'features/cancel-order-form'. Below this, it says 'Updated 35 minutes ago' and provides a link to 'Create a pull request'. Another 'Added file' entry is listed below.
- Related Work:** A section titled 'Related Work' with a '+ Add link' button.



#### NOTE

The Development section within the work item form is not supported in TFS 2015 and earlier versions. Consider [upgrading to a later TFS version](#).

From it, you can quickly access branches, pull requests, and commits which are linked to the work item. Also, you can initiate a pull request for a branch you've created or linked to from the work item.

## 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](#).
  - To create new tags to add to work items, you must have **Basic** access or higher and have the project-level **Create new tag definition** permissions set to **Allow**. By default, the **Contributors** group has this permission set. Even if the permission is explicitly set for a **Stakeholder**, they won't have permission to add new tags, as they are prohibited through their access level.
- 
- 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](#).
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## Workflow process to create a branch and pull request

Consider creating a new branch when there are no linked code artifacts. If there is a branch but no pull requests, consider creating a pull request. Here's a typical workflow sequence when working with a Git repository.

1. Start work on the work item by creating a branch. You can add a new Git branch from within the Development section...

[USER STORY 513](#)

## 513 Cancel order form

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

State New
 Area Fabrikam Fiber
 Reason New
 Iteration Fabrikam Fiber\Sprint 3
Updated 14 minutes ago

Details
🕒
🔗 (2)
📎

### Description

B I U

Provide a **cancellation order form** similar to the screen shown. See the attached storyboard for details.

### Planning

Story Points

Priority 2

Risk

### Classification

### Development

+ Add link

Development hasn't started on this item.

[Create a new branch](#)

### Related Work

+ Add link

There are no links in this group.

### Acceptance Criteria

### Discussion

... or, from the form's **...** Actions menu.

[USER STORY 513](#)

## 513 Cancel order form

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

State New
 Area Fabrikam Fiber
 Reason New
 Iteration Fabrikam Fiber\Sprint 3
Updated 14 minutes ago

Details
🕒
🔗 (2)
📎

### Description

B I U

Provide a **cancellation order form** similar to the screen shown. See the attached storyboard for details.

### Planning

Story Points

Priority 2

Risk

### Classification

### Development

+ Add link

Development hasn't started on this item.

[Create a new branch](#)

### Related Work

+ Add link

There are no links in this group.

### Acceptance Criteria

### Discussion

- Refresh
- Revert changes
- New linked work item
- Change type...
- Move to team project
- Create copy of work item...
- Email work item
- Delete
- Templates >
- Start storyboarding
- Request feedback
- New branch...**
- Customize
- Visualize

Name the branch and select the repository on which it's based.

Create a branch

Name

features/cancel-order-form

Based on

Fabrikam Fiber

master

Work items to link

Add work items

10 Cancel order form  
Updated 13 minutes ago, New

Create branch Cancel

Branches you create are automatically linked to the work item.

#### NOTE

You can only create a branch once you've added files to the main branch, which is always named `master`. The system automatically adds a README file to the initial repo created with each new project.

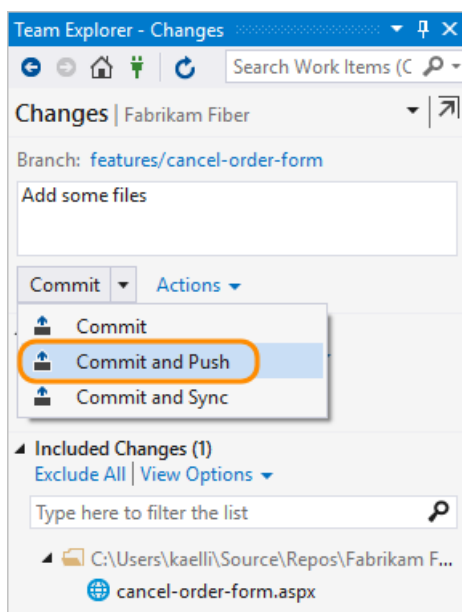
2. The system will open to the repository and branch that you just created.

You can edit a file within the web portal.

Or, if you have extensive file edits or need to add files, then you'll need to work from Visual Studio or other supported IDE. You'll want to add a new local branch from the branch you just created. For details, see [Update code with fetch and pull](#), [Download changes with fetch](#). (While any code editing and committing process will work, we work best with an edition of Visual Studio.)

3. Add or modify files in the branch that you created.

From Visual Studio or other supported IDE, commit and push changes from your local branch to the repository.



If this is the first time pushing changes from a new branch, you'll need to publish the branch before pushing your changes. For more details, see [Share code with push](#).

4. Create a [pull request](#) from the work item form.

You create a pull request to merge the changes you made to a master branch and get your changes reviewed by other members of your team.

The screenshot shows the 'USER STORY 513' form in Azure DevOps. The title is '513 Cancel order form' by Jamal Hartnett. The state is 'New', area is 'Fabrikam Fiber', and iteration is 'Fabrikam Fiber\Sprint 3'. The description contains a text block and a storyboard image of a 'Cancel' button. The 'Development' tab is active, showing a link to 'Updated README.md' with a 'Create a pull request' button highlighted. The 'Planning' tab shows 'Story Points', 'Priority 2', and 'Risk'. The 'Related Work' section is empty.

USER STORY 513

513 Cancel order form

Jamal Hartnett 0 Add tag Save & Close Follow

State New Area Fabrikam Fiber Updated 14 minutes ago

Reason New Iteration Fabrikam Fiber\Sprint 3

Details (2)

**Description**

Provide a **cancellation order form** similar to the screen shown. See the attached storyboard for details.

Order details here

Cancel

**Planning**

Story Points

Priority 2

Risk

**Development**

+ Add link

Updated README.md Created an hour ago, ✓ Completed

Create a pull request

**Related Work**

+ Add link

There are no links in this group.

5. Your view will switch to **Code**, Pull Requests page. Complete creating the pull request as shown.

Fabrikam Fiber

Files

History

Branches

Pull Requests

New pull request

features/cancel-order-form

into

master

Title \*

Updated README.md

Description

Updated README.md

Markdown supported.

AaB I Link Code List Bulleted List @ #

Updated README.md

Reviewers

[Fabrikam Fiber A]\Fabrikam Fiber A Team

 Search users and groups to add as reviewers

Work Items

Search work items by ID or title

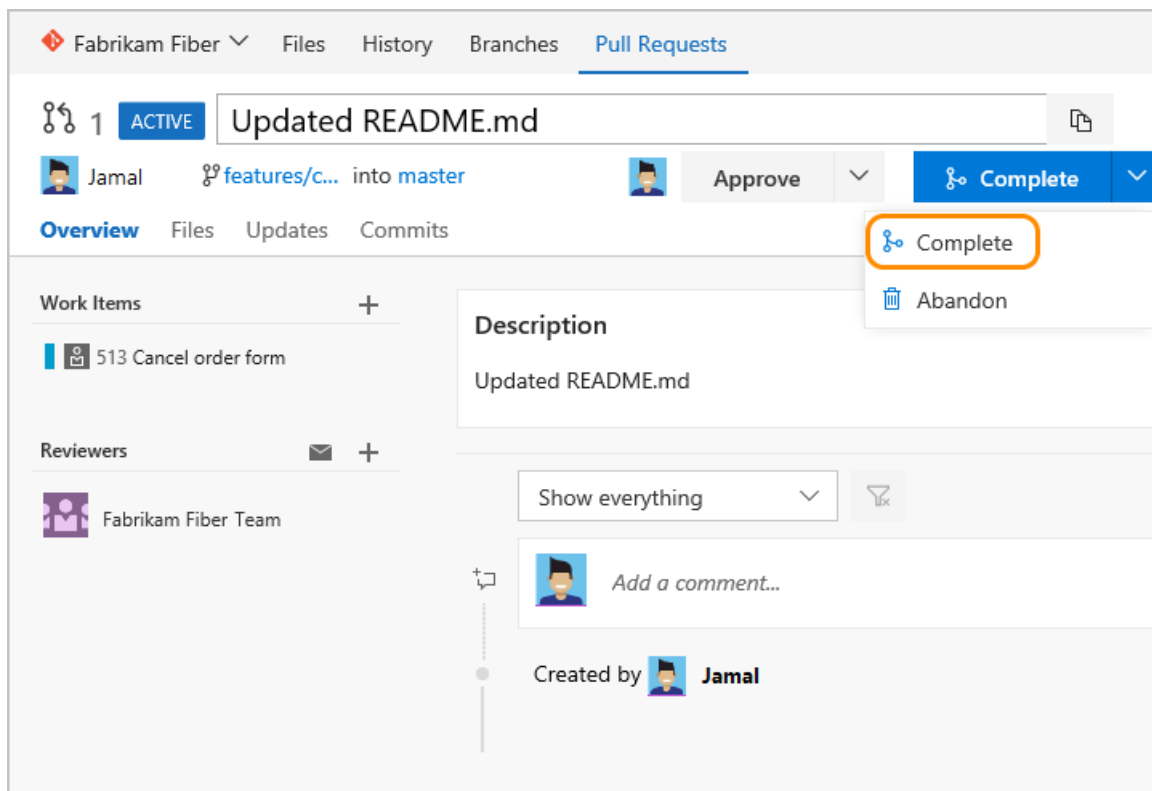
513 Cancel order form

Updated 10 minutes ago, New

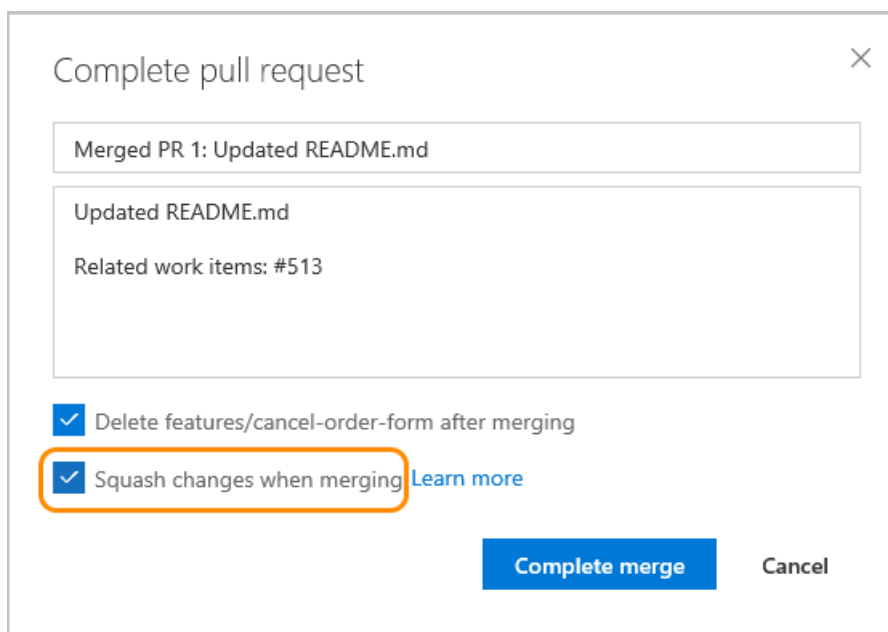
Create

#### NOTE

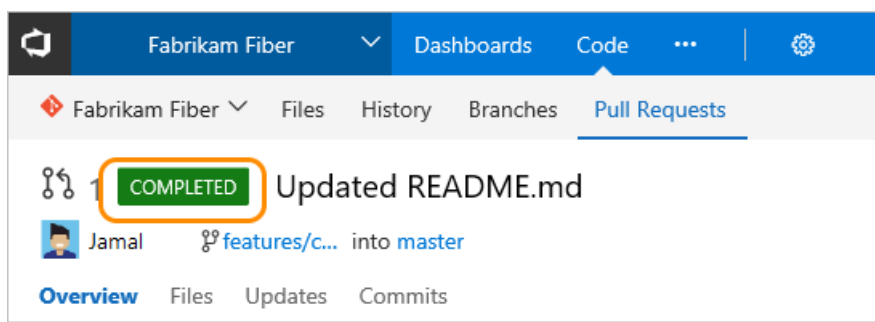
Once you've created a pull request, you can't create a new pull request for the same branch until you complete the previous pull request.




Check the box for **Squash changes when merging** and then complete the merge.



6. Upon completion, you should see a similar screen as follows.



7. Open the work item form or refresh the form, expand the Development section (click the  icon), and you'll see the links that have been added to support the operations you just completed.

USER STORY 513

513 Cancel order form

Jamal Hartnett

0

Add tag

Save

Follow

...

Development

+ Add link

Link ↑ State Latest Update ↓

▼ Pull Request

Updated README.md

✕ ✓ Completed

Created 45 minutes ago

▼ Commit

71049661 Merged PR 1: Updated README.md Upd...

Created 43 minutes ago

## Create a branch for several work items

You can also add a new branch from the work item listed on the backlog or Kanban board without having to open the work item. Using [multi-select](#), you can select several work items and create a new branch where they're all linked to the branch.

For example, here we select the first five items to link to a new branch.

Stories

Backlog Board

Forecast Off Parents Hide In progress items Show Mapping On

New

+

□

Create query

Column options

Filter

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

...

Edit...

Assign to

Copy to clipboard

Delete

Add link

Move to iteration

Change parent...

Change position...

Change type...

Move to team project...

Email...

New branch...

Do exploratory testing

And, we specify the name of the branch.

Create a branch

Name

Initial-perf-tests

Based on

Fabrikam Fiber

master

Work items to link

Add work items

32 Secure sign-in

Updated less than a minute ago, New

31 Slow response on form

Updated 3 minutes ago, New

28 Change initial title

Updated 2 minutes ago, New

27 Hello World Web Site

Updated less than a minute ago, New



33 Interim save on long forms

Updated less than a minute ago, New

Create branch


Cancel


## Link to existing development and build objects


All items listed under the Development section also appear under the  Links tab. All development actions initiated from the Development section are also logged under the  History tab.

Add Tag


Details





 (3)




Links









Title	ID	Work Item Type	Assigned To	State	Comment
Branch (1)					
features/cancel-order-form					
Commit (1)					
Commit 4ba415...					
Pull Request (1)					
2					

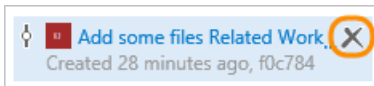
To link a work item to an existing object, click the  Add links icon and then choose the link type.



Linking, traceability, and managing dependencies.

### Remove a link

If you want to remove a link, you can do so from the Development section by highlighting it first and then click the delete icon.



Or, you can select it from the Links tab and click the remove link icon.

## Related articles

Learn more about tracking work with work items and developing with Git from these resources:


- [Add work items](#)
- [Git overview](#)
- [Link GitHub commits and pull requests to work items](#)
- [TFVC overview](#)
- [Create your backlog](#)
- [Add work items](#)
- [Git overview](#)
- [TFVC overview](#)
- [Create your backlog](#)

Keep in mind that the Development section only appears within the web portal work item form. The work item tracking experience and forms that appear in Visual Studio or other supported clients will be missing several of the features that the web portal makes available.

### Associated work items in build

With Git commits, any work items that have been linked to a commit will be listed under the Associated work items in the build summary page.

**Build succeeded**



**Build VSO.PR\_20170331.222 8%**  
 Ran for 21.4 minutes (TfsAgentPool), completed 8.7 minutes ago

[Summary](#)
[Timeline](#)
[Code coverage\\*](#)
[Tests](#)
[WhiteSource Bolt Build Report](#)

### Build details

Definition	<a href="#">VSO.PR (edit)</a>
Source	<a href="#">201339</a>
Source version	<a href="#">Commit b8775481</a>
Requested by	Microsoft.VisualStudio.Services.TFS on behalf of [User Name]
Queued	Friday, March 31, 2017 10:56 AM
Started	Friday, March 31, 2017 10:56 AM
Finished	Friday, March 31, 2017 11:17 AM

### Issues

Build

⚠ Machine Groups will be removed in future updates. Refer here - <https://go.microsoft.com/fwlink/?LinkID=799742&clcid=0x409> for more details

⚠ Machine Groups will be removed in future updates. Refer here - <https://go.microsoft.com/fwlink/?LinkID=799742&clcid=0x409> for more details

### Associated work items

[User Story 959273](#) Kill off dead VS tests  
 Current state is In Progress. Currently assigned to [User Name].

### Associated changes


[dbcd41e](#) Authored by [User Name]  
 Removed VS tests for VC area as well

[4fc335d](#) Authored by [User Name]  
 Added missing references back

[38bd2ee](#) Authored by [User Name]  
 Removed VS Tests for WIT

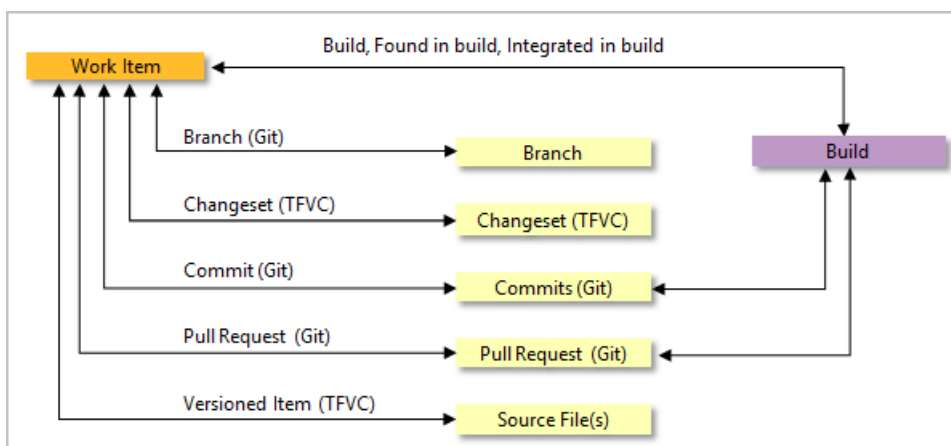
## Link types showing in the Development section

Links shown in this section appear as a result of these actions:

- Creating a branch, commit, or pull request from the work item
- Specifying the work item ID during a commit, pull request, or other supported Git or TFVC operation
- Specifically linking the work item from the Development section or  Links tab to a source code branch, build, or other supported Git or TFVC operation.

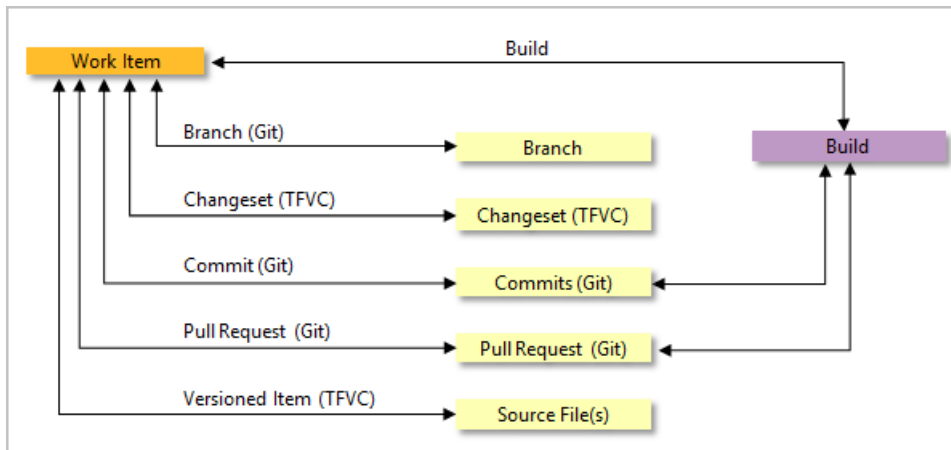
Hovering over any entry listed under the Development section activates the hyperlink to the associated object.

The link types you can add within the development section are Branch, Build, Changeset, Commit, Found in build, Integrated in build, Pull Request, and Versioned Item.



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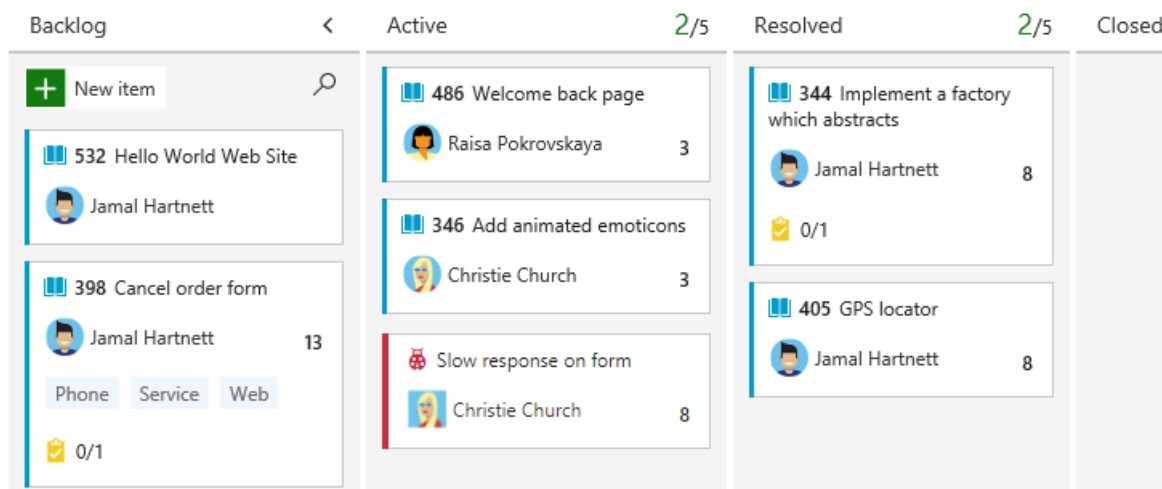
To learn more about the links control or to customize the Development links control, see [LinksControlOptions elements](#), [Development links control](#).

# Kanban basics

1/31/2019 • 11 minutes to read • [Edit Online](#)

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

To maximize a team's ability to consistently deliver high quality software, Kanban emphasize two main practices. The first, visualize the flow of work, requires you to map your team's workflow stages and configure your Kanban board to match. The second, constrain the amount of work in progress, requires you to set work-in-progress (WIP) limits. You're then ready to track progress on your Kanban board and monitor key metrics to reduce lead or cycle time.



Your Kanban board turns your backlog into an interactive signboard, providing a visual flow of work. As work progresses from idea to completion, you update the items on the board. Each column represents a work stage, and each card represents a user story (blue cards) or a bug (red cards) at that stage of work.

Review this article to gain an understanding of how to configure and start working with your Kanban boards:

- View your Kanban board
- Customize the columns shown on your Kanban board to support how your team works
- Set WIP limits to constrain work in progress
- Update the status of work via drag-and-drop
- View the Cumulative flow chart
- How to turn live updates on or off

### NOTE

Both Kanban boards and Taskboards support visualizing the flow of work and monitoring metrics to optimize that flow. Kanban boards track requirements, are sprint-independent, and provide a cumulative flow chart for monitoring progress. Each sprint is associated with a Taskboard that supports tracking tasks defined for the sprint. You can monitor progress through capacity charts and the sprint burndown chart. For guidance on using the Taskboard, see [Update and monitor your Taskboard](#).

User stories and bugs correspond to types of work items. You use [work items](#) to share information, assign work to team members, update status, track dependencies, and more.

## 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 work items and exercise all board features, you must be granted **Basic** 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 private project can't exercise these board features: add work items, drag-and-drop work items to update status, update fields displayed on cards. They can add tasks and change task status.

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

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## Open your Kanban board from the web portal

Your Kanban board is one of two types of boards available to you. The other is the sprint Taskboard. Kanban boards track requirements, are sprint-independent, and provide a cumulative flow chart for monitoring progress. Each sprint is associated with a Taskboard that supports tracking tasks defined for the sprint. You can monitor progress through capacity charts and the sprint burndown chart. For guidance on using the Taskboard, see [Update and monitor your Taskboard](#). For an overview of the features supported on each backlog and board, see [Backlogs, boards, and plans](#).

#### 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](#).



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. Check that you selected the right project, and select **Boards** > **Boards**. Then select the correct team from the team selector menu.

To select another team's board, open the selector. Then select a different team, or select 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.

#### TIP

Select the  star icon to make a team board a favorite. Favorite artifacts () appear at the top of the team selector list.

2. Check that you selected **Backlog items** for Scrum, **Stories** for Agile, or **Requirements** for CMMI as the backlog level.

To switch to the [product backlog](#), select **Stories backlog**. To switch to a Taskboard, see [Update and monitor your Taskboard](#).

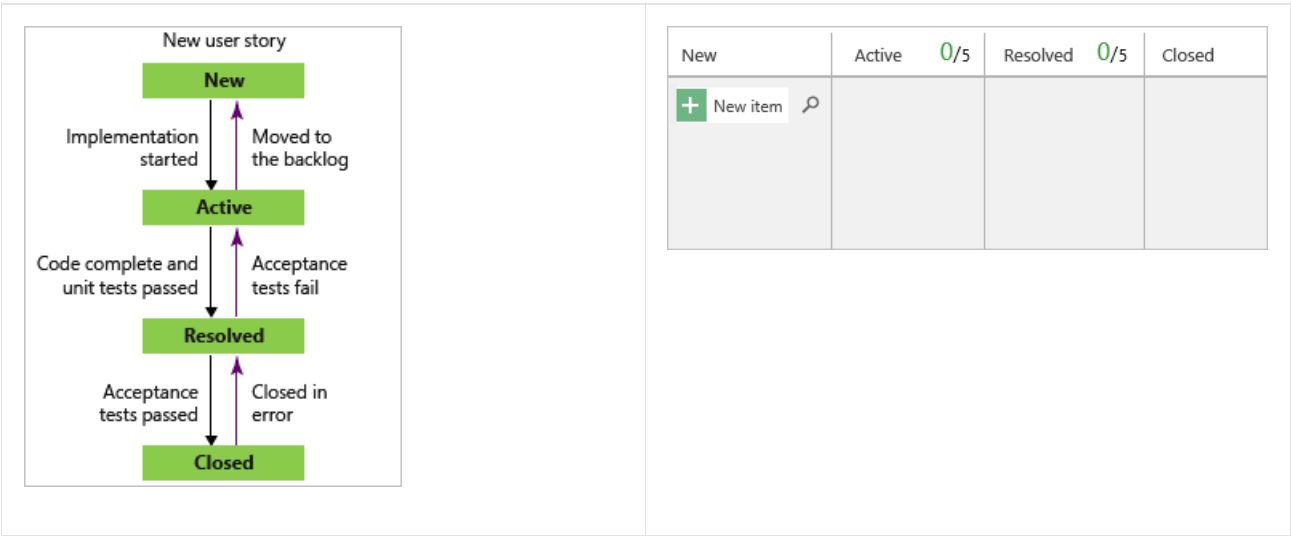
**New navigation** isn't supported on TFS at this time. Select **Previous navigation** for guidance.

## 1. Map the flow of how your team works

Kanban literally means signboard or billboard. As a first step, you customize your board to map to how your team works.

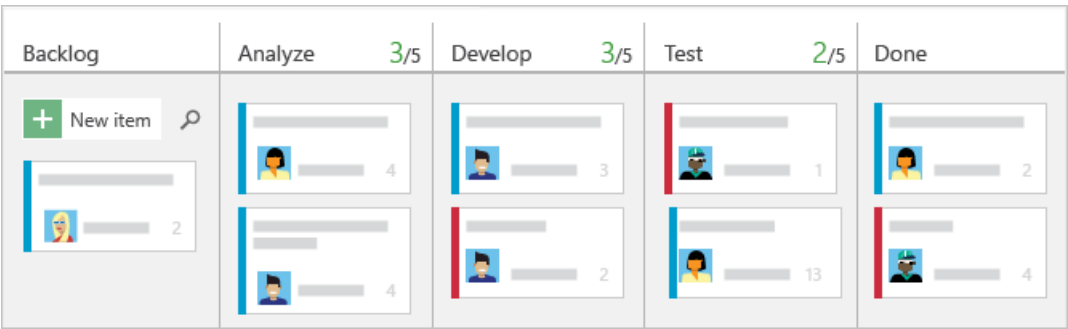
When you first open your Kanban board, you'll see one column for each [workflow state](#). Your actual columns vary based on the [process](#) used to create your project.

For user stories, the New, Active, Resolved, and Closed states track progress from idea to completion.



However, your team's workflow stages most likely don't map to these default states. For your team to have a functional board they must identify the stages of their workflow process and then configure the board to match.

For example, you can change your Kanban columns to map to the following five workflow stages.



Once you've identified your stages, simply [add and rename columns](#) to map to them. Keep the number of columns to a minimum while still representing the key handoffs that occur for your team.

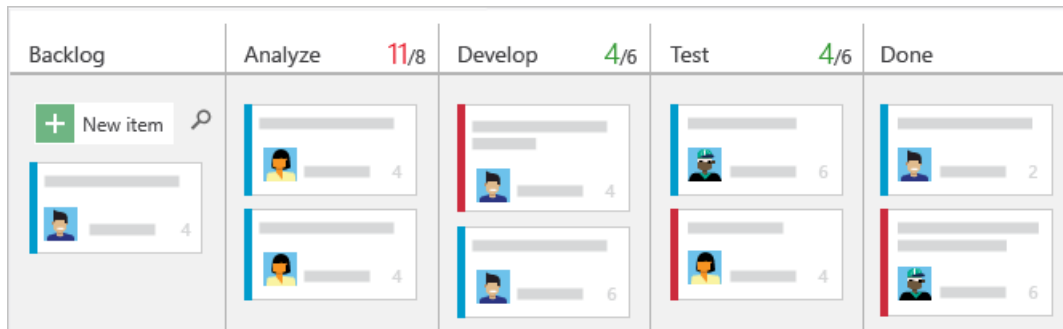
## 2. Set WIP limits to constrain work in progress

In this next step, your team sets WIP limits for each workflow stage. While setting WIP limits is easy, adhering to them takes a team commitment. Teams new to Kanban may find WIP limits counterintuitive and uncomfortable. However, this single practice has helped teams identify bottlenecks, improve their process, and increase the quality of software they ship.

What limits should you set? Start with numbers that don't exceed 2 or 3 items per team member working within

a stage. Respecting WIP limits means teams don't pull items into a column if doing so causes the number of items in the column to exceed the WIP limit.

When they do exceed the limit, the column count displays red. Teams can use this as a signal to focus immediately on activities to bring the number of items in the column down.

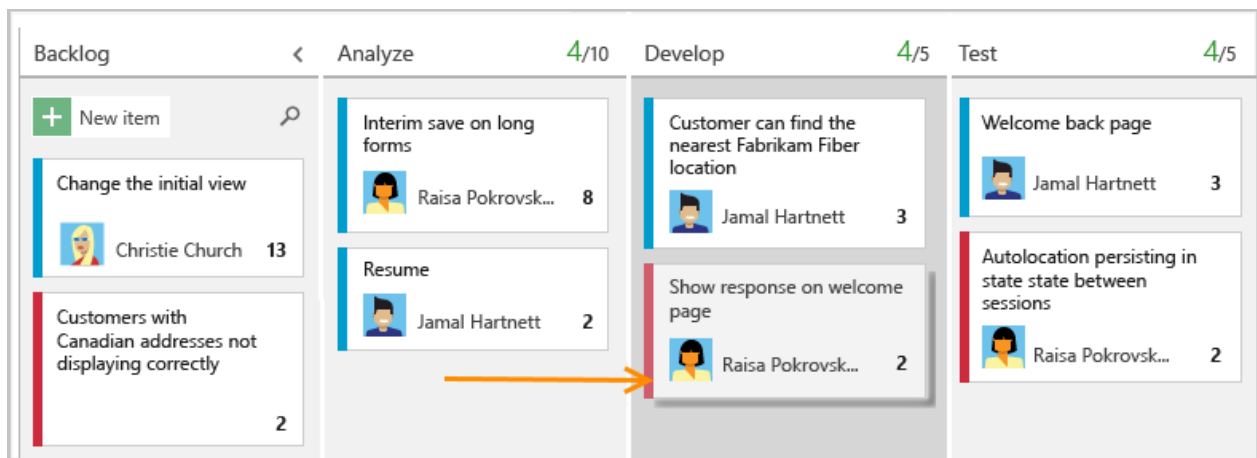


[Set WIP limits](#) based on team discussions and revisit as your team identifies ways to improve their processes. Use WIP limits to identify bottlenecks and eliminate waste from your work flow processes.

### 3. Track work in progress

Once you've configured your Kanban board to match how your team works, you're ready to use it.

Here are a few things you can do. See at a glance the estimated size of work for each item which displays at the bottom right of each card. Add items to your backlog in the first column. When priorities change, move items up and down within a column. And, as work completes in one stage, update the status of an item by moving it to a downstream stage.

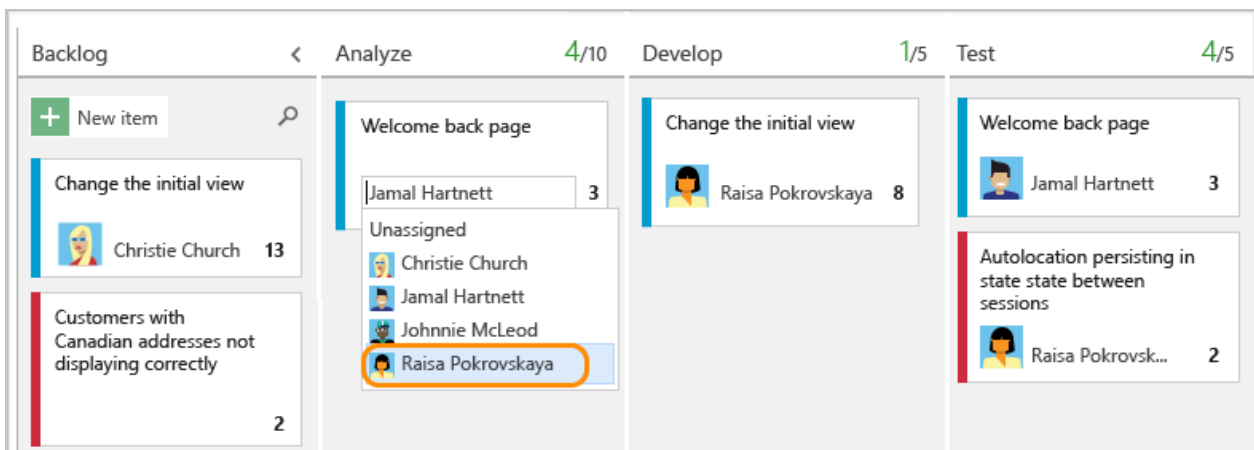


#### NOTE

You can [reorder items within a column](#) from TFS 2015.1 and later versions.

Also, you can quickly update a field or reassign ownership directly from the board.

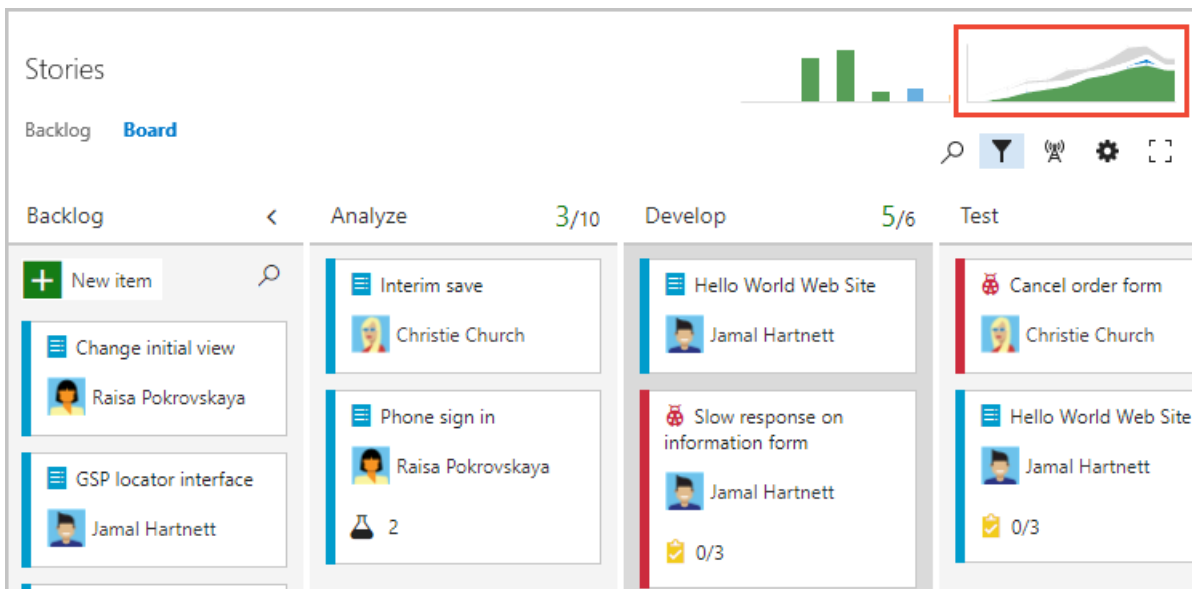




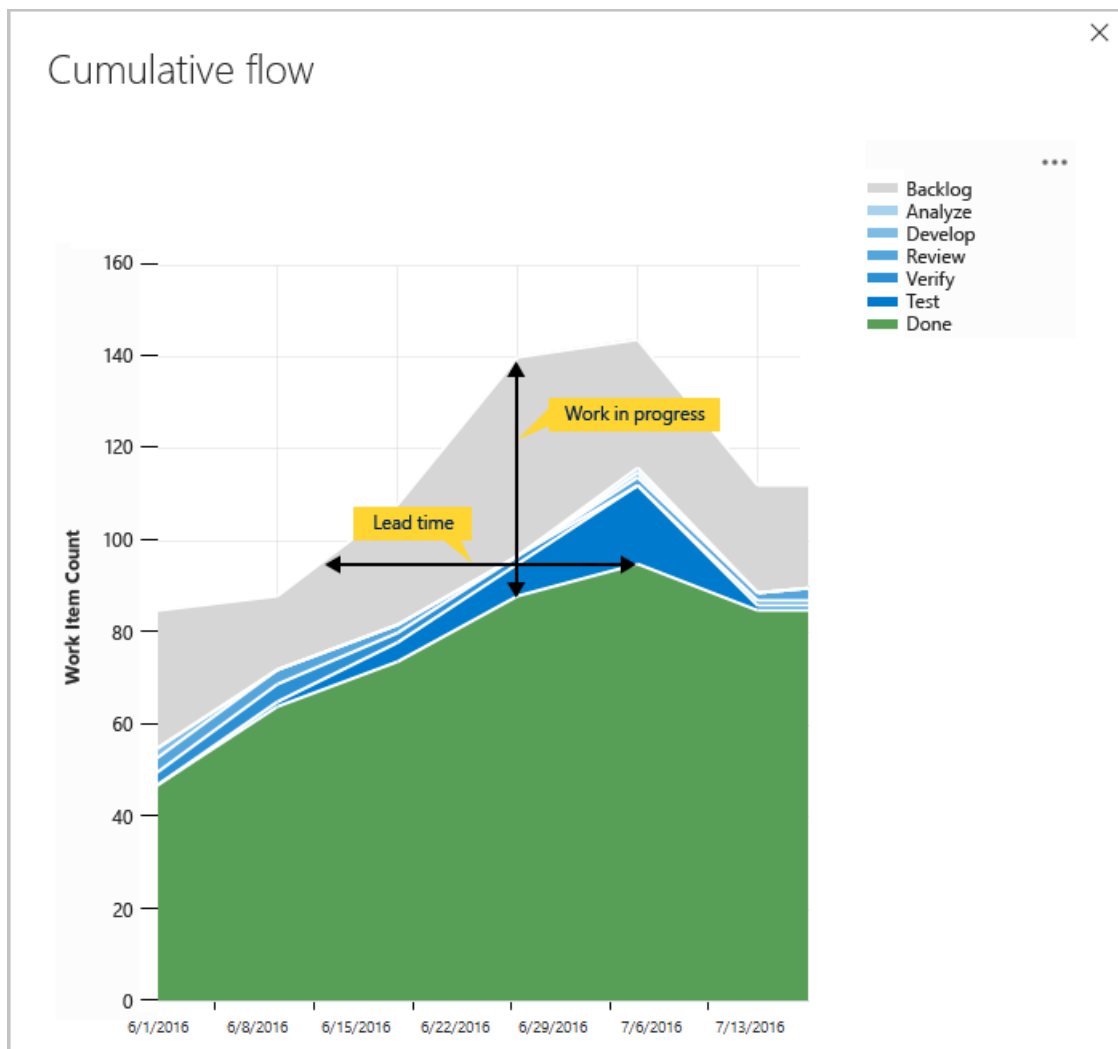
Updating your Kanban board as work progresses helps keep you and your team in sync. Also, you'll be able to see and share the value stream your team is delivering to customers.

## 4. Monitor metrics and fine tune

As with most Agile practices, Kanban encourages monitoring key metrics to fine tune your processes. After your team has used the Kanban board for several weeks, check out your Cumulative Flow Diagram (CFD).



The CFD shows the count of items in each Kanban column for the past 30 weeks or less. From this chart you can gain an idea of the amount of work in progress and lead time. Work in progress counts unfinished requirements. Lead time indicates the amount of time it takes to complete a requirement from the time it was first proposed.



By monitoring these metrics, you can gain insight into how to optimize your processes and minimize lead time. For additional guidance, see [Configure a cumulative flow chart](#).

In addition to the above chart, you can add Analytics widgets to your dashboard. The Analytics Service is in preview and provides access to several widgets. To learn more, see these topics:

- [Widgets based on the Analytics Service](#)
- [Add an Analytics widget to a dashboard](#)
- [What is the Analytics Service?](#)

## Try this next

Here are some useful tips when working with the Kanban board:

- To focus on select work items, [filter your Kanban board](#)
- To quickly assign items to a team member, add the Assign To field to display on the cards, see [Customize cards](#)
- Add a swimlane to track high-priority work or track work which falls into different service level agreements, see [Swimlanes](#)
- Highlight specific work items by color coding cards based on a field value or tag, (see [Customize cards](#))
- If you use Scrumban, drag-and-drop cards onto a sprint to quickly assign them to a sprint.

Each team can manage their backlog and customize their Kanban board. [Add teams](#) when you assign specific feature areas to different teams for development. Each team can then manage their backlog and focus on how they will develop their deliverables.

If you're new to tracking work with Agile tools and want to understand what you can customize, see [Customize](#)

your work tracking experience.


## Enable live updates

Enable live updates to automatically refresh your Kanban board when changes occur. With live updates enabled, you no longer have to press **F5** to see the latest changes.

### NOTE

Live updates is supported on TFS 2017 and later versions.

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

Choose the  view options icon and move the slider for **Live updates** to On.

☐

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](#).

# Add task checklists

2/7/2019 • 8 minutes to read • [Edit Online](#)

## Azure Boards | Azure DevOps Server 2019 | TFS 2018 | TFS 2017 | TFS 2015

Many teams find Kanban ideal for tracking work as it supports visualizing the flow of work in progress. And, you can quickly add new items and update status. If you're new to working with the Kanban board, see [Kanban basics](#).

With task checklists, you continue to enjoy lightweight tracking, while gaining visibility into which tasks are still to be completed and those that are done. Task checklists provide a quick and easy way to track elements of work which are important to support completing a backlog item. Here we see several tasks for work in progress, both yet to do and those completed.

### NOTE

Task checklists on the Kanban board are supported from TFS 2015.1 and later versions.

In this article, you'll learn:

- How to add a task or set of tasks to a backlog item from your Kanban board
- How to mark a task as done
- How to expand or collapse the task checklist
- How to reorder and reparent tasks or reassign them to a sprint
- Keyboard shortcuts for working with the Kanban board

The screenshot displays the Azure Boards Kanban board interface. At the top, there are tabs for 'Backlog' and 'Board', with 'Board' selected. Below the tabs, there are three columns representing different stages of work: 'Analyze' (1/5 items), 'Code' (1/5 items), and 'Test' (2/10 items). Each column has a 'New' button on the left. The 'Analyze' column contains a task card for 'Hello World Web Site' by Jamal Hartnett, with a checklist of four items: 'Design welcome screen' (checked), 'Change background color' (unchecked), 'Standardize form factors' (unchecked), and 'About screen' (unchecked). The 'Code' column contains a task card for 'Slow response on form' by Raisa Pokrovskaya, with a checklist of two items: 'Fix performance issues' (checked) and 'Apply fix elsewhere' (unchecked). The 'Test' column contains two task cards: 'Welcome back' by Jamal Hartnett with a checklist of three items ('Design form' and 'Code form' are checked), and 'Add an information form' by Christie Church with a checklist of two items ('Auto-complete user's name in form' and 'Auto-save' are checked).

## Prerequisites

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- [Previous navigation](#)

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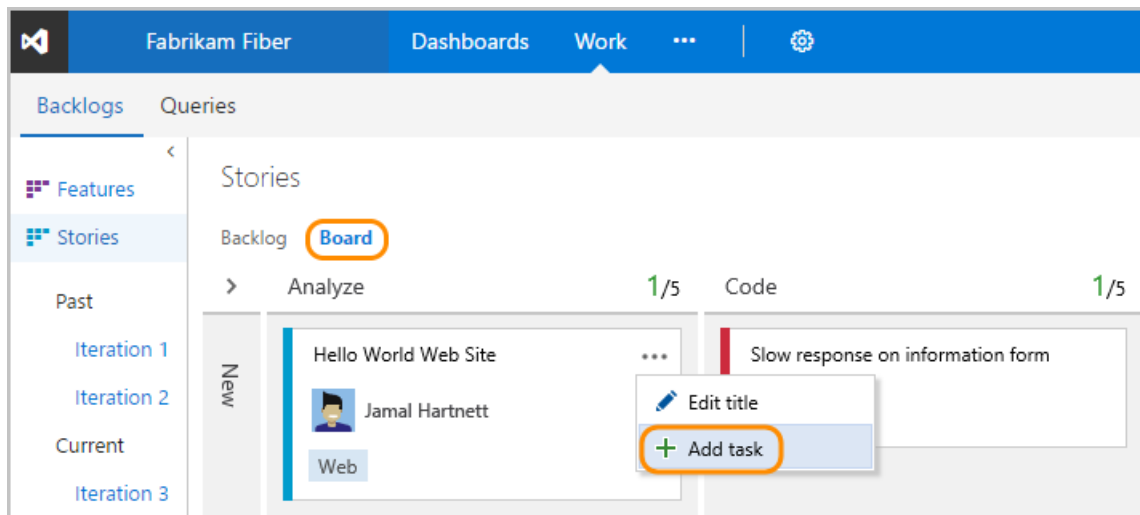
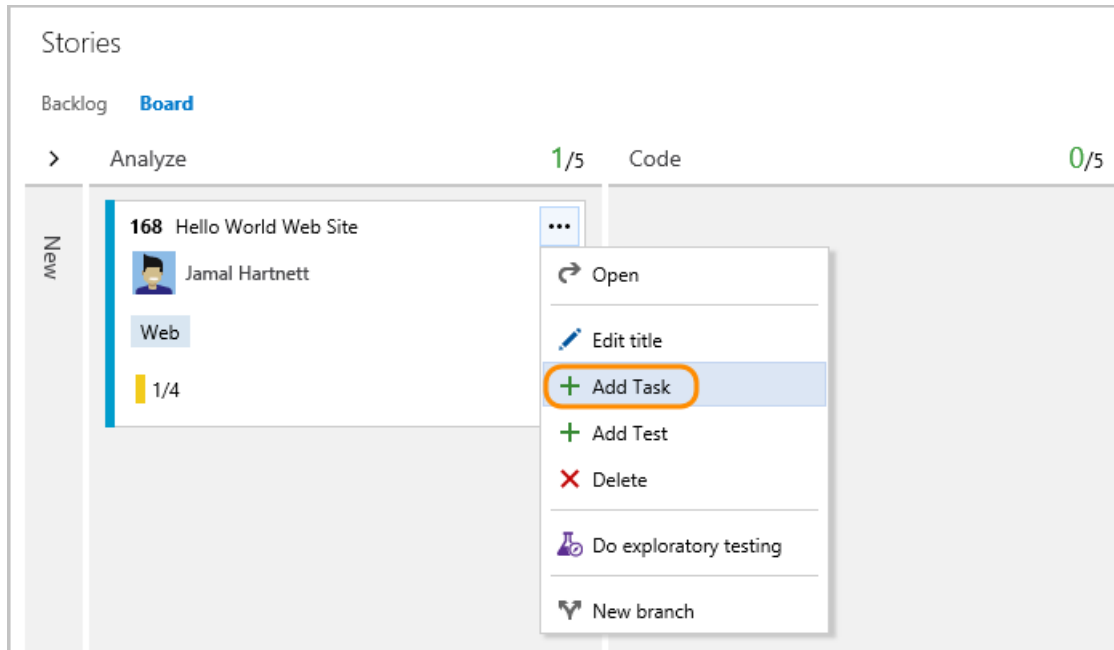
2. Check that you selected **Backlog items** for Scrum, **Stories** for Agile, or **Requirements** for CMMI as the backlog level.

To switch to the [product backlog](#), select **Stories backlog**. To switch to a Taskboard, see [Update and monitor your Taskboard](#).

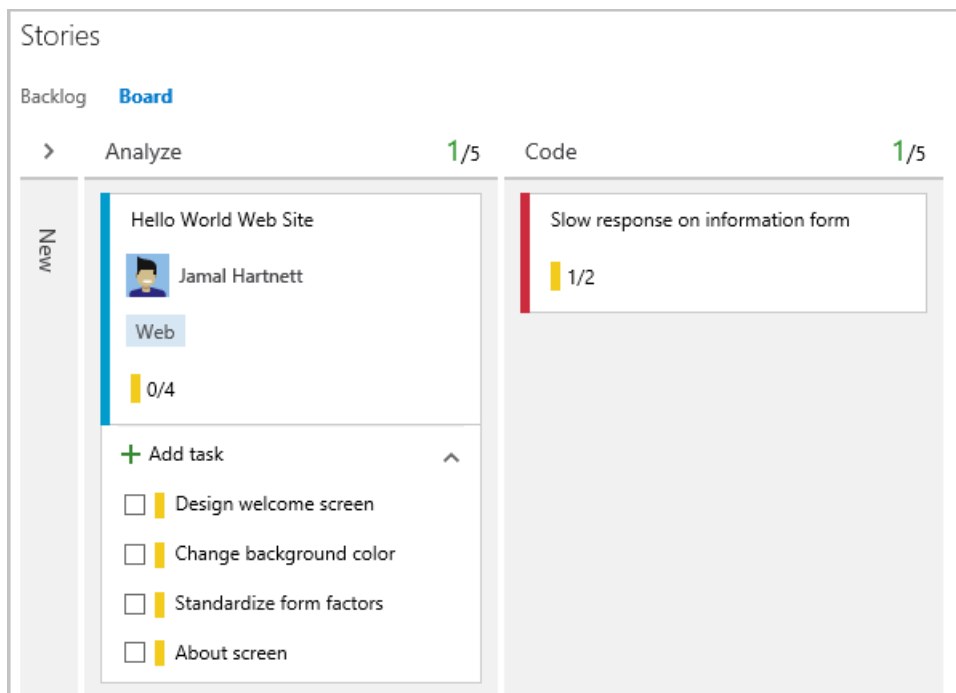
**New navigation** isn't supported on TFS at this time. Select **Previous navigation** for guidance.


## Add a task or set of tasks

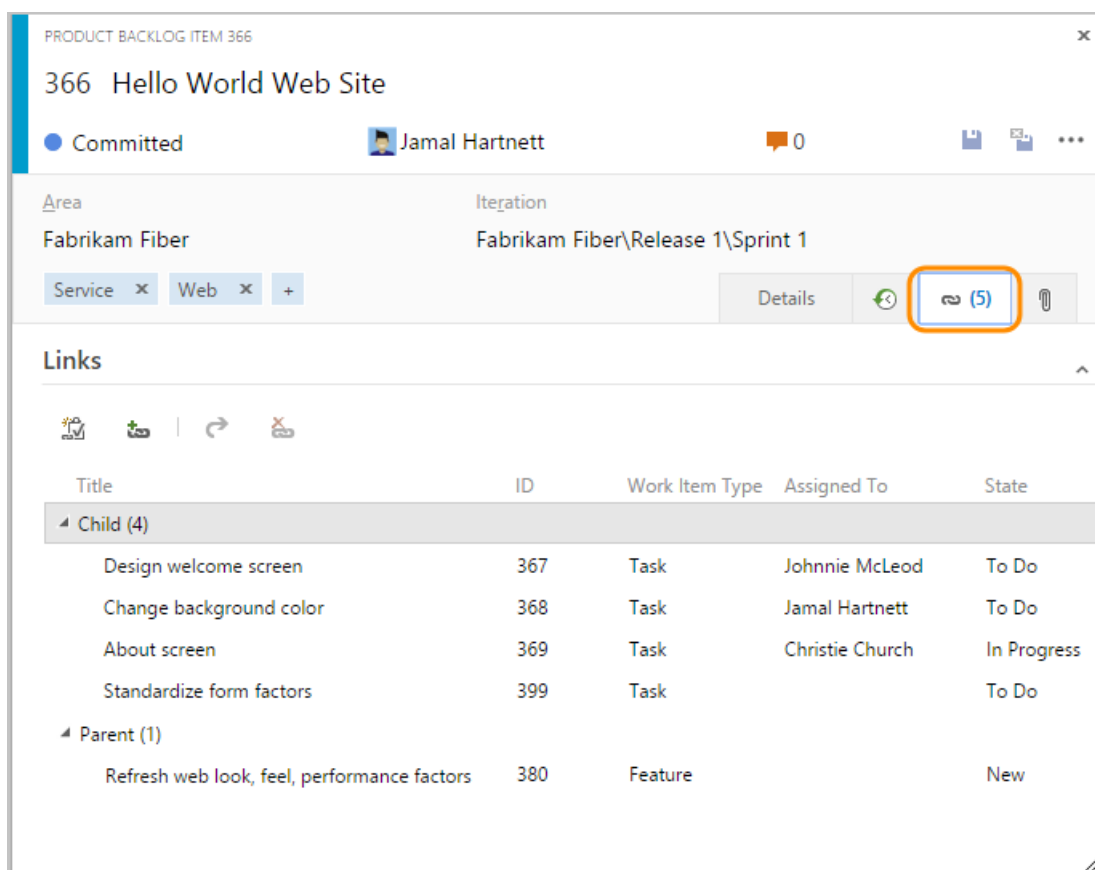
1. To start adding tasks, open the menu for the work item.



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



3. If you have details you want to add about a task, open the parent work item and then choose the  links icon/tab.



4. Double-click the task, or select and press the Enter key, to open it.



TASK 367

367 Design welcome screen

To Do

Johnnie McLeod

0

Area

Fabrikam Fiber

Add Tag

Iteration

Fabrikam Fiber\Release 1\Sprint 1

Details

(1)

Description

B / U

Status

Reason

Additional work found

Details

Priority

2

Remaining Work

Activity

Blocked

Tasks that you create from the Kanban board will show up on your sprint taskboard. Also, tasks that you create from the [sprint backlog](#) or [taskboard](#) will show up within tasks checklists on the Kanban board.

## Mark a task as done

When you complete a task, simply click the checkbox to change its status to Done or Closed.

Stories

Backlog

Board

>

Analyze

1/5

Code

1/5

Test

2/10

New

Hello World Web Site

Jamal Hartnett

Web

1/4

+ Add task

☒ Design welcome screen

☐ Change background color

☐ Standardize form factors

☐ About screen

Slow response on form

Raisa Pokrovskaya

1/2

+ Add task

☒ Fix performance issues

☐ Apply fix elsewhere

Welcome back

Jamal Hartnett

2/2

+ Add task

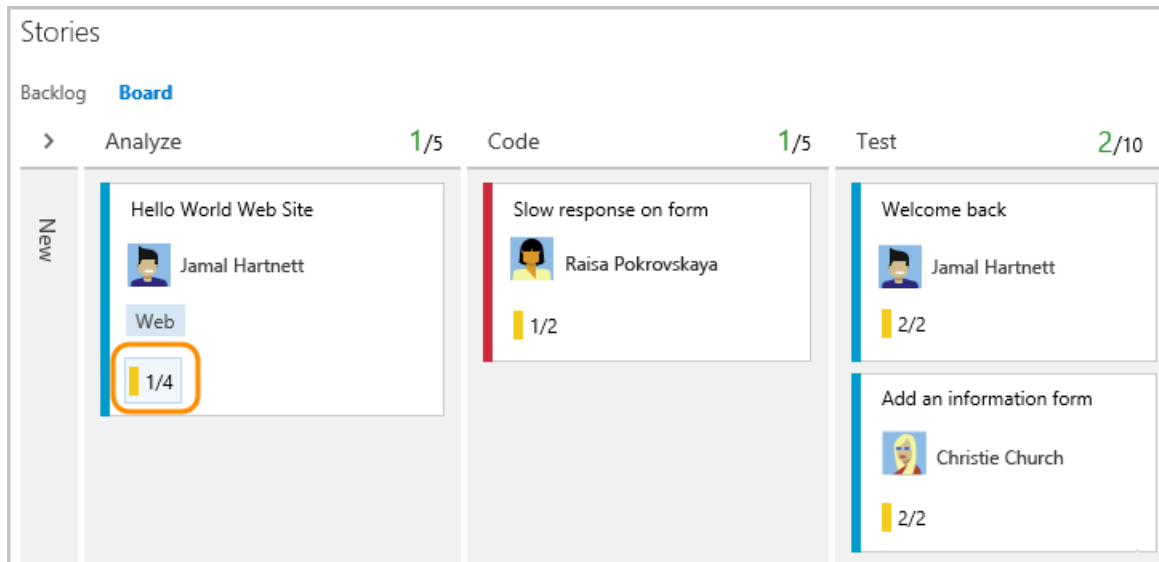
☒ Design form

☒ Code form

The State of the work item is updated from To Do to Done for Scrum projects, and from Active to Closed for Agile and CMMI projects.

## Expand or collapse the task checklist

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

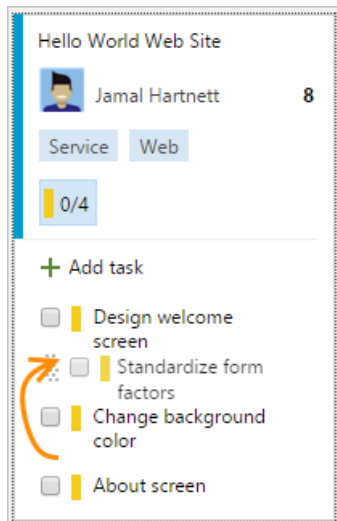


Simply click the task checklist summary to expand a collapsed task checklist. Click the same summary to collapse an expanded checklist.

## Reorder and reparent tasks or reassign them to a sprint

Tasks that you create from the Kanban board are automatically assigned to the sprint/iteration path of the parent work item under which you define them.

You can drag a task within a work item to reorder it. Or, you can drag the task to another work item on the Kanban board to reparent it.



### NOTE

Users with **Stakeholder** access can't drag-and-drop tasks or reorder and reparent tasks.

To reassign a task to a different sprint, you must open the sprint backlog where it's currently defined and then drag it to the new sprint.

## Configure the Kanban board

To configure or change the layout of the board, see one of these topics.

- [Add columns](#)

- [WIP limits](#)
- [Add swimlanes, expedite work](#)
- [Customize cards](#)
- [Split columns](#)
- [Definition of Done](#)

## Q & A

**Q: If I manage bugs with tasks, can I add bugs as a checklist to a requirement?**

**A:** No. Task checklists only support the task work item type.

## Related articles

Use your task checklist for lightweight tracking of to-do lists. If you find that you don't use this feature, you can disable it from the [common configurations dialog](#).

You can also [add tags and show tags and fields on cards](#) to support other tracking needs.

In addition, you can:

- [Add, run, update manual tests](#)
- [Create a new branch, drive Git development](#)
- [Kanban board controls](#)

### REST API resources

To programmatically create tasks, see the [REST API, Work Items reference](#).

# Add, run, and update inline tests

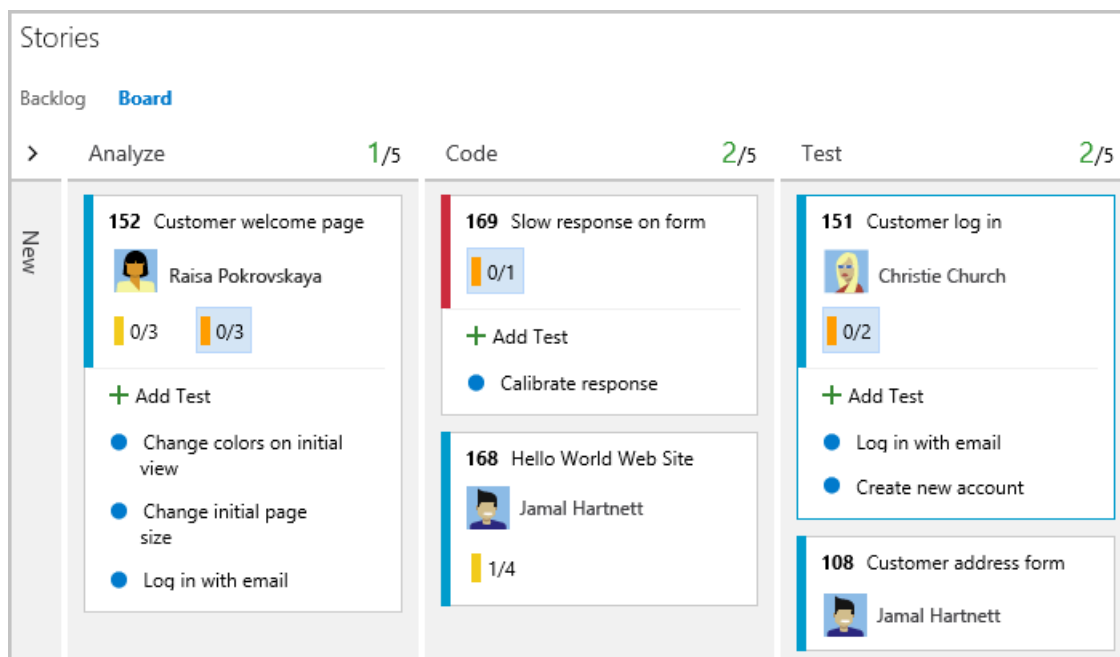
1/31/2019 • 7 minutes to read • [Edit Online](#)

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

Similar to [task checklists](#), you can quickly define inline tests, or a set of manual tests, for a backlog item from your Kanban board. Not only can you add tests, you can run them and update their status. If you're new to working with the Kanban board, see [Kanban basics](#).

In this article, you'll learn:

- How to add inline tests to a backlog item from your Kanban board
- How to run tests and update the status of tests
- How to expand or collapse inline tests
- How to reorder or reparent inline tests



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

## Prerequisites

- You must connect to a project. If you don't have a project yet, [create one](#).
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- 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 work items and exercise all board features, you must be granted **Basic** 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 can't exercise these board features: add work items, drag-and-drop work items to update status or move to another sprint, update fields displayed on cards. They can add tasks and change task status.

## Open your Kanban board from the web portal

#### 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

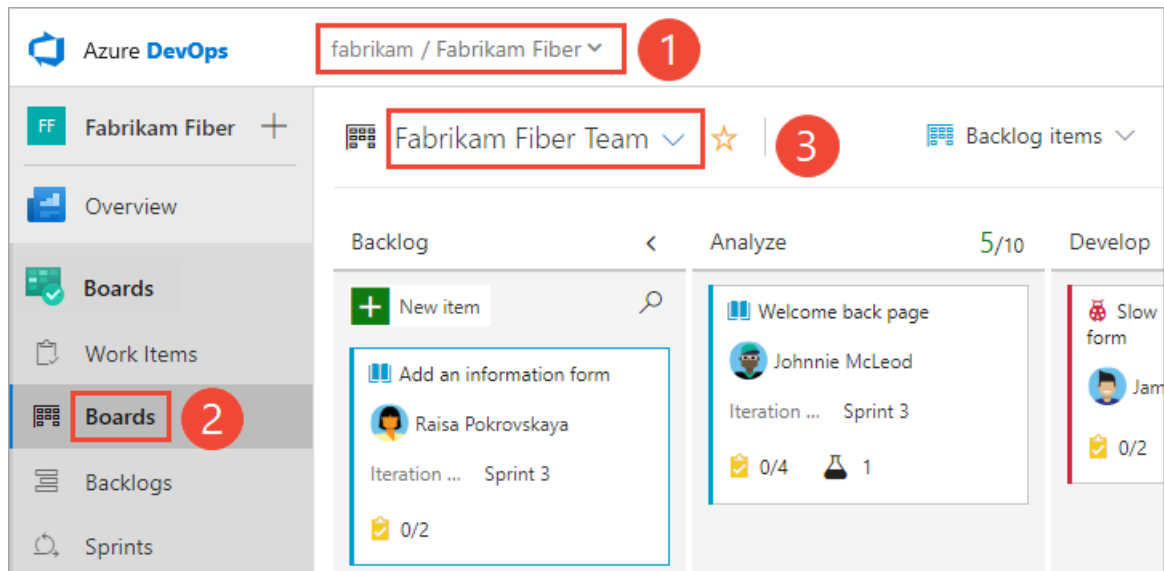
Choose the **New navigation** tab for guidance. Azure DevOps Server 2019 supports the **New Navigation** user interface. For more information, see [Web portal navigation](#).

#### NOTE

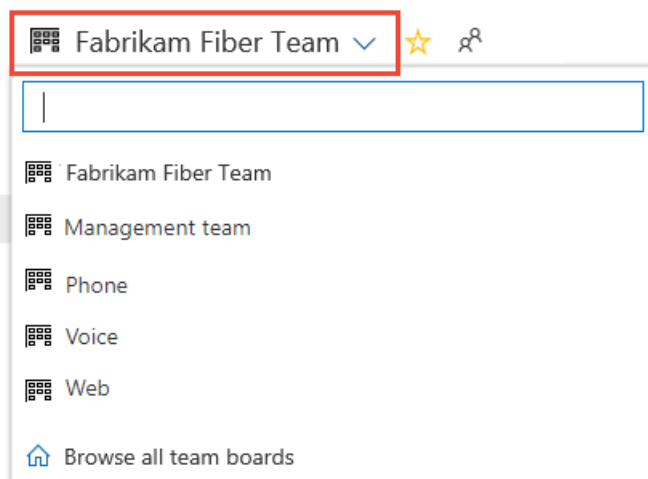
Choose the **Previous navigation** tab for guidance. TFS 2018 and earlier versions only support the previous navigation user interface. For more information, see [Web portal navigation](#).

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



1. To view your Kanban board, open your project from a web browser and choose (1) **Work**, (2) **Boards**, and then (3) select the team's board from the selector.



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.



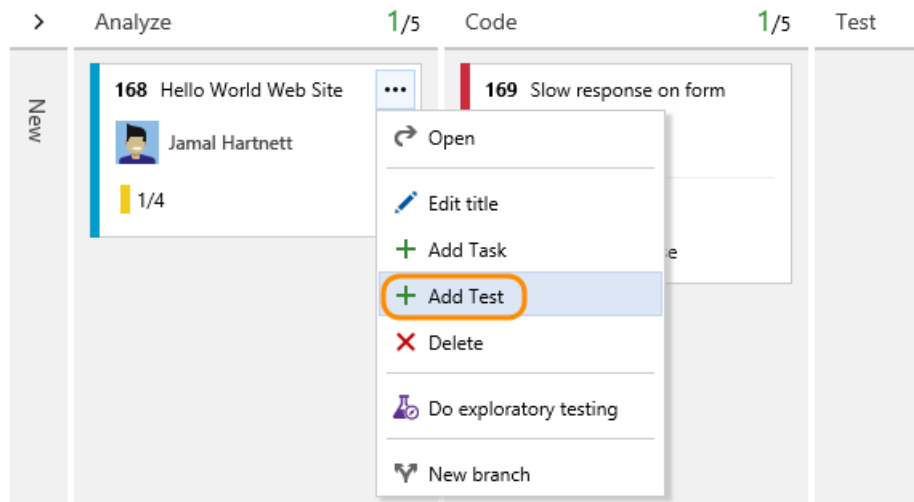
#### TIP

Choose the  star icon to favorite a team board. Favorited artifacts ( favorited icon) appear at the top of the team selector list.

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

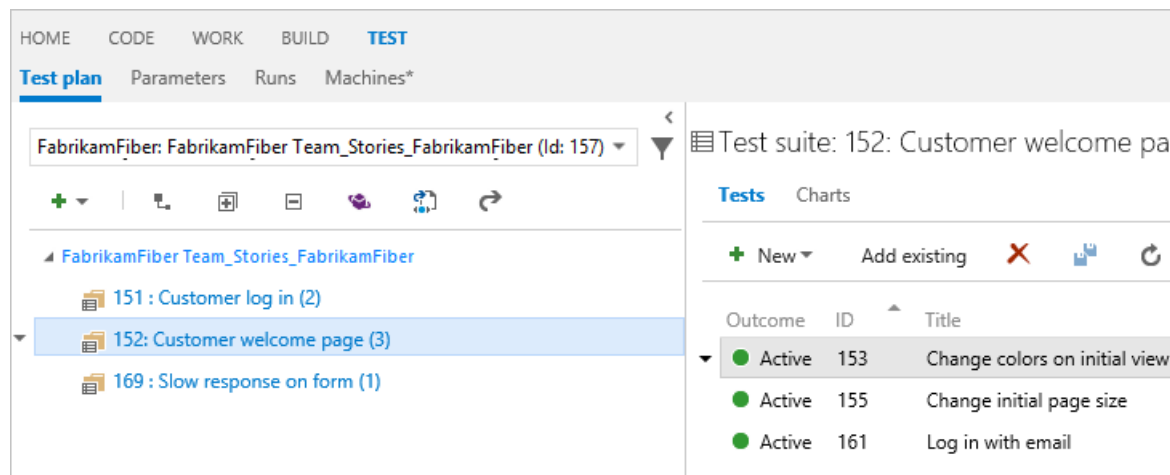
# Add tests

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



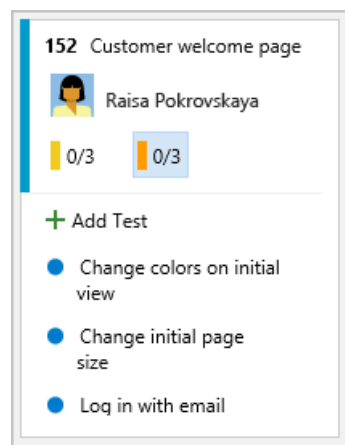
Adding inline tests is the same as adding test cases to a test suite. A default test plan and test suite are automatically created under which the manual test cases are grouped.

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

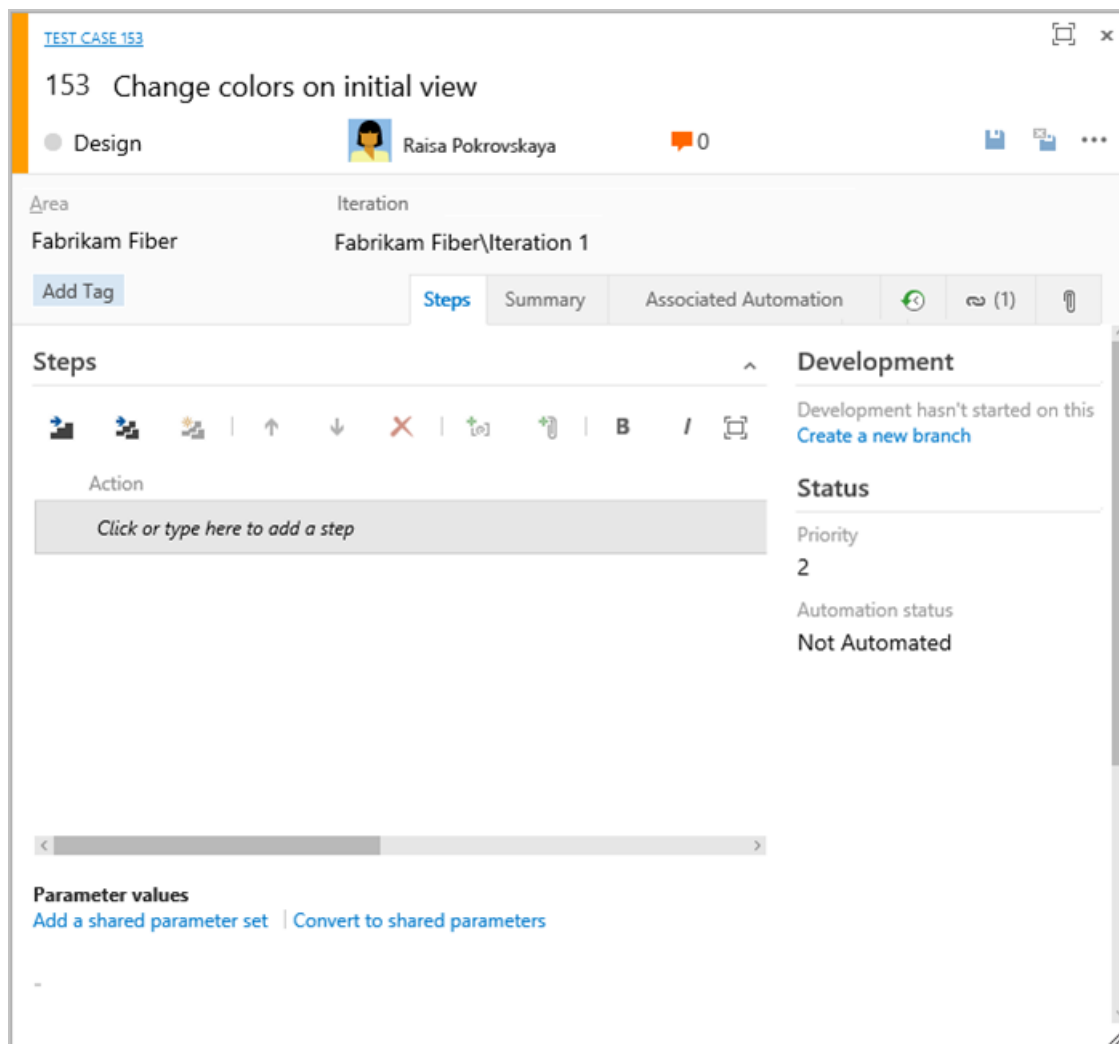


To learn more about test plans and test suites, see [Plan your tests](#).

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




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

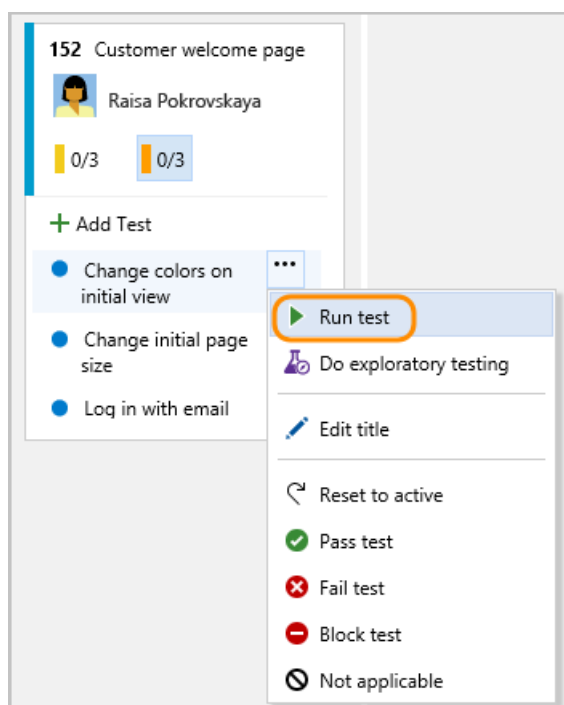


See [Create manual tests](#) to learn more about defining tests.

Prior to running the test, you must add details.

## Run test

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

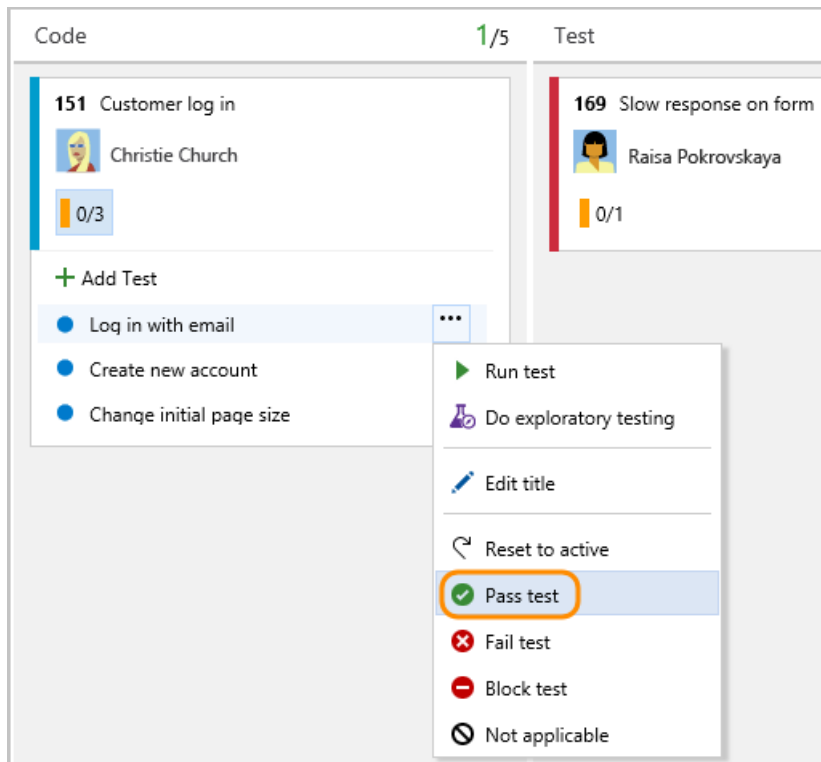




Microsoft Test Runner starts in a new browser instance. For details on running a test, see [Run manual tests](#).

## Update the status of a test

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

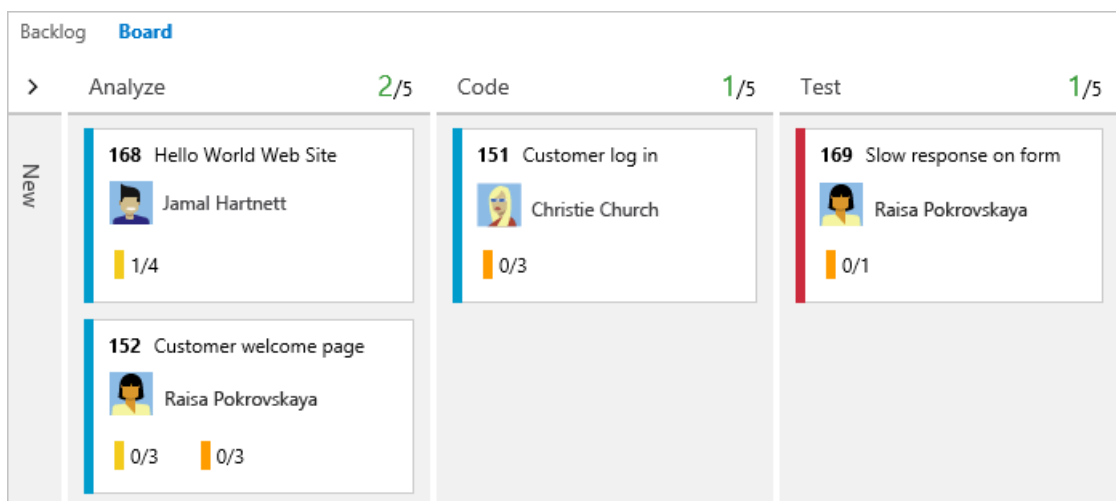


Updating the status of tests enable you to [track test results](#).

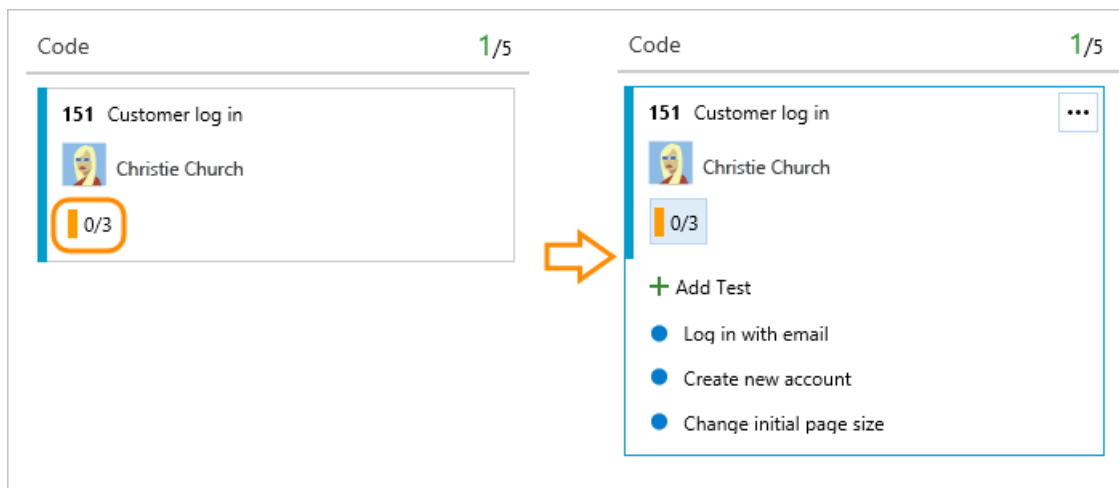
[Why doesn't the Kanban board show the status for test suites and plans already created in Test?](#)

## Expand or collapse inline tests

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

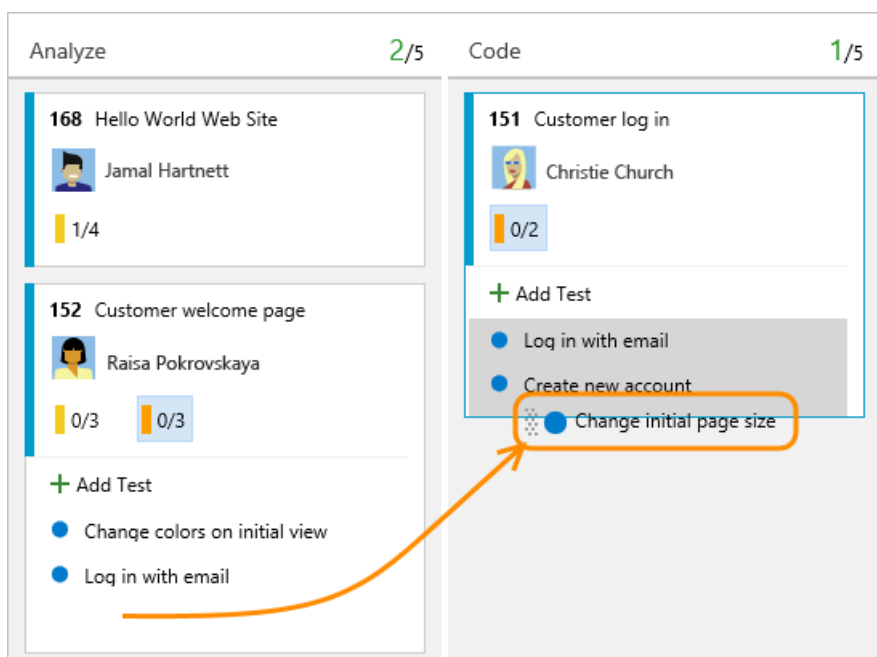


Simply click the inline test summary to expand a collapsed set of tests. Click the same summary to collapse an expanded list.



## Copy or reparent a test

To reparent a test, drag and drop the test onto a different user story.



This action automatically changes the linked relationship of the test to point to the new user story.

To create a copy of a test to add to a different user story, select the test, press the CTRL key and then drag and drop the test onto the card of the user story.

## Related articles

Use inline tests for lightweight traceability and to manage manual tests for user stories or other backlog items that they support. To learn more about test case management, see [Create manual tests](#).

If you find that you don't use this feature, you can disable it from the [common configurations dialog](#).

Additional ways you can quickly add linked items and objects to user stories from the Kanban board:

- [Add inline tasks](#)
- [Create a new branch, drive Git development](#)

To initiate web-based exploratory testing for a user story, you need to install the [Test & Feedback Marketplace extension](#). For details, see [Install the Test & Feedback extension](#).

### Test status in the Kanban board

Test integration with the Kanban board makes it easy for teams to get started with manual testing and then take advantage of the full testing capabilities in Test Manager later, when required. When test cases are created from the Kanban board and updated afterwards in Test Manager, the Kanban board shows the correct status. However, integration is not optimized to work in the other direction; for example, when users create requirement-based suites with Test Manager instead of in the Kanban board. We intend to make some major performance improvements to this integration in future releases.

# Kanban board features and epics

2/7/2019 • 6 minutes to read • [Edit Online](#)

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

If you use Kanban to track progress on your backlog, you can also use Kanban boards to track epics and features.

And, just as with [child task checklists for backlog items](#), you can quickly define and track the progress of child items for your features or epics. Here we see several stories defined for features, both in progress and those completed.

In this article, you'll learn:

- How to add epics and features using your portfolio backlogs
- Keyboard shortcuts for working with the Kanban board

For information on managing features and epics as a list and examples for features and epics, see [Define features and epics](#).

### NOTE

Epic portfolio backlogs are supported in TFS 2015 and later versions. You can add them manually as described in [Add a portfolio backlog level](#).

The screenshot displays the TFS Kanban board interface. At the top, the title 'Features' is shown, followed by tabs for 'Backlog' and 'Board'. Below the tabs, there are columns for 'New', 'Active' (with a '2/5' indicator), and 'Resolved'. The 'New' column contains a 'New item' button and a feature card for '40 Phase 1 - Customer Web' with a progress bar at 1/3. The 'Active' column contains two feature cards: '41 Phase 1 - Customer phone' with a progress bar at 1/3 and '42 Customer service - Phone' with a progress bar at 0/1. Each feature card has a 'Value Area' and 'Business' label, and a list of child tasks with checkboxes. The 'Resolved' column is currently empty.

Features

Backlog Board

New < Active 2/5 Resolved

**40 Phase 1 - Customer Web**  
Value Area Business  
1/3  
+ Add User Story  
☐ Hello World Web Site  
☐ Change the initial view  
☒ Welcome page

**41 Phase 1 - Customer phone**  
Value Area Business  
1/3  
+ Add User Story  
☐ Request support  
☒ Phone sign in  
☐ Check service status

**42 Customer service - Phone**  
Value Area Business  
0/1  
+ Add User Story  
☐ Technician sign in perf improvements

### NOTE

Child checklists for feature and epic Kanban boards are supported from TFS 2017 and later versions.

## 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 work items and exercise all board features, you must be granted **Basic** 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 private project can't exercise these board features: add work items, drag-and-drop work items to update status, update fields displayed on cards. They can add tasks and change task status.

Users with **Stakeholder** access for a public project have full access to 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 work items and exercise all board features, you must be granted **Basic** 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 can't exercise these board features: add work items, drag-and-drop work items to update status, or update fields displayed on cards. They can add tasks and change task status.

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- 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 work items and exercise all board features, you must be granted **Basic** 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 can't exercise these board features: add work items, drag-and-drop work items to update status or move to another sprint, update fields displayed on cards. They can add tasks and change task status.

## Open your Kanban board from the web portal

Your Kanban board is one of two types of boards available to you. For an overview of the features supported on each backlog and board, see [Backlogs, boards, and plans](#). To switch to the [product backlog](#), choose **Stories**

**backlog.** And, to switch to the [taskboard](#), choose **Sprints** and then choose **Taskboard**.

#### 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](#)

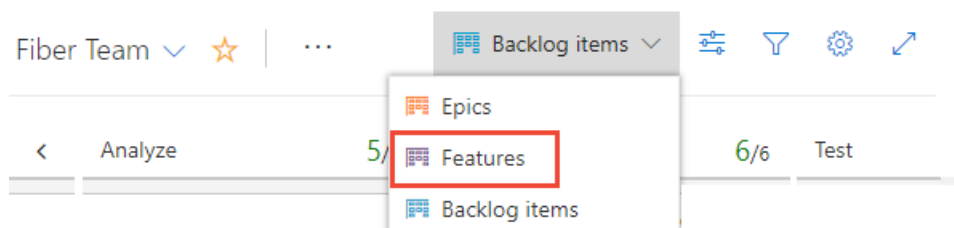
1. (1) Check that you have selected the right project, (2) choose **Boards>Boards**, and then (3) select the correct team from the team selector menu.

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.

#### TIP

Choose the  star icon to favorite a team board. Favorited artifacts ( favorited icon) appear at the top of the team selector list.

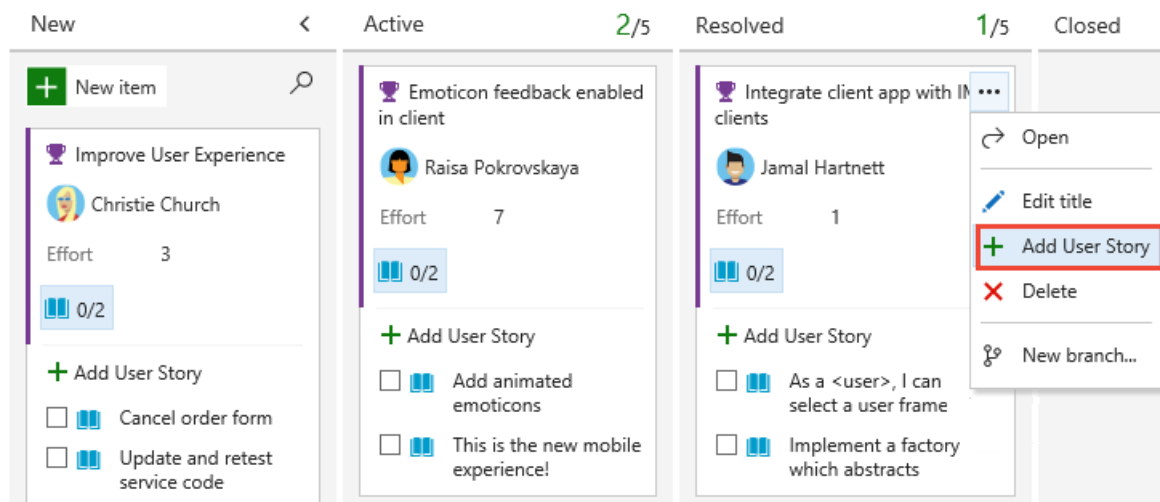
2. Select **Features** or **Epics** from the backlog selector menu .



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

## Add epics or features

Add new items to a feature or epic through the item's **...** Action menu. For descriptions of fields used to support features and epics, see [Define features and epics](#).





If you have a number of items to add, simply keep typing your task titles and click Enter. If you have details you want to add about to a work item, hover over the item and press Enter.

## Related articles

If you're new to working with the Kanban board, see [Kanban basics](#)

For additional guidance on working with a checklist on a Kanban board, see [Add task checklists](#). You can perform the same operations for the features and epics Kanban boards as you do with the Kanban board for the product backlog. This includes:

- Mark an item as done
- Reorder and reparent work items

To customize the columns, swimlanes, or cards for each Kanban board, make sure you first select the board and then choose the  or  gear icon to open the Settings dialog. See these topics for details:

- [Add columns](#)
- [Customize cards](#)

### REST API resources

To programmatically interact with Kanban board and other team settings, see the [REST API, Boards reference](#).

# Kanban best practices

1/25/2019 • 7 minutes to read • [Edit Online](#)

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

Having worked through the four configuration steps provided in [Kanban basics](#), you're well on your way to implementing most of Kanban's six core practices.

1. **Visualize your workflow.** Teams track their work using a Kanban board that maps to how they work. Teams discuss how to best focus their resources to deliver the most important work.
2. **Limit work in progress.** Teams set and adhere to WIP limits they set for each stage of work. They use WIP limits to maintain focus on completing what they started and to identify bottlenecks occurring in their processes.
3. **Manage flow.** Teams monitor the overall work in progress and lead time, which gives them an idea of the speed of their delivery.
4. **Make policies explicit.** Teams spell out the standards and processes they agree to follow and make them readily accessible. For example, by making the team's Definition of Done for each work stage explicit, they can avoid wasted time and effort.
5. **Create opportunities for feedback.** Teams meet periodically to reflect on what's working and what needs improvement.
6. **Improve collaboratively, evolve experimentally.** Teams determine how to improve the continuous flow of delivery over time based on key metrics. They involve the entire team to gather insights and ideas. And, when persistent bottlenecks arise, they determine the changes that will alleviate them.

Over time, Kanban can provide your team insight as to how well their current processes work end-to-end and how to improve them. Incremental adoption of Kanban practices tends to yield greater success and builds on the sixth practice, to evolve experimentally. These practices arose from principles of Lean Manufacturing and Systems Thinking.

## WIP limits, challenges, and solutions

Teams occasionally exceed WIP limits by 1 or 2 items. However, if your team frequently exceeds the limits, and exceeds them by 3 or more items, they should review processes or adjust the limits.

After a team has worked with WIP limits for several weeks, discuss the challenges team members have, solutions they'd like to try, and adjust the limits as needed. The following list, although not exhaustive, indicates some of the common challenges encountered and proven solutions used by teams who've implemented Kanban successfully.

### Challenges

- **Social dynamics.** When it comes to following rules, team members can feel challenged. Some naturally want to rebel, others don't see that the rule applies to them, or don't see what they do as breaking the rules. Some team members may take on extra work that's outside the scope of what's been agreed to. And, still others don't want to give up multitasking as they believe it's the key to their productivity and individual achievement.
- **Variability of work in progress.** Wide variability in the size of work items—users stories and bugs— can negatively impact the overall workflow. For example, items with estimates that vary in size from 4 hours to 14 days, or 2 to 55 story points, can't be counted the same when it comes to constraining work in progress.
- **Ignoring systemic problems.** Instead of addressing workflow problems when bottlenecks occur, teams soldier on, putting in more time to overcome the bottleneck.



- **Culture change.** Adopting WIP limits introduces changes to the system, culture, and team.

## Solutions

- **Build a culture of team productivity.** Address the natural tension that exists between individual productivity versus team productivity. Identify ways in which team members can enhance the overall productivity of the team and workflow process.
- **Size work to minimize variability.** Before work starts on any item, the team should discuss the overall size of work required and determine if it can be broken down into smaller tasks.
- **Focus on the flow of high priority items.** When idle, team members ask how they can help move an upstream item forward. When blocked or challenged to deliver an item on time, team members ask for help to complete an item.
- **Resource team capacity for each work stage.** Bottlenecks can occur when there aren't enough specialists who work in a particular stage. Determine ways to either increase team skills within each work stage, or add resources as needed to meet an understaffed work stage.
- **Build shared understanding.** Continuously strive to increase the team's understanding of how to work using Kanban practices. Take actions that allow team members to contribute to process changes. Consider scheduling regular retrospectives or team meetings to discuss what works well and what needs changing. Document team policies to limit ambiguity.
- **Use metrics to adjust processes.** Periodically check Kanban metrics of work in progress and lead time to determine when changes need to be made.
- **Manage culture changes mindfully.** People want to do their best work—a core tenant underlying Kanban and its associated disciplines. Apply change management principles as you adopt new practices. Create greater ownership within the team for the success of implementing WIP limits.

## Your team, working software and the Definition of Done

One of the [12 principles of Agile software development](#) is to "deliver working software frequently, from a couple of weeks to a couple of months, with a preference to the shorter timescale."

*All agile teams must establish what they mean when they say "working software," which is frequently known as the definition of done. At a high level, a piece of functionality is complete only when its features pass all tests and can be operated by an end user. At a minimum, teams must go beyond the unit test level and test at the system level. The best teams also include integration testing, performance testing, and customer acceptance testing in their definition of what it means to be done with a piece of functionality. — Jeff Sutherland*

One of the major causes of teams failing to implement Agile is they lack good definitions of done.

Each stage indicates a handoff to someone else who will do work. What information does the next person in the flow sequence need to quickly succeed. Incomplete work or uncommunicated information can lead to delays and wasted effort.

As a starting point, consider some of the following criteria as you work with your team to decide what done means throughout the development process.

STAGE	DONE CRITERIA
-------	---------------

Before work starts on a feature, user story, or requirement	<ol style="list-style-type: none"> <li>1. User story is properly scoped and estimated.</li> <li>2. Acceptance criteria is well defined.</li> <li>3. Customer needs are understood by the team.</li> <li>4. Dependencies have been identified and are tracked.</li> </ol>
Bug filing	<ol style="list-style-type: none"> <li>1. Bug title identifies the issue clearly.</li> <li>2. Repro steps are clear and minimal.</li> <li>3. Bug specifies a single issue.</li> <li>4. Related issues are linked to as related.</li> <li>5. Terms used are clearly understood within the team.</li> </ol>
Code complete, ready for testing	<ol style="list-style-type: none"> <li>1. Code complete, commented, and run against current version.</li> <li>2. Code peer reviewed and meets team standards.</li> <li>3. Builds without error.</li> <li>4. Passes unit and system tests.</li> <li>5. Remaining hours for tasks set to zero and task closed.</li> </ol>
Test complete, ready for release	<ol style="list-style-type: none"> <li>1. Unit tests implemented for all new features or functions.</li> <li>2. Unit tests are all passing.</li> <li>3. Acceptance/story tests are written and passing.</li> <li>4. Regression tests are green with known failures.</li> <li>5. Sufficient exploratory testing has been done.</li> <li>6. Feature/function works correctly as expected.</li> <li>7. Unsolved defects have been logged as bugs.</li> <li>8. Code coverage is stable or improving.</li> </ol>

As your team makes progress, revisit your Definition of Done criteria.

*A development team's Definition of Done is meant to expand over time. A newly formed team will invariably have a less stringent and smaller Definition of Done than a more mature team with a shared history of improving. Expanding a team's Definition of Done lies at the very core of Kaizen, a Japanese term meaning a mindful and constant focus on improvement. While a team may initially require only that code build before being checked in, over time they should evolve more exacting standards like the need for unit tests to accompany new code. — David Starr*

## Acceptance Criteria versus Definition of Done

Acceptance criteria corresponds to what a customer should expect when a user story, feature, or requirement has been implemented. Conversations between the team and customers to determine the acceptance criteria helps ensure a common understanding within the team to meet customers' expectations. The acceptance criteria can be used as the basis for acceptance tests so that the team can more effectively evaluate whether an item has been satisfactorily completed.

Acceptance criteria defines when a feature is shippable. Capture the criteria for each backlog item in the Acceptance Criteria field (for Scrum product backlog items) or the Description field (for Agile user stories and CMMI requirements).

Product Backlog Item 387\*: Cancel order form

Cancel order form

387

IterationFabrikam Fiber

STATUS

Assigned ToJamal Hartnett

StateNew

AreaFabrikam Fiber

ReasonNew backlog item

DETAILS

Priority2

Effort13

Business Value

Value areaBusiness

DESCRIPTIONSTORYBOARDS (1)TEST CASESTASKS

B / U + -

Provide a **cancellation order form** similar to that shown below.  
See storyboard for details.

Order details here

Cancel

ACCEPTANCE CRITERIAHISTORYLINKS (1)ATTACHMENTS

B / U + -

SaveSave and closeCancel

Tags Add...

Cancel order form

387

Iteration	Fabrikam Fiber
-----------	----------------

## STATUS

Assigned To  Jamal Hartnett

State	New
-------	-----

Area	Fabrikam Fiber
------	----------------

Reason	New backlog item
--------	------------------

## DETAILS

Priority

2

Effort

13

## Business Value

Value area

Business

### DESCRIPTION

## STORYBOARDS (1)

## TEST CASES

## TASKS

### ACCEPTANCE CRITERIA

## HISTORY LINKS (1)

) ATTACHMENTS

Provide a **cancellation order form** similar to that shown below.  
See storyboard for details.

Order details here

Cancel

Save

Save and close

Cancel

The Definition of Done, on the other hand, is about delivering an incremental piece of a feature as it moves from not started to complete. Agile teams meet with greater success when each handoff made is in a ready state for the recipient to begin their work.

*Agility requires delivering done, ready-to-use increments of working software each Sprint. Yet most Scrum and agile teams generate partially done, incomplete Increments. When a Scrum Team is asked why Product Backlog requirements were not completely done in a Sprint, team members often reply, "We didn't have time."*  
— Ken Schwaber and David Starr

## Additional resources

- [DoD Goes Agile](#)
- [Walking Through a Definition of Done](#)
- [Agile Culture](#)
- [What is Kanban?](#)
- [Kanban: Successful Evolutionary Change for Your Technology Business by David J. Anderson](#)
- [Agile Project Management with Kanban by Eric Brechner](#)

# Kanban key concepts

1/31/2019 • 6 minutes to read • [Edit Online](#)

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

This article provides a short dictionary of terms and available tools used in tracking work using Kanban boards and Kanban methods. See also:

- [Agile glossary](#)
- [Work item field index](#)
- [Project management and navigation glossary](#)

## Agile tools

A suite of web-based tools used to track work and support Agile methodologies. Agile tools support the core Agile methods—Scrum and Kanban—used by software development teams today. Learn more: [About Agile tools and Agile project management](#).

## Blocker

An issue that prevents work from progressing. You can highlight work that is blocked by using tags and changing the card color. Learn more: [Customize cards](#), [Define style rules to highlight cards](#).

## Bottleneck

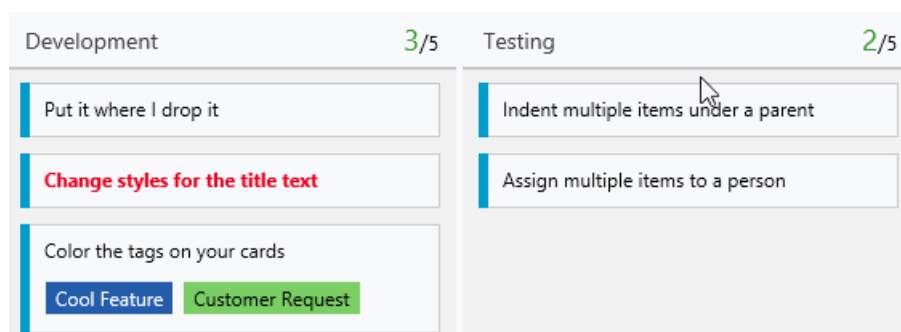
A constraint in the system that limits the flow of work. Identifying bottlenecks makes it easier to reduce their impact and provides a mechanism for controlling work flowing through the process. Learn more: [Split columns](#), [Identify bottlenecks](#).

## Bugs

A type of work item that records a potential source of dissatisfaction with the product. The common name of a work item type for tracking code defects. Each team can choose how they want to manage bugs. Some teams like to track bugs along with requirements on the backlog. Other teams like to track bugs as tasks performed in support of a requirement. The bugs then appear on their Taskboard. Learn more: [Manage bugs](#).

## Card reordering

Card reordering is a configurable setting for a team's Kanban board that either forces cards to maintain the backlog priority when dragged and dropped on the board, or allows the priority order to change. Learn more: [Reorder cards](#).



## Cumulative flow diagram (CFD)

The built-in CFD chart shows the count of items in each Kanban column for the past 30 weeks or less. From this chart you can gain an idea of the amount of work in progress and lead time. Work in progress counts unfinished requirements. Learn more: [Cumulative flow, lead time, and cycle time guidance](#).

## Cycle time

Cycle time is the time calculated for a work item from first entering an *In Progress* category state to entering a *Completed* state category. Learn more: [Cumulative flow, lead time, and cycle time guidance](#).



You can gain valuable metrics and visualize the cycle time for a team and a configurable time period by [adding the Cycle Time widget to the dashboard](#).

## Definition of Done

Criteria that a team specifies for each stage of work to share and standardize on what constitutes work being done at that stage. Learn more: [Kanban best practices, working software and the Definition of Done](#).

## Kanban board

An interactive, electronic sign board that supports visualization of the flow of work from concept to completion and lean methods. Azure DevOps provides a Kanban board for each product and portfolio backlog. Learn more: [Kanban basics](#) and [Kanban board features and epics](#).

## Kanban columns

A Kanban column maps to a stage of work. The default columns map to the workflow states of the work item types which appear on the Kanban board. You configure the columns to map [workflow states](#) of your team. Learn more: [Kanban basics, Map the flow of work](#).

## Lead time

Lead time is the time calculated for a work item from first entering a *Proposed* category state to entering a *Completed* state category. Learn more: [Cumulative flow, lead time, and cycle time guidance](#).

You can gain valuable metrics and visualize the lead time for a team and a configurable time period by [adding the Lead Time widget to the dashboard](#).

## Live updates

Live updates is a Kanban board view option which when enabled automatically refreshes the Kanban board as other team members move or reorder cards. Learn more: [Enable live updates](#).

## Issues or impediments

A type of work item that helps track unplanned activities. Resolving an issue or impediment requires more work beyond what was scheduled based on actual requirements. Using the issue (Agile or CMMI process) or impediment (Scrum process) work item type helps you track and manage these issues until you can resolve and close them. Learn more: [Manage issues and impediments](#).

## Product backlog

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](#).

## Product backlog item

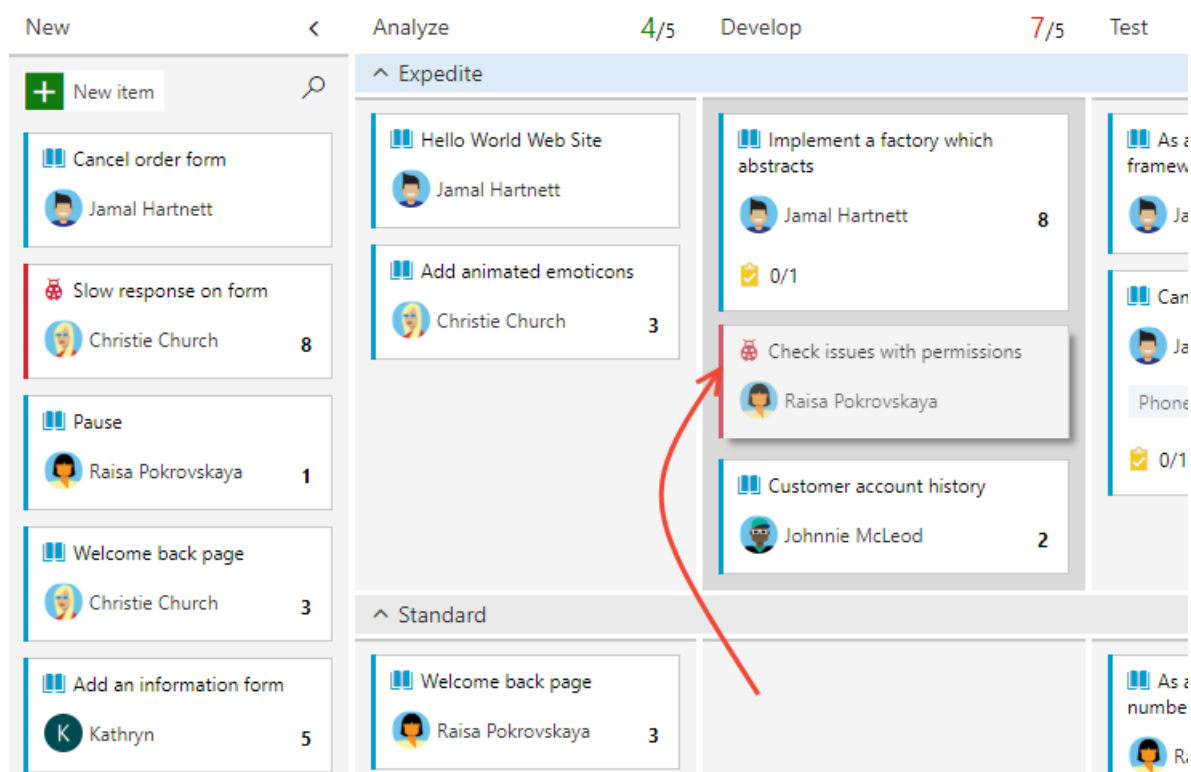
A type of work item that defines the applications, requirements, and elements that teams plan to create. Product owners typically define and stack rank product backlog items which are defined with the Scrum process. Learn more: [Scrum process work item types and workflow](#).

## Portfolio backlog

An interactive list of work items, similar to the product backlog, that supports organizing or grouping work under features, epics, or scenarios. Portfolio backlogs work similarly to product backlogs in that you can prioritize work and view the tree hierarchy of work. Learn more: [Define features and epics](#).

## Swimlanes

A swimlane is a configurable row on a Kanban board, usually used to support different service class levels of work. Learn more: [Expedite work with swimlanes](#).



## Split columns

Split columns lets your team implement a pull mechanism within the workflow process. Without split columns, teams push work forward, to signal that they've completed their stage of work. However, pushing it to the next stage doesn't necessarily mean that a team member immediately starts work on that item. With split columns, your team knows exactly how many items sit idle, waiting for work to begin. Learn more: [Split columns](#).

Backlog	Analyze 4/5		Develop 6/5		Test 4/5		Done
	Doing	Done	Doing	Done	Doing	Done	
+ New item							

## Task checklists

A task is a type of work item used to track work required to complete a user story or product backlog item. You can add tasks from your Kanban board which appear as a checklist of work to be done. As you complete a task, you can update it's status by checking the checkbox for the task. Learn more: [Add task checklists](#).

## Task switching

Task switching, also referred to as *context switching* or *multitasking*, is when a team member shifts their attention among different tasks. Limiting task switching can allow a person to work more efficiently by minimizing the amount of time required to redirect cognitive function to a new activity.

## User story

A type of work item that defines the applications, requirements, and elements that teams plan to create. Product owners typically define and stack rank user stories. User story is defined with the Agile process. Learn more: [Agile process work item types and workflow](#).

## WIP limit

A WIP limit is a constraint that a team applies to one or more workflow stages to help prevent potential bottlenecks that hinder the continuous flow of work in the system. Learn more: [Work in Progress limits](#).

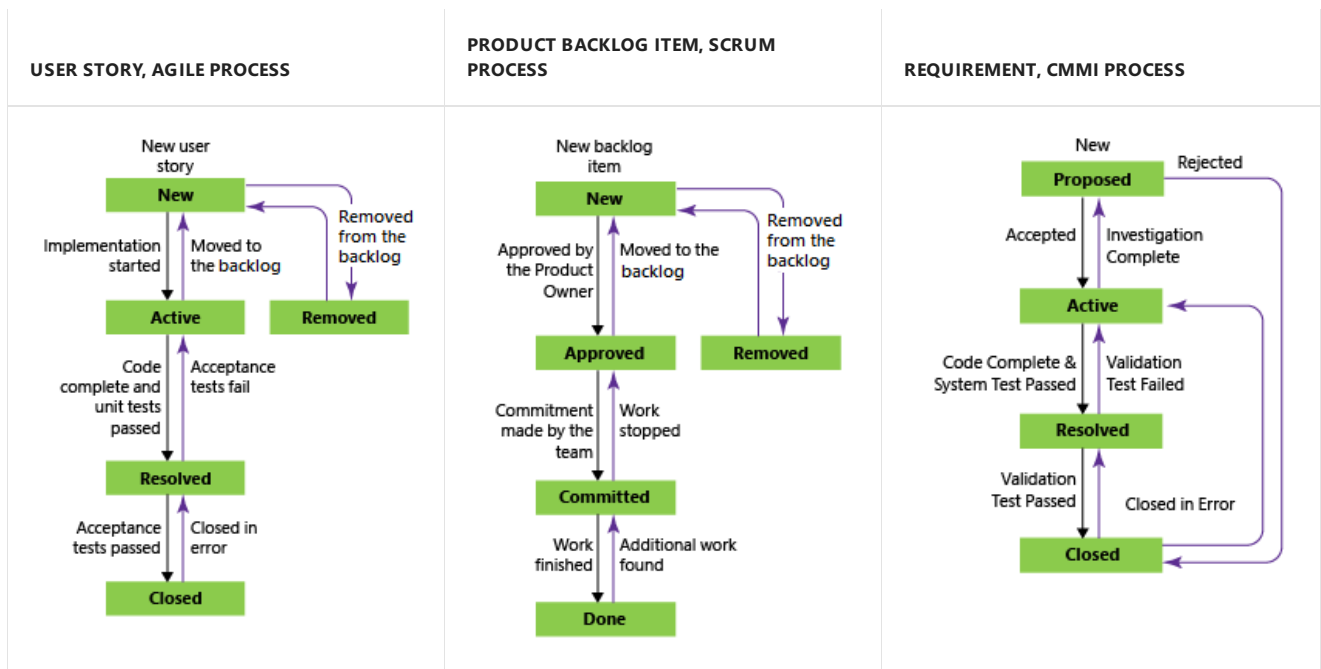
## Work in Process (WIP)

Work that has been started but isn't done or completed.

## Workflow states

Workflow states are defined for each work item type to support tracking the status of a work item, from its creation to it's completion. These states define the workflow process: actions, steps, or stages that a piece of work goes through from inception to completion.

### Examples of workflow states for the three system processes



You can customize your workflow states, adding states or renaming states. Learn more: [Customize the workflow](#).

You can customize your workflow states, adding states, renaming states, and changing state transitions and reasons. Learn more: [Customize the workflow](#).

## Workflow state categories

State categories determine how the Kanban board treat each workflow state. The state categories used by the backlogs are *Proposed*, *In Progress*, *Resolved*, and *Completed*. Learn more: [Workflow states and state categories](#).

## Related articles

- [Refine your backlog](#)
- [Kanban best practices](#)
- [About boards and Kanban](#)



# How workflow states and state categories are used in Backlogs and Boards

1/31/2019 • 5 minutes to read • [Edit Online](#)

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

All workflows consist of states, transitions, and reasons. Workflows are defined for a work item type (WIT). A transition supports forward and backward movement among two states. When you add a custom state, the system automatically adds transitions from the custom state to all other inherited states (except for Removed).

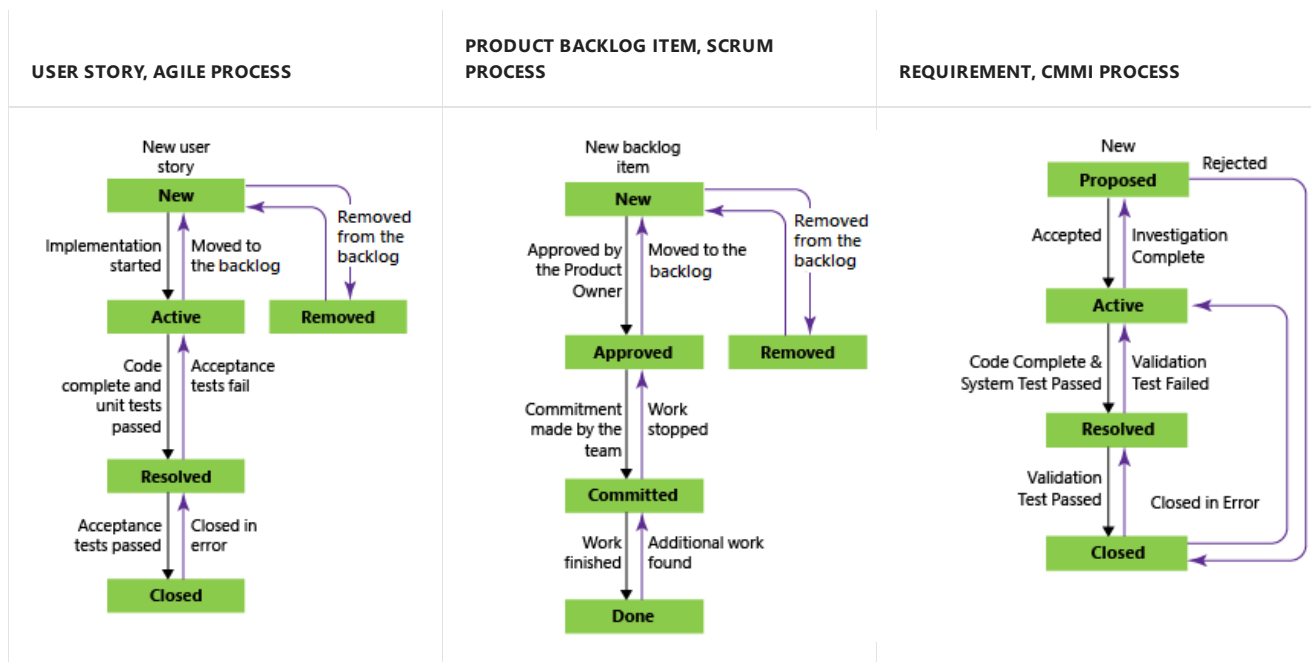
Each state belongs to a state category (previously referred to as a metastate). State categories support the Agile tool backlog and board views.

## Workflow states

Workflow states define how a work item progresses upon its creation to closure. For example, the four main states defined for the User Story (Agile process) define a progression of four states, from New, Active, Resolved, to Closed. (The Removed state supports removing a work item from appearing on the backlog; to learn more, see [Move, change, or delete work items.](#))

The natural progressions and regressions of the user story, product backlog item, and requirement WITs are as shown.

### Workflow states



## State categories

State categories, on the other hand, determine how Agile planning tools and select dashboard widgets treat each workflow state. The state categories used by the backlogs, boards and widgets are Proposed, In Progress, and Complete.

Here's how the default, inherited states map to the state categories for all three system processes plus test case management WITs. The workflow states for Test Case, Test Design, and Test Suite are the same across all three

system processes.

CATEGORIES	AGILE	SCRUM	CMMI	TEST WITS
<b>Proposed:</b> Assign to states associated with newly added work items that should appear on the backlog. The first column on the Kanban or taskboard maps to a Proposed state.	New	New Approved To Do (Task)	Proposed	Design (Test Case)
<b>In Progress:</b> Assign to states that represent active work. Work items assigned to states mapped to this category will appear in the backlog (unless you choose to hide them) and make up the middle columns on the Kanban boards.	Active Resolved (Epic, Feature, User Story)	Committed Open (Impediment)	Active Resolved (Epic, Feature, Requirement, Task)	Active (Test Plan) In Planning (Test Suite) In Progress (Test Suite) Ready (Test Case)
<b>Resolved:</b> Assign to states that represent a solution has been implemented, but are not yet verified. Generally these states apply to bug WITs. Work items in a Resolved state appear on the backlog by default. The Agile tools treat the Resolved state category exactly the same as the In Progress state category.	Resolved (Bug)	n/a	Resolved (Bug, Issue, Review, Risk)	n/a
<b>Completed:</b> Assigned to states that represent work has finished. Work items whose state is in this category don't appear on the backlog and do appear in the last column of the Kanban board. Note that you can't modify states in this category nor can you add states to this category.	Closed	Done	Closed	Closed (Test Case) Completed (Test Suite) Inactive (Test Plan)
<b>Removed:</b> Assigned to the Removed state. Work items in a state mapped to the Removed category are hidden from the backlog and board experiences.  <div><b>Note:</b> You should avoid using the Removed state and Removed state category as they are in the process of being deprecated. Instead, you should <a href="#">Delete work items</a> to remove them from the backlog.</div>	Removed	Removed	n/a	n/a

## When to add a State versus a Kanban column

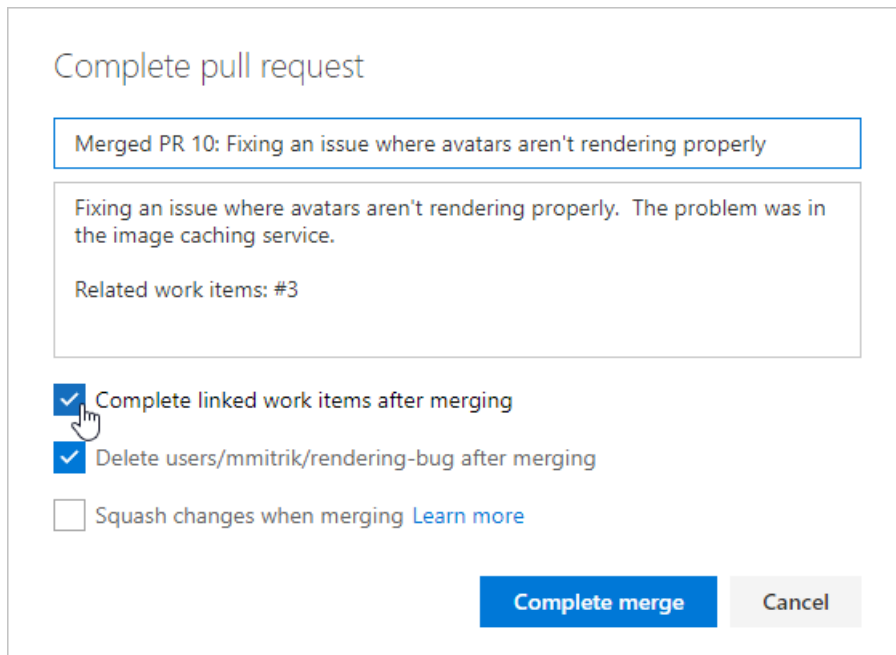
Both States and Kanban columns are used to track the status of work. Workflow states are shared across a project while Kanban columns are shared within a team. Only project collection admins can add custom states, while team admins can add Kanban columns.

Add custom states when you want all teams to track the status according to the business workflow adopted by the organization. By customizing the process, you automatically customize the projects and WITs that reference that process.

Also, by adding custom states to support those workflow states that several teams want to track, you avoid the confusion that can arise when team's create a query based on a Kanban column. Because each team can customize the Kanban board columns and swimlanes, the values assigned to work items which appear on different boards may not be the same. The primary work around for this issue is to maintain single ownership of work items by team area path. Another work around is to formalize the columns by adding custom states which can be shared across teams.

## Auto completion of work items with pull requests

When you link a work item to a pull request (PR), you have the option to automatically complete those work items when you successfully complete the PR. As shown in the following image, all you have to do is check the box to **Complete linked work items after merging**. The system defaults to your selection for future PRs.



Complete pull request

Merged PR 10: Fixing an issue where avatars aren't rendering properly

Fixing an issue where avatars aren't rendering properly. The problem was in the image caching service.

Related work items: #3

☒ Complete linked work items after merging

☒ Delete users/mmitrik/rendering-bug after merging

☐ Squash changes when merging [Learn more](#)

**Complete merge** Cancel

In the following circumstances the system won't automatically update the work item state to Done, Closed, or the state that belongs to the Closed category for the WIT:

- The work item, whose WIT is managed with the Inheritance process model, is already in a State that belongs to the Resolved category. In this instance the system won't update the State. For example, if a bug derived from the Agile process is in a Resolved state, the system won't transition it to Closed.
- The work item is already in a State that belongs to the Completed category. No further transition is required.
- The WIT associated with the work item contains one or more workflow field rules that prevent the work item being saved to a next state. For example, a rule requires that another field must be defined as part of closing the work item.
- For TFS and Azure Boards Hosted process model, you must modify the workflow to specify actions (**ACTION** element) to take place when transitioning the workflow. See [Change the workflow for a work item type](#), [Specify Actions](#).

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

## Related articles

- [Lead Time and Cycle Time control charts \(widgets\)](#)
- [Customize a workflow for a process](#)
- [Lead Time and Cycle Time control charts \(widgets\)](#)
- [Change the workflow for a work item type](#)

- [ProcessConfiguration XML element reference](#)
- [Customize your work tracking experience](#)
  
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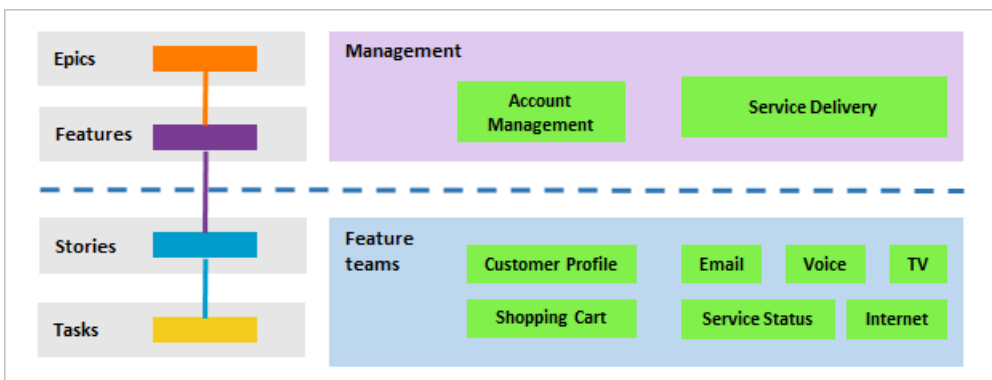
# About teams and Agile tools

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Adding a team is the #1 way in which Agile tools supports a growing organization. Once your team grows beyond its optimum size—typically anywhere from 6 to 9 members—you might consider moving from a one team structure to a two team structure. For enterprises adopting Agile tools, setting up a hierarchical team structure provides several advantages to portfolio and program managers to track progress across several teams.

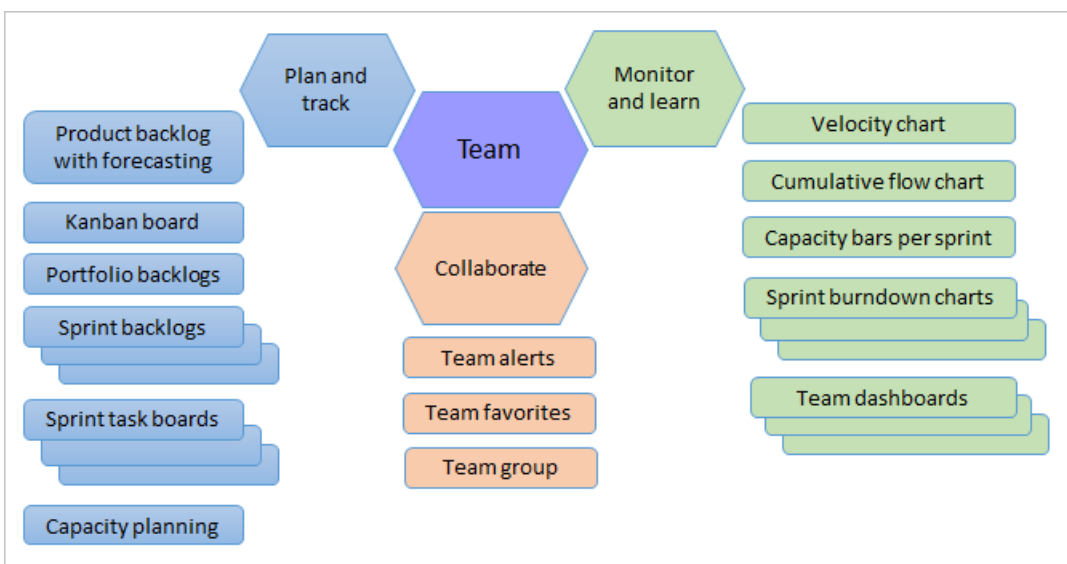
Depending on the size of your organization and your tracking needs, you can set up a team structure similar to the one shown. You do this by defining teams and their associated area path(s).

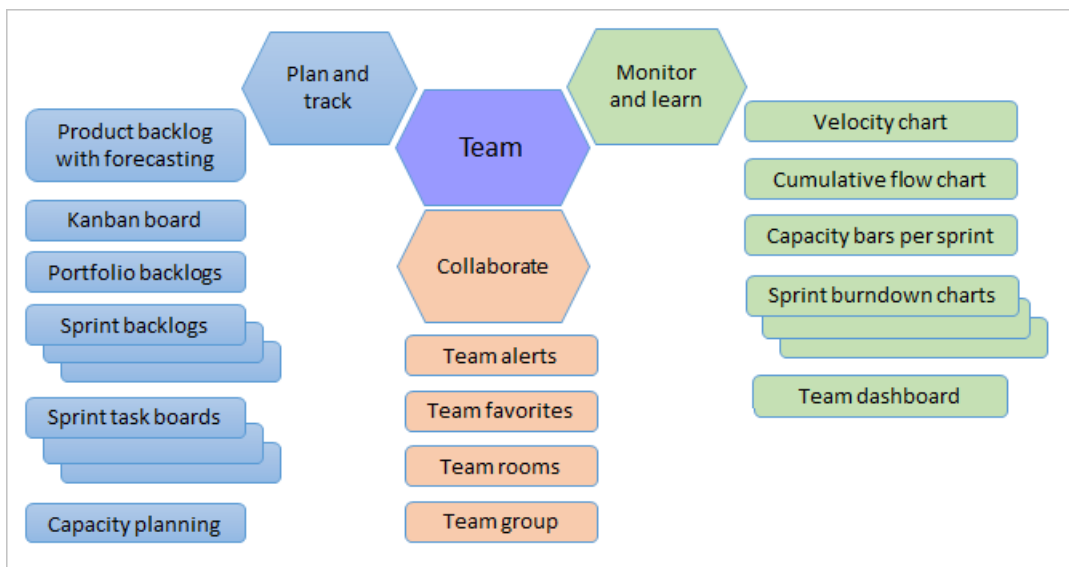
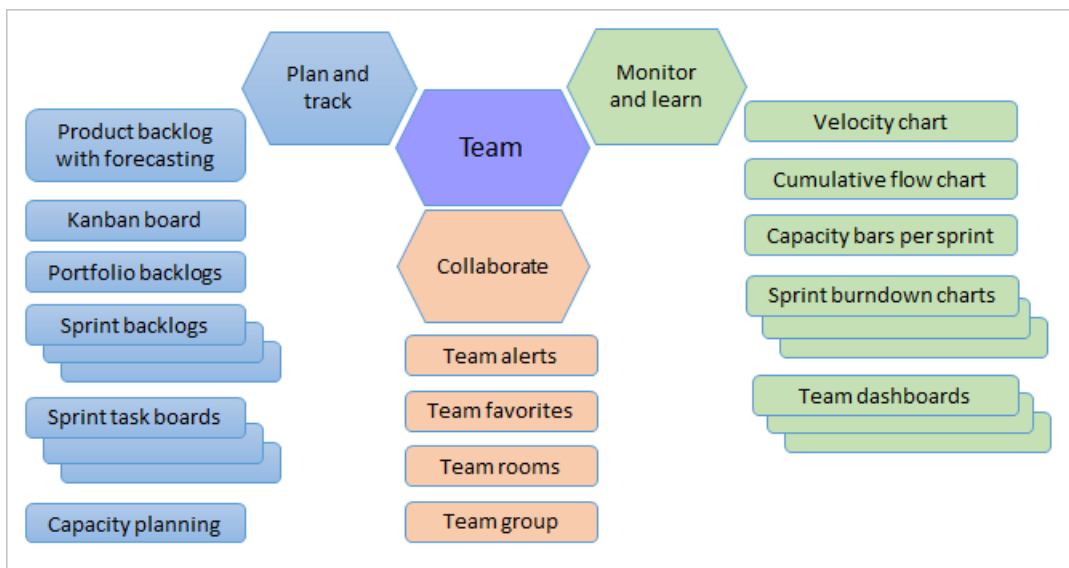


For example, each feature team can be associated with a single feature area path—such as *Customer Profile*, *Shopping Cart*, *Email*—or several area paths. Each management team, which focuses on a set of features, can choose several area paths to monitor. This allows each feature team to have their distinct backlog to plan, prioritize, and track their work. And, portfolio or product owners can create their vision, road map, and goals for each release, monitor progress across their portfolio of projects, and manage risks and dependencies. To learn more, see [Portfolio management](#).

## Each team gets their own set of tools

Each team you create gets access to a suite of Agile tools and team assets. These tools provide teams the ability to work autonomously and collaborate with other teams across the enterprise. Each team can configure and customize each tool to support how they work.





These tools reference the team's default area path, iteration path, and selected sprints to automatically filter the set of work items they display. To learn more about each tool and the configuration settings for each tool, see the corresponding articles.

AREA	TOOL	TEAM CONFIGURATION TASKS
Backlogs	<ul style="list-style-type: none"> <li>Product backlog</li> <li>Features backlog</li> <li>Epics backlog</li> <li>Forecast</li> </ul>	<ul style="list-style-type: none"> <li>Configure area paths</li> <li>Select active iteration paths (sprints)</li> <li>Select backlog levels</li> <li>Show bugs on backlogs &amp; boards</li> </ul>
Sprints and Scrum	<ul style="list-style-type: none"> <li>Sprint backlogs</li> <li>Sprint capacity</li> <li>Task board</li> <li>Sprint burndown</li> </ul>	<ul style="list-style-type: none"> <li>Select active iteration paths (sprints)</li> <li>Set working days</li> </ul>
Kanban boards	<ul style="list-style-type: none"> <li>Kanban board</li> <li>Features board</li> <li>Epics board</li> <li>Cumulative flow</li> </ul>	<ul style="list-style-type: none"> <li>Configure area paths</li> <li>Select default iteration path</li> <li>Select backlog levels</li> <li>Show bugs on backlogs &amp; boards</li> </ul>

Widgets	<ul style="list-style-type: none"> <li>• <a href="#">New work item</a></li> <li>• <a href="#">Sprint burndown</a></li> <li>• <a href="#">Sprint capacity</a></li> <li>• <a href="#">Sprint overview</a></li> <li>• <a href="#">Team members</a></li> </ul>	<ul style="list-style-type: none"> <li>• <a href="#">Configure area paths</a></li> <li>• <a href="#">Select active iteration paths (sprints)</a></li> <li>• <a href="#">Add team members</a></li> </ul>
Other tools	<ul style="list-style-type: none"> <li>• <a href="#">Favorites</a></li> <li>• <a href="#">Work item templates</a></li> <li>• <a href="#">Delivery plans</a></li> <li>• <a href="#">Queries</a></li> <li>• <a href="#">Velocity</a></li> <li>• <a href="#">Dashboards</a></li> <li>• <a href="#">Alerts</a></li> </ul>	Not applicable

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AREA	TOOL	TEAM CONFIGURATION TASKS
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Backlogs	<ul style="list-style-type: none"> <li>• <a href="#">Product backlog</a></li> <li>• <a href="#">Features backlog</a></li> <li>• <a href="#">Forecast</a></li> </ul>	<ul style="list-style-type: none"> <li>• <a href="#">Configure area paths</a></li> <li>• <a href="#">Select default, current, and active iteration paths (sprints)</a></li> <li>• <a href="#">Show bugs on backlogs &amp; boards</a></li> </ul>
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Many of these tools are built from system queries that reference the team area path. For example, a team's default area path filters the work items that appear on a team's backlog. Also, work items that you create using an Agile tool auto-assign the areas and iterations based on team defaults.

## Team defaults referenced by backlogs and boards

What work items appear on team backlogs and boards? When you add work items to a backlog or board, how are team defaults used to assign field values?

Teams are associated with one or more area paths and a backlog iteration path which determine what items will appear on their backlogs and boards.

When you define a team, you define the team's:

- Selected area path(s)
- Default area path
- Selected iteration path(s)
- Backlog iteration path
- Default iteration path

All Agile tools reference the area path(s) defined for a team. The set of work items that appear on a backlog or board depend on the current State of a work item or it's parent-child status.



In addition, several tools reference the team's default iteration and selected iteration paths or sprints. For example, when you add new work items from a backlog or board view, or from a team dashboard, the system assigns the team's default area path and default iteration path to these work items.

AGILE TOOL	AREA PATH (SEE NOTE 1)	ITERATION PATH	STATE
Portfolio or product backlogs	Selected area path(s)	Equal to or under team's <a href="#">backlog iteration path</a>	Active (corresponds to a Proposed or InProgress state category, see notes 2, 3)
Kanban boards (see note 4)	Selected area path(s)	Equal to or under team's <a href="#">backlog iteration path</a>	Any state (see notes 3, 5)
Sprint backlogs (see note 4)	Selected area path(s)	Team's selected iteration paths	Any state (see notes 3, 5)
Task boards (see note 4)	Selected area path(s)	Team's selected iteration paths	Any state (see notes 3, 5)
New work item widget	Default area path	Default iteration path	n/a

#### Notes:

1. Agile tools filter items based on the team's selected area path(s). Teams can choose [whether to include or exclude items assigned to subarea paths](#).
2. Work items whose State equals Closed, Done, or Removed (corresponding to a Completed category state) don't appear on portfolio and product backlogs.
3. You can add custom workflow states and assign them to one of three state categories. The [state categories](#) determine which work items appear on backlog and board views.
4. Kanban boards, sprint backlogs, and task boards only show the last node in a hierarchy, called the leaf node. For example, if you link items within a hierarchy that is four levels deep, only the items at the fourth level appear on the Kanban board, sprint backlog, and task board. To learn more, see [parent-child links between items](#).
5. Work items whose State equals Removed don't appear on boards.

## Structure hierarchical teams or scale agility within an enterprise

Although there is no concept of sub-teams, you can create teams whose area paths are under another team, which effectively creates a hierarchy of teams. To learn more, see [Add another team](#).

Also, these topics can walk you through the steps for configuring teams, area paths, and iterations to support portfolio management or enterprise organizations:

- [Portfolio management](#)
- [Implement Scaled Agile Framework to support epics, release trains, and multiple backlogs](#)

## Team groups

When you add a team, a security group is automatically created with the team name. You can use this group to filter queries. The name of team groups follows the pattern **[Project Name]\Team Name**. For example, the following query finds work assigned to members of the **[Fabrikam Fiber]\Email** team group.

Email team assigned work 23 work items (1 selected)

Results **Editor** Charts 🗖


---

📄 📌 ▶️ ↺ | Column options Copy query URL

Type of query ☒ Flat list of work items Query across projects ☐

---

Filters for top level work items

	And/Or	Field	Operator	Value
+ X <input type="checkbox"/>		Work Item Type	=	User Story
+ X <input type="checkbox"/>	And	Assigned To	In Group	 [Fabrikam Fiber]\Email
+ X <input type="checkbox"/>	And	State	In	New,Active,Committed,In Progress
+ Add new clause				

You can also use the **@mention** control within discussions and pull requests to notify all members of a team. Simply start typing the name of a team or a security group, click the search icon and then select from the options listed. To learn more, see [Use @mentions to further discussion](#).

## Work on more than one team

Can a user account belong to more than one team?

Yes. When you add user accounts to a project, you can add them as members of the project, or you can add them to one or more teams added to the project. If you work on two or more Scrum teams, you'll want to make sure you, [specify your sprint capacity for each team you work on](#).

## Team member permissions

By default, team members inherit the permissions afforded to members of the project Contributors group. Members of this group can add and modify source code, create and delete test runs, and create and modify work items. They can collaborate with other team members and [collaborate on a Git project](#) or [check in work to the team's code base](#).

Code	Work	Build	Test
<b>Object and project-level:</b> <b>TFVC:</b> Check in Check out Label Lock Merge Read  <b>Git repositories</b> Administer Branch creation Contribute Note management Read Rewrite and destroy history Tag creation	<b>Area-node level</b> Edit work View permissions View work items  <b>Shared queries</b> Read  <b>Project-level</b> View project-level information	<b>Object-level:</b> Edit build quality Queue builds View build definition View builds	<b>Area-node level</b> Manage test plans Manage test suites  Create test runs Delete test runs Manage test configurations Manage test environments View test runs

You can choose to limit access to select features by making a user a [Stakeholder](#) or limiting their access to read-only. For an overview of default permissions and access assignments set for work tracking features and built-in groups, see [Permissions and access for work tracking](#).

## Summary

- Every team owns their own backlog, to create a new backlog you [create a new team](#)
- Every backlog has a corresponding [Kanban board](#) you can use to track progress and update status

- The team's specified area and iteration paths determine which work items appear on the backlog and Kanban board—you can easily decide to include or exclude work items under a specific area path
- Each team can control how [bugs show up on their backlogs and boards](#)
- For an overview of all team assets and how to configure them, see [Manage teams and configure team tools](#)
- To have work performed by several teams roll up in to a portfolio backlog, you'll want to [setup the team hierarchy](#)
- To add fields or work item types, see [Customize your work tracking experience](#).

## Related articles

- [Add another team](#)
- [Configure team settings](#)
- [Work across projects](#)

# Add work item tags to categorize and filter lists and boards

1/31/2019 • 7 minutes to read • [Edit Online](#)

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

Tagging work items helps you quickly filter the product backlog or a work item query by categories that you define. A tag corresponds to a one or two keyword phrase that you define and that supports your needs to filter a backlog or query, or define a query.

You can add and modify tags from the web portal, from Team Explorer plug-in for Visual Studio. Also, you can open a query in [Excel](#) to perform bulk modifications of tags.

## NOTE

Tags are a shared resource, they're associated with a project and not a team. If your project contains multiple teams, all teams will add to and work from the same set of tags.

## 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](#).
  - To create new tags to add to work items, you must have **Basic** access or higher and have the project-level **Create new tag definition** permissions set to **Allow**. By default, the **Contributors** group has this permission set. Even if the permission is explicitly set for a **Stakeholder**, they won't have permission to add new tags, as they are prohibited through their access level.
- 
- 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](#).
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  - To create new tags to add to work items, you must have **Basic** access or higher and have the project-level **Create new tag definition** permissions set to **Allow**. By default, the **Contributors** group has this permission set. Even if the permission is explicitly set for a **Stakeholder**, they won't have permission to add new tags, as they are prohibited through their access level.

#### NOTE

Users with **Stakeholder** access for public projects are allowed to add new tags.

## Add tags to a work item

Tags should be 400 characters or less and not contain separators such as a `,` (comma), `;` (semicolon), or other formatting character.


From the web portal, open a work item and add a tag. Choose **Add tag** and type your keyword. Or, select from the list of previously assigned tags.

The screenshot shows a work item titled '532 Hello World Web Site' with the state 'Unassigned'. It has '0 comments' and an 'Add tag' button highlighted with a red box. Below the title, there are fields for 'State' (New), 'Area' (Fabrikam Fiber A), 'Reason' (New), and 'Iteration' (Fabrikam Fiber A).

From the web portal, open a work item and add a tag. Choose **Add** and type your keyword. Or, select from the list of previously assigned tags.

The screenshot shows a work item titled 'Product Backlog Item 69: Hello World Web site'. It has a tag bar with 'page' and an 'Add...' button highlighted with an orange box. Below the tag bar, there is a blue box containing the text 'Hello World Web Site'. At the bottom, there are fields for 'Iteration' (Fabrikam Fiber Website) and 'Area' (Fabrikam Fiber Website).

To add several tags at one time, type a comma between tags. Tags are case sensitive.

Tags that appear in the tag bar are already assigned to the work item. To unassign a tag, simply choose the x on the tag, `Web` .

#### NOTE

By default, all Contributors and Stakeholders of public projects are granted permissions to add new and existing tags. Stakeholders in private projects can add tags that are already defined, but not add new tags. To grant or restrict permissions to create new tags, you set the permission **Create tag definition** at the project-level. To learn more, see [Add administrators, set permissions at the project-level or project collection-level](#).

## Bulk add or remove tags

You can bulk update work items to add or remove tags from the web portal. You bulk modify tags in the same way as you [bulk modify other fields using the web portal](#). Or, you can use [Excel](#) to bulk add or remove tags.

## Edit work items

+ X

Field

Tags (Add)

Value

Beta

+ Add new field

Notes for History

**B** *I* U

Tagging items targeted for Beta release

Save

Cancel

Use Excel to bulk modify tags.

### NOTE

Bulk modify of tags from the Visual Studio client isn't supported.

## Query for work items based on tags

To query work items based on tags, add a clause for each tag you want to use to support your query.

### NOTE

Adding tags to a query is supported from TFS 2013.2 and later versions.

For example, here we query for all work items that are tagged either `Web` or `Service`.

Queries > My Queries/tag query

Results **Editor** Charts | Run query New Save query Save as... Rev

Type of query Flat list of work items

Filters for top level work items

	And/Or	Field	Operator	Value
+ X		Work Item Type	=	[Any]
+ X	And	Tags	Contains	Web
+ X	Or	Tags	Contains	Service

+ Add new clause

### TIP

You can use the **Contains** or **Does Not Contain** operators. To learn more about queries, see [Create managed queries](#).

## Show tags in your backlog or query results

Click **Column Options** to add the Tags field to the product backlog or a work item query. If the option doesn't appear, click the \*\*\* to select it from the menu of options.

Column options

Add or remove columns. To change the column order, drag and drop a field, or use the keyboard shortcuts, Ctrl+Up or Ctrl+Down.

State

Title

Tags

Iteration Path

Add a column

OK

Cancel

All tags that have been added to the listed work items appear.

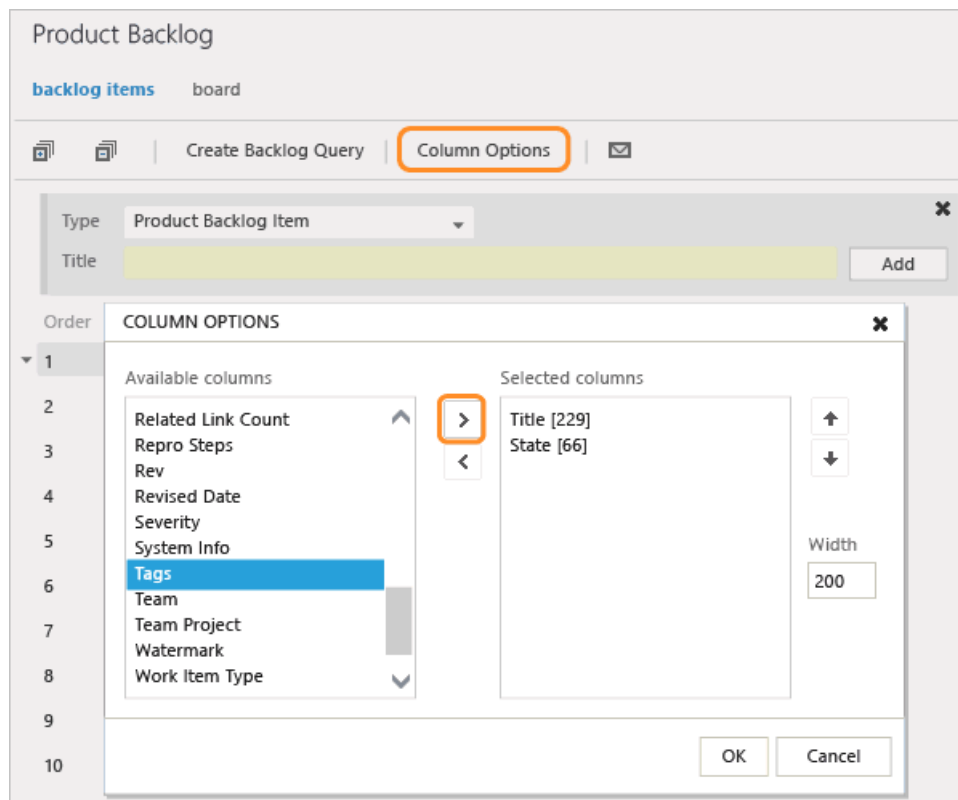
Product backlog

BacklogBoardForecast Off

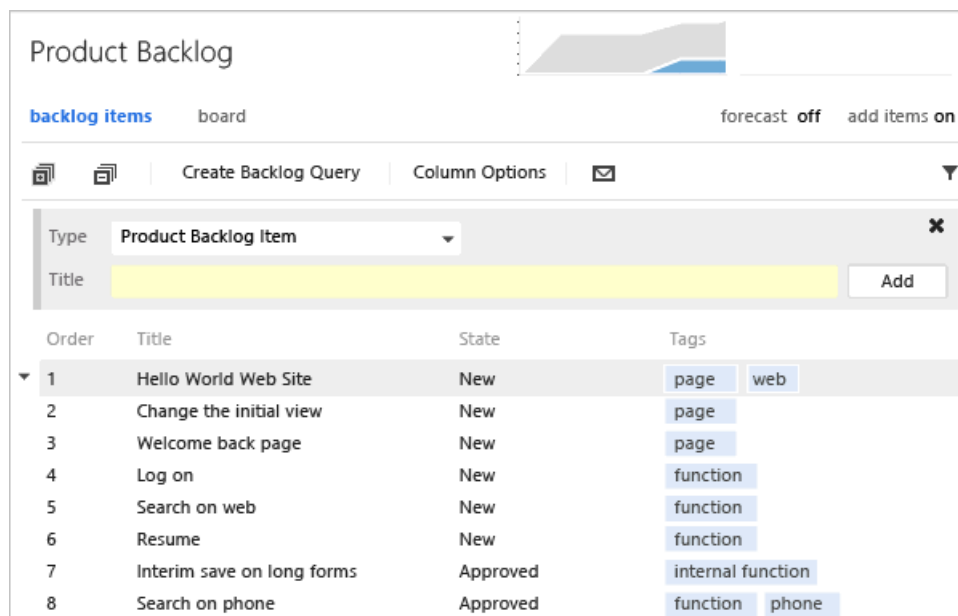
NewCreate queryColumn options

Order	State	Title	Tags
1	Approved	Welcome back page	Mobile
2	Approved	Interim save on long form	
3	New	Change initial view	Web
4	Approved	Phone sign in	Mobile
5	Approved	Canadian addresses don't display correctly	RC Review
6	Approved	Switch context issues	
7	Committed	Hello World Web Site	
8	Committed	Slow response on information form	
9	Committed	Secure sign-in	MobileWeb
10	Committed	Cancel order form	PhoneServiceWeb
11	New	GSP locator interface	

1. Click **Column Options** to add the Tags field to the product backlog or a work item query. If the option doesn't appear, click the \*\*\* actions icon to select it from the menu of options.




2. All tags that are assigned to the listed work items appear.



## Filter lists using tags

From the web portal, you can filter backlogs, boards, and query results using tags.

Begin by clicking the  filter icon.

Check the boxes of those tags that you want to filter on. Keep the OR selection to perform a logical OR for all the tags you selected. Or, click the AND option to perform a logical AND on all the selected tags.



## Product backlog

Backlog Board

New | | Create query | Column options |



Filter by keyword

Types

Assigned to

States

✓ Web (+1)

Clear

☒ Or ☐ And

☒ Mobile

☐ Phone

☐ RC Review

☐ Service

☒ Web

Clear

Title

Welcome back page

Change initial view

Phone sign in

Secure sign-in

Cancel order form

Research architecture changes

Request support

Hello World Web Site

Tags

Mobile

Web

Mobile

Mobile Web

Phone Service Web

Web

Mobile Web

Service Web

1. Turn on filtering and choose a tag.

Product Backlog

backlog items board forecast off add items on

| Create Backlog Query | Column Options |

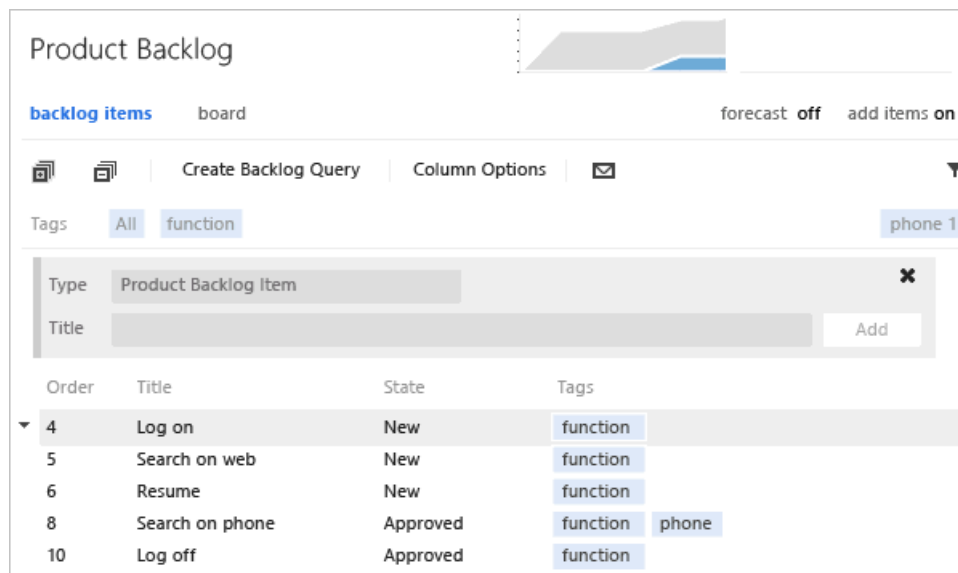
Tags All **function 5** page 3 form 1 internal function 1 phone 1 web 1

Type Product Backlog Item

Title  Add

Order	Title	State	Tags
1	Hello World Web Site	New	page web
2	Change the initial view	New	page
3	Welcome back page	New	page
4	Log on	New	function
5	Search on web	New	function

The list refreshes. Only those work items with the selected tag are displayed. Filtering the list disables add-a-backlog-item panel, stack ranking, and forecasting.



2. To apply a sub-filter, choose another tag. You filter successively by choosing from the set of tags that appear in the filter tag bar. To start your filter process over, choose All to show all tags.
3. To show all items, choose All or choose the Tag filter image on backlog and queries pages filter icon to turn filtering off.

## Delete, remove, or manage tags

You can't delete a tag itself. However, if you delete a tag from all work items to which it's currently assigned, the system will delete the tag. The system automatically deletes unassigned tags after 3 days of disuse.

If you misspell a tag, don't assign the misspelled tag to any work item and the system will automatically delete it within 3 days.

Another option is to install the [Marketplace Tags Manager](#) which adds a **Tags** page under **Boards** or **Work** to manage tags.

## Color-code tags on boards

You can highlight tags on Kanban board cards by color-coding them. These colors only appear on the Kanban board that you configure. they don't appear on backlogs or taskboards. To learn more, see [Customize cards, color-code tags](

Requires TFS 2015.1 or later version.

# Settings



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Tag colors \*

Annotations

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Working with bugs

Tag colors

Emphasize selected tags using colors. Only one color applies to a tag at a time.

+ Tag color

Tag	Color	Enabled
Web	<div></div>	<input checked="" type="checkbox"/> <input type="checkbox"/>
Service	<div></div>	<input checked="" type="checkbox"/> <input type="checkbox"/>
Phone	<div></div>	<input checked="" type="checkbox"/> <input type="checkbox"/>

Save

Cancel

## Related articles

- [Best tool to add, update, and link work items](#)
- [Use the query editor to list and manage queries](#)
- [Show tags on cards](#)
- [Bulk modify work items from the web portal](#)
- [Bulk modify work items from Excel](#)

### Limits on number of tags

While no hard limit exists, creating more than 100K tags for a project collection can negatively impact performance. Also, the auto-complete dropdown menu for the tag control displays a maximum of 200 tags. When more than 200 tags are defined, begin typing to cause the tag control to display relevant tags.

You can't assign more than 100 tags to a work item or you'll receive the following message:

```
TF401243: Failed to save work item because too many new tags were added to the work item.
```

Simply save the work item with the tags (100 or less) that you've added, and then you can add more tags.

Limit queries to fewer than 25 tags. More than that and the query will likely time out.

### Add tags to the default column view on the product backlog

To add the Tags field as a column field for the product backlog, you modify the ProcessConfiguration file to include `System.Tags`. To learn how, see the [Process configuration XML element reference](#).

# Add columns to your Kanban board

2/7/2019 • 14 minutes to read • [Edit Online](#)

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

Kanban's number one practice is to visualize the flow of work. Accordingly, your number one task is to visualize your team's workflow. You do this by identifying the types of work and handoffs that occur regularly as your team moves items off the backlog and into a shippable state.

After you identify your team's workflow stages, you're ready to [configure your Kanban board to map to them](#). Once configured, you use your Kanban board to update status, reassign work, and reorder items to reflect changing priorities.

For example, the main workflow stages performed by our example dev team are captured here as Analyze, Develop, and Test. Each column corresponds to a work stage the team performs on each item before it can be considered done.

Backlog	Analyze 3/5	Develop 3/5	Test 2/5	Done
<div><div><div><div></div><div></div><div></div></div><div><div></div><div></div><div></div></div></div><div><div><div></div><div></div><div></div></div><div><div></div><div></div><div></div></div></div></div> <div><div><div></div><div></div><div></div></div><div><div></div><div></div><div></div></div></div>				

If you're just getting started, review [Kanban basics](#) to get an overview of how to access your board and implement Kanban.

### NOTE

If you're looking at how to add columns to a taskboard, you need to customize the workflow. For details, see [Customize your work flow](#). To add columns to a backlog or query results, see [Change column options](#).

For an overview of the features supported on each backlog and board, see [Backlog, board, and plan views](#).

### NOTE

If you're looking at how to add columns to a taskboard, you need to customize the workflow. For details, see [Add or modify a work item type](#). To add columns to a backlog or query results, see [Change column options](#).

For an overview of the features supported on each backlog and board, see [Backlog, board, and plan views](#).

## Prerequisites

- You must be added to the team administrator role for the team's settings you want to modify, or be a member of the **Project Administrators** security group. To get added, see [Add a team administrator](#) or [Set permissions at the project- or collection-level](#).
- You must be granted **Stakeholder** access or higher. For details, see [About access levels](#).

# Map the flow of work

It's best if you involve the entire team to identify an initial set of workflow stages. Each team member provides useful perspectives to capture and further deepen team understanding of the end-to-end processes.

To get started, ask your team these questions:

- *What types of activities do we regularly perform?*
- *What natural hand offs occur within our team? Or, from our team to other teams?*
- *What activities will help reinforce our team policies, such as analysis, code review, or design acceptance?*
- *What work needs to occur at each stage?*

Our example development team came up with these stages as essential to their process:

Backlog	Analyze	Develop	Test	Done
Prioritize Estimate	Clear goal Right-sized stories Next steps defined	Clean code Code checked in Unit tests run	Exploratory tests integration & regression tests	Customer ready Ready for production

- **Backlog:** Prioritized list of items which aren't yet ready to work on
- **Analyze:** Well understood and shared acceptance criteria identified and overall work required to develop and test item
- **Develop:** Code and run unit tests for the item
- **Test:** Perform exploratory, automated, integration, and other tests
- **Done:** Item ready to handoff to production.

You can always revisit these initial stages later and adjust.

Another idea, capture the list of items your team identifies as critical-to-complete for each stage. You can use that later to fill out the [Definition of Done](#) for each column.

## Update status and handoff items

Using your Kanban board couldn't be simpler. Using drag-and-drop operations you update the status or change priorities.

For example, to signal when work can start in a downstream stage, simply drag items into the next column.

Backlog	Analyze 4/10	Develop 4/5	Test 4/5
<div>+ New item</div> <div>Change the initial view Christie Church 13</div> <div>Customers with Canadian addresses not displaying correctly 2</div>	<div>Interim save on long forms Raisa Pokrovsk... 8</div> <div>Resume Jamal Hartnett 2</div>	<div>Customer can find the nearest Fabrikam Fiber location Jamal Hartnett 3</div> <div>Show response on welcome page Raisa Pokrovsk... 2</div>	<div>Welcome back page Jamal Hartnett 3</div> <div>Autolocation persisting in state state between sessions Raisa Pokrovsk... 2</div>

You'll notice that you can move an item from one column to any other column on the board. That way, if you discover more work is needed at an earlier stage, you can simply move the item backward, for example from Test into Analyze or Develop.

Also, to handoff work to another team member, simply reassign it directly from the board.

Backlog	Analyzed <span>1/8</span>	Develop <span>1/5</span>	Test
<div>+ New item</div> <div>Change the initial view Christie Church 13</div> <div>Slow response on form Raisa Pokrovskaya 3</div>	<div>Welcome back page</div> <div>Jamal Hartnett 3</div> <div>Unassigned</div> <div>Christie Church</div> <div>Jamal Hartnett</div> <div>Johnnie McLeod</div> <div>Raisa Pokrovskaya</div>	<div>Change the initial view Raisa Pokrovskaya 8</div>	<div>Reduce bug debt Johnnie McLeod</div>

And, team members receiving the handoff can [set alerts](#) to receive immediate email notifications of their newly assigned work.

## Change priorities

To keep teams working on the highest priority items, you'll want to react quickly when a change in priority occurs even after work starts. With your Kanban board it's a snap. Simply drag an item up or down within a column.

Backlog	Analyzed <span>2/8</span>	Develop <span>2/5</span>	Test <span>2/5</span>
<div>+ New item</div> <div>Canadian addresses don't display correctly 5</div> <div>Change the initial view</div>	<div>Welcome back page Jamal Hartnett 3</div> <div>Slow response on form Raisa Pokrovskaya 3</div>	<div>Secure sign-in Johnnie McLeod 5</div> <div>Interim save on long forms Raisa Pokrovskaya 8</div>	<div>Reduce bug debt Johnnie McLeod 13</div> <div>Search on phone Raisa Pokrovskaya 5</div>

## Add or rename columns

Now that you've got the essentials of how to work with your Kanban board, here's how you get it to look like what you need it to.

You'll see different column titles and choices based on the [Process](#) you used to create your project and whether your team has chosen to [treat bugs like requirements or like tasks](#).

### 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 your Kanban board](#). If you're not a team admin, [get added as one](#). Only team and project admins can customize the Kanban board.
  2. Choose the  gear icon to configure the board and set general team settings.



3. Choose **Columns** and then a column tab to see all the settings you can modify. Your initial column settings will look something like this.

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**Columns \***

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Columns

Columns visualize the flow of work across the board.

+ Column

New

**Active**

Resolved

Closed

Column name

Name

Work in progress limit  
Setting it to 0 specifies no limit.

WIP limit

☐ Split column into doing and done

State mapping  
Specify the state this column maps to.

Bug

User Story

Definition of done  
Enter plain text or format using markdown.

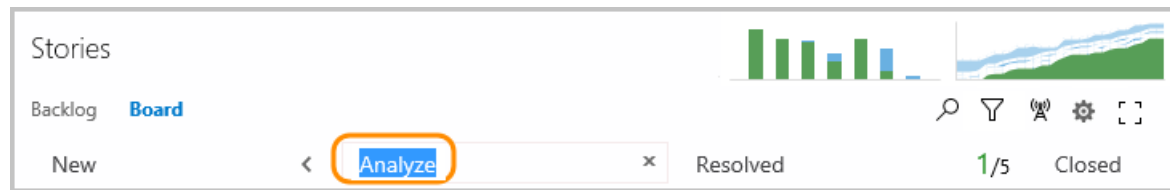
Save

Cancel

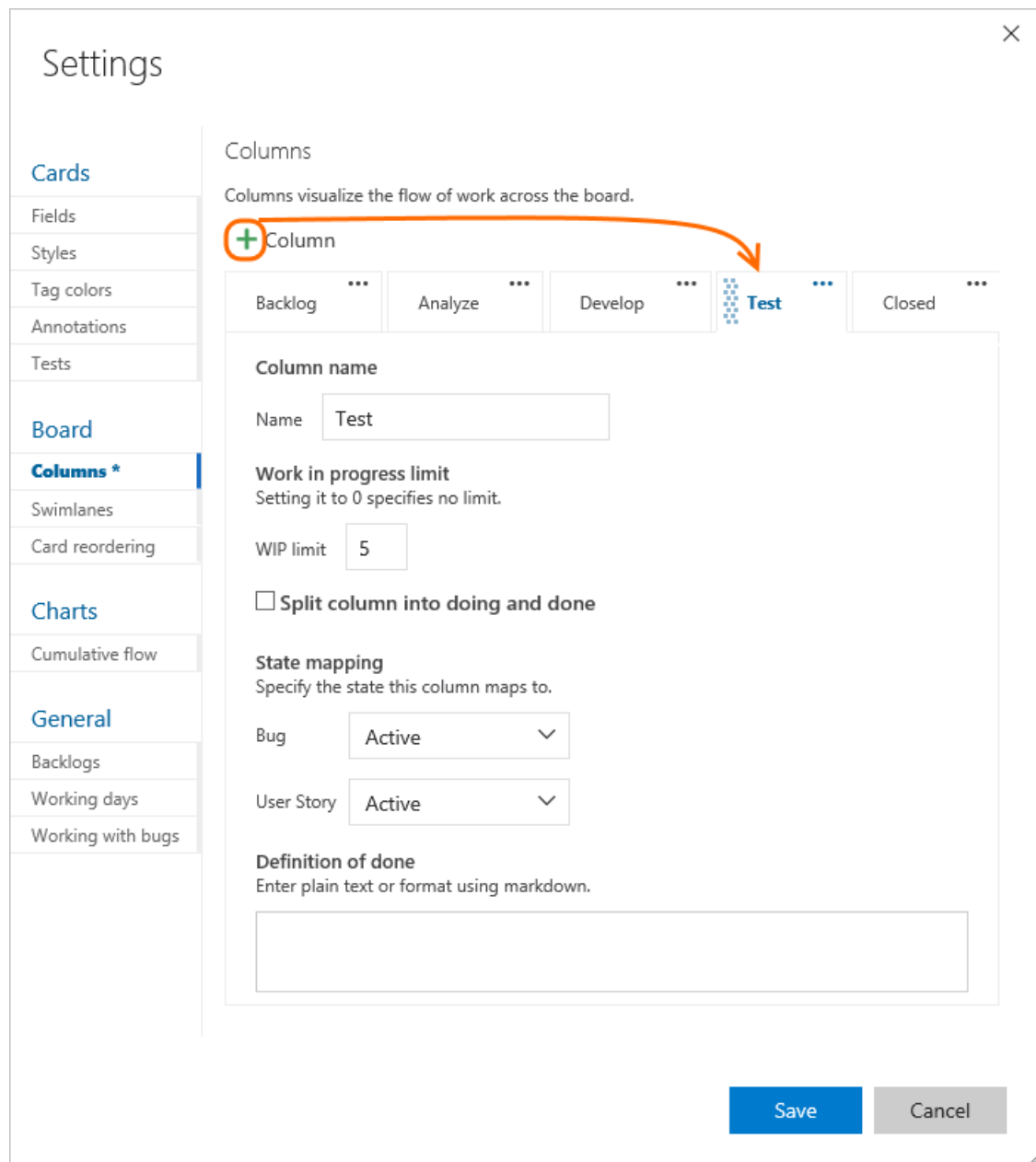
4. Change your column titles to map to your workflow stages. You can add, rename, and move columns to support more stages.

Here, we rename the first, second, and third columns to Backlog, Analyze, and Develop. We then add a column and label it Test.

You can rename a column directly from the Kanban board.



Or, you can open the dialog and change one or more settings for a Kanban column.



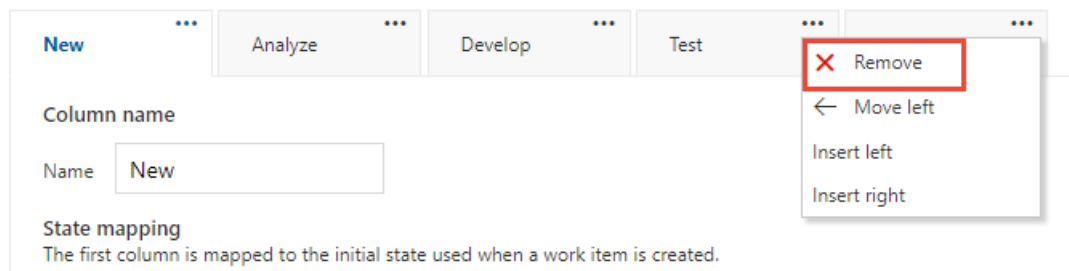
5. To change the column order, simply drag the column tab to the position you want.
6. To delete a column, first make sure that the column doesn't contain any work items. If it does, move the items to another column. Then, open **Settings**, choose **Columns**, and choose the **...** actions icon from the column tab and select **Remove** from the menu.



## Columns

Columns visualize the flow of work across the board.

+ Column



7. [Change State mappings as needed](#) for added columns, added workflow states, or added work item types (WITs).

Usually you need to do this when you change the [Working with bugs](#) setting, add [WITs to the Requirement Category](#), or [customize the workflow](#).

8. When done with your changes, choose **Save**.

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

## Update Kanban column-to-State mappings

Another "under the hood" item that impacts Kanban column-to-State mappings is categories. The Kanban board and other Agile tools uses categories to group WITs that they want to treat the same.

What does this mean for Kanban board users? First, only work items whose WITs belong to the Requirement Category show up on the Kanban board. Second, if you add bugs or other WITs to appear on the Kanban board, you potentially introduce additional workflow states. This means that you may need to adjust the Kanban column-to-State mappings when you perform one of these additional customizations:

- Your team admin chooses to [show bugs on backlogs and boards](#)
- Your project admin [adds WITs to backlogs and boards](#)
- Your project collection or project admin customizes the workflow for a WIT in the Requirement Category: [Azure Boards](#) or [TFS](#)

For example, if you change the team setting and add bugs to the Requirements Category, the bug WIT will now appear in the Columns dialog. You'll want to make sure that the Kanban column-to-State mappings match what you want. For more information, see [Workflow states and state categories](#).

In this example two new states have been added, Triaged for bug, and Investigate for user story. Each needs to be mapped to an existing or new column in order for the Kanban board to display work items assigned to these states.

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Working with bug

## Columns

Columns visualize the flow of work across the board.

+ Column

New

Investigate...

Active

Develop

Column name

NameInvestigate / Triaged

Work in progress limit

Setting it to 0 specifies no limit.

WIP limit5

☐ Split columns into doing and done

State mapping

Specify the state this column maps to.

BugTriaged

User StoryInvestigate

Definition of done

Enter plain text or format using markdown.

Save

Cancel

**\*\*TFS 2015.1 \*\*** In this example two new states have been added, Triaged for bug, and Investigate for user story. Each needs to be mapped to an existing or new column in order for the Kanban board to display work items assigned to these states.

Settings

Cards

Fields

Styles

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Columns

Columns visualize the flow of work across the board.

+ Column

New

Investigate...

Active

Develop

Column name

Name

Investigate / Triaged

Work in progress limit

Setting it to 0 specifies no limit.

WIP limit

5

☐ Split columns into doing and done

State mapping

Specify the state this column maps to.

Bug

Triaged

User Story

Investigate

Definition of done

Enter plain text or format using markdown.

Save

Cancel

**TFS 2015** In this example, bugs have been added to show on the Kanban board. You need to map the bug state for each column on the Kanban board.

Title	Backlog	Analyze	Develop	Test	Done
WIP limit		5	5	5	
Max work items	20				20
Split column		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Definition of Done		Edit Definition	Edit Definition	Edit Definition	
Backlog items	State	State	State	State	State
Bug	Active	Active	Active	Resolved	Closed
User Story	New	Active	Active	Active	Closed

In this example, bugs have been added to show on the Kanban board. You need to map the bug state for each

column on the Kanban board.

The image shows a TFS Kanban board configuration interface. It consists of a left sidebar with settings and a main area with five columns: Backlog, Analyze, Develop, Test, and Done. Each column has a title, a WIP limit, a max work items value, a split column checkbox, a definition of done dropdown, and a state dropdown. The Backlog column is grey, while the others are light blue or green. The Done column is green and has a 'Closed' state. The Analyze, Develop, and Test columns have an 'Active' state. The Done column has a 'Closed' state. The interface includes a '+', '-', and '<-->' button at the bottom of each column to manage the board layout.

Column	Title	WIP limit	Max work items	Split column	Definition of Done	State
Backlog	Backlog		20			Active
Analyze	Analyze	5		<input type="checkbox"/>	Edit Definition	Active
Develop	Develop	5		<input type="checkbox"/>	Edit Definition	Active
Test	Test	5		<input type="checkbox"/>	Edit Definition	Resolved
Done	Done		20			Closed

## Track Kanban column status

Your Kanban board is one of several tools you have for tracking work. The [query tool](#) allows you to list a subset of work items for the purposes of review, triage, update, or chart generation. For example, you can create a query to list all active user stories (specify two clauses: Work Item Type=User Story; State=Active).

But what if you want to list items based on their Kanban column assignment? Can you do that? Yes, you can track Kanban board column moves using the [Board Column](#) and [Board Column Done](#) fields.

But what if you want to list items based on their Kanban column assignment? Can you do that? Yes, from TFS 2015 Update 1 or later version. No, if you work from TFS 2015 or earlier versions. You track Kanban board column moves using the [Board Column](#) and [Board Column Done](#) fields.

**For TFS 2013, TFS 2015:** What you can do is view the history of changes made to a work item. The [History field](#) captures all updates made to an item, including column moves. You can view this by opening the card (double-click to open).

For example, the following History shows two updates made by dragging the item into a different Kanban column. The first (revision 8) involved a column move, from Analyze to Develop; and a State change, New to Active. However, the second (revision 9) only involved a column move, from Develop to Test; the State remains at Active.

DISCUSSION ONLY ALL CHANGES																	
<div> <div></div> Jamal Hartnett made field changes (less than a minute ago) </div>																	
<div>Fields</div> <table> <tr> <th>Field</th><th>New value</th><th>Old value</th></tr> <tr> <td>Rev</td><td>9</td><td>8</td></tr> <tr> <td>[Fabrikam Fiber\Fabrikam Fiber Team] Stories column</td><td>Test</td><td>Develop</td></tr> </table>			Field	New value	Old value	Rev	9	8	[Fabrikam Fiber\Fabrikam Fiber Team] Stories column	Test	Develop						
Field	New value	Old value															
Rev	9	8															
[Fabrikam Fiber\Fabrikam Fiber Team] Stories column	Test	Develop															
<div> <div></div> Jamal Hartnett changed state from New to Active, made field changes (5 days ago) </div>																	
<div>Fields</div> <table> <tr> <th>Field</th><th>New value</th><th>Old value</th></tr> <tr> <td>State</td><td>Active</td><td>New</td></tr> <tr> <td>Rev</td><td>8</td><td>7</td></tr> <tr> <td>Reason</td><td>Code complete and unit tests passed</td><td>Implementation started</td></tr> <tr> <td>[Fabrikam Fiber\Fabrikam Fiber Team] Stories column</td><td>Develop</td><td>Analyze</td></tr> </table>			Field	New value	Old value	State	Active	New	Rev	8	7	Reason	Code complete and unit tests passed	Implementation started	[Fabrikam Fiber\Fabrikam Fiber Team] Stories column	Develop	Analyze
Field	New value	Old value															
State	Active	New															
Rev	8	7															
Reason	Code complete and unit tests passed	Implementation started															
[Fabrikam Fiber\Fabrikam Fiber Team] Stories column	Develop	Analyze															

As an item's card moves from one Kanban column to the next, the item's workflow state updates based on the Kanban column-to-State mapping. You can see and set these mappings from the Customize Columns dialog. For example, here's the default mapping for the Agile user story.

Backlog items	State		State		State		State
User Story	New		Active		Resolved		Closed
		+	→	+	←	+	

Kanban columns may correspond to an actual workflow state or a pseudo state. For example, Develop, Test, and Verify columns may all map to the Active state. In this case, when you move an item from Develop to Test or from Test to Verify, the item's State doesn't change.

## Related articles

That's about all you need to know about working with Kanban columns. Here are a few more options you have for customizing the look and feel of the board.

- [Workflow states & state categories](#)
- [Show bug on backlogs and boards](#)
- [Work in Progress limits](#)
- [Add swimlanes, expedite work](#)
- [Split columns](#)
- [Definition of Done](#)

### REST API resources

To interact programmatically with Kanban board and other team settings, see the [REST API, Boards reference](#).

# Customize cards

1/31/2019 • 16 minutes to read • [Edit Online](#)

## Azure Boards | Azure DevOps Server 2019 | TFS 2018 | TFS 2017 | TFS 2015

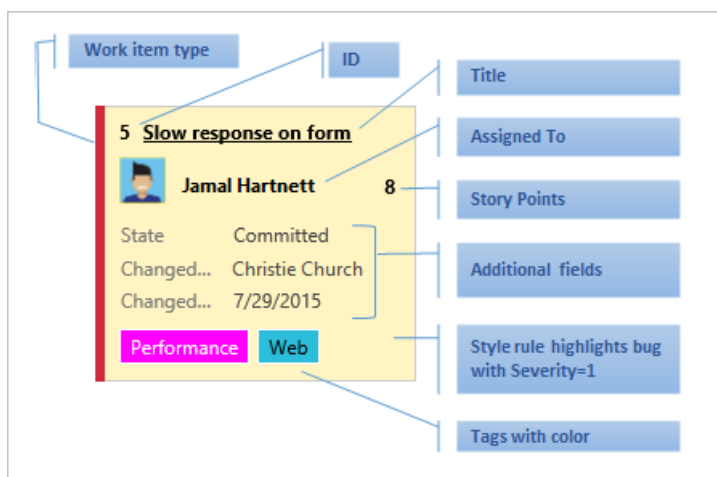
While many work tracking views show up as lists—such as your backlogs and queries—board views display cards. Information rich cards not only provide at-a-glance info of interest to you and your team, they also provide a way for you to update a field without opening the work item. And, with style rules, you can highlight those work items with select colors based on the criteria you set.

Each card corresponds to a work item which you use to share information, track status, and assign work.

In this example, the bug work item type (WIT) shows all the core fields, three additional fields, and tags. Also, To make severity 1 bugs stand out, a styling rule has been added to cause the card to display as yellow.

In the card shown below, the following customizations have been set for the bug work item type (WIT):

- Show all core fields: ID, Assigned To, Story Points, Tags
- Show three additional fields: State, Changed By, and Changed Date
- Apply tag colors
- Apply styling rule to display bugs with Severity=1 as yellow and bold and underline the Title field



### NOTE

You can customize a work item type which is different then customizing the card displayed on the Kanban board or taskboard. You customize a WIT by adding fields, changing the workflow, adding custom rules and more. You can also add custom work item types and custom backlog levels. For details, see [Customize an inheritance process](#).

### NOTE

You can customize a work item type which is different then customizing the card displayed on the Kanban board or taskboard. You customize a WIT by adding fields, changing the workflow, adding custom rules and more. You can also add custom work item types and custom backlog levels. For details, see [Customize the On-premises XML process model](#).

You can either increase or simplify the information that displays on your cards. It all depends on what's of interest to your team. Does your team like to refer to work items by their ID? Do they want to see estimates? Do they want to highlight work items according to set criteria? Or, will just the bare bones of title and

assignment suffice?

Your best bet is to show fields on cards based on what your team frequently refers to or updates when using the Kanban and taskboards. Also, add fields with information that you can use to filter the board. If you're new to working with these tools, see [Kanban basics](#) and [Sprint planning](#).

## Prerequisites

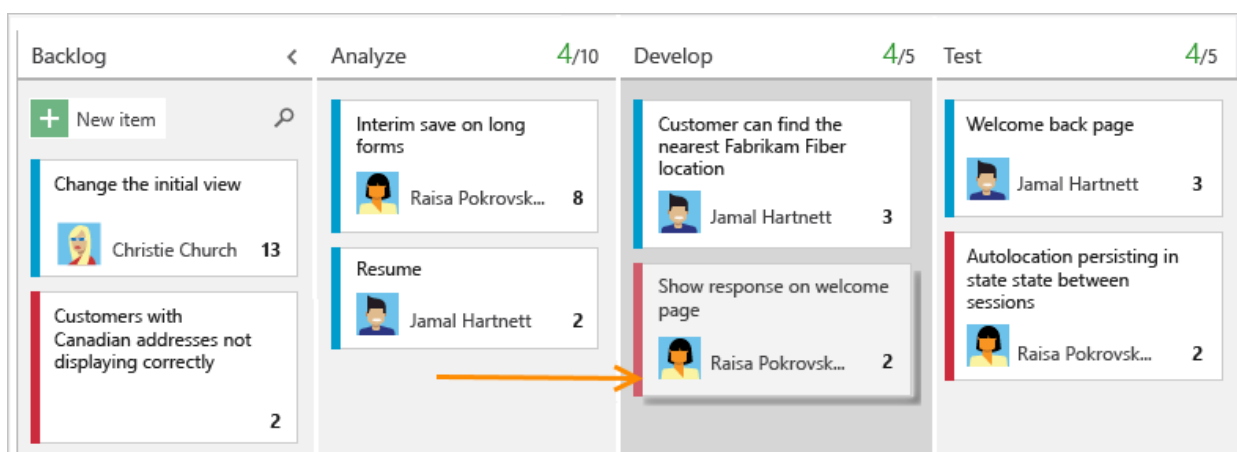
- You must be added to the team administrator role for the team's settings you want to modify, or be a member of the **Project Administrators** security group. To get added, see [Add a team administrator](#) or [Set permissions at the project- or collection-level](#).
- You must be granted **Stakeholder** access or higher. For details, see [About access levels](#).

## Update fields from the cards

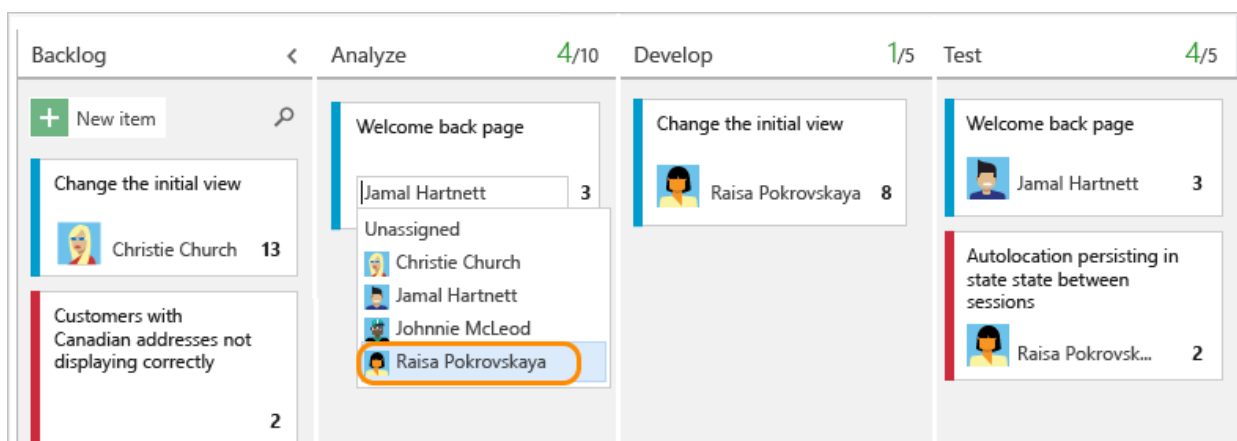
Using the board views provides you with quick and easy ways to update work items as work progresses. Making daily or frequent updates helps everyone on your team stay in sync with what's been done and what needs doing next.

To update status of a work item, you simply drag-and-drop cards to a different column. To change the order or stack ranking of a work item, you drag a card up or down within a column.

For example, on the Kanban board, moving the card from Analyze to Develop updates the corresponding State field. In this case, the State field updates from Approved to Committed.



Another handy feature is to simply update a field without having to open the work item. You can update most fields shown on the card. Here we reassign a requirement.



This quick update feature is particularly useful when you need to update a number of work items at once. For example, you can add estimates for backlog items on the Kanban board or update remaining work on the taskboard.

To change the title, click the pencil icon in the upper-right corner. To add tags, double-click the work item to open it. And, just a reminder, you can't change the IDs for a work item, not from the card and not from within the form.

To customize cards on the Kanban board, see [Change how cards display on the Kanban board](#). To customize taskboard cards, see [Change how cards display on the taskboard](#).

## Highlight cards

With styling rules, you can cause cards to change color when their corresponding work items meet criteria that you set. Here, we highlight severity 1 bugs by having the cards display as yellow.

This feature requires TFS 2015.1 or later versions.



### Example styling rules

What rules should you apply to highlight work items? Here are a few examples and their associated criteria .

WORK ITEMS	CRITERIA
High priority items	Priority = 1
High effort items	Effort 20 OR Story Points 20
Stale items unchanged in the last 5 days	Changed Date @Today-5
Title contains a key word	Title Contains Yes
Severity 1 bugs	Severity = 1 - Critical AND Work Item Type = Bug
High value business items	Business Value 50
Items assigned to specific feature area	Area Path Under Fabrikam Fiber\Phone
Contains specific tag	Tags Contain RTM
Blocked tasks (Scrum process only)	Blocked = Yes

## Choose fields to appear on cards (Kanban boards)

By showing a field on a card, you can edit that field directly on the board without having to open the card, unless it's a read-only field, such as the Change By and Changed Date fields. You can also customize the cards that appear on the Kanban board for features and epics. You follow similar steps, however you start from the [corresponding portfolio backlog](#).

As a first step, you'll see that you can determine which fields appear on each card type. To add a custom field,



you must first [add it to the process used to customize the project](#).

As a first step, you'll see that you can determine which fields appear on each card type. To add a custom field, you must first [add it to the WIT definition](#).

#### 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 your Kanban board](#). If you're not a team admin, [get added as one](#). Only team and project admins can customize the Kanban board.
  2. Choose the  gear icon to configure the board and set general team settings.



3. Choose **Fields** and then a work item type to see all the settings you can modify. Your initial column settings will look something like this.

Here we choose User Story. Your choices will vary based on the [process](#) used to create your project and whether your team has chosen to [treat bugs like requirements or like tasks](#).

# Settings



- Cards
  - Fields \***
  - Styles
  - Tag colors
  - Annotations
  - Tests
- Board
  - Columns
  - Swimlanes
  - Card reordering
- Charts
  - Cumulative flow
- General
  - Backlogs
  - Working days
  - Working with bugs

## 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

State



Changed Date



Changed By



### Show empty fields

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

Save

Cancel

- Place a check mark in the check box for those fields you want to have appear on the board.

If you want work estimates to show, check **Show Effort**. **Show Effort** corresponds to these fields: Effort ([Scrum](#)), Story Points ([Agile](#)), and Size ([CMMI](#)).

- To add a field, choose the plus icon and enter the name of a field you want to add.

- To remove a field, choose the delete icon next to the field.

- When done with your changes, choose **Save**.

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


## Choose fields to appear on cards (Taskboards)

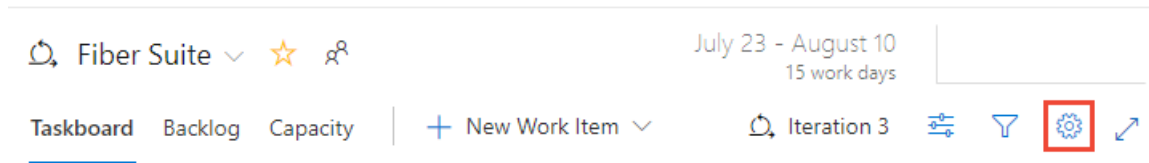
Scrum teams use the taskboard to burn down work and report on progress during daily standups. Your taskboard shows cards that correspond to both requirements and tasks. If you want bugs to appear on the taskboard, change your team settings for [show bugs on the backlogs and boards](#).

You change the way cards appear on the taskboard in the same way you change the appearance of cards on Kanban boards. Only here, you start from the taskboard.

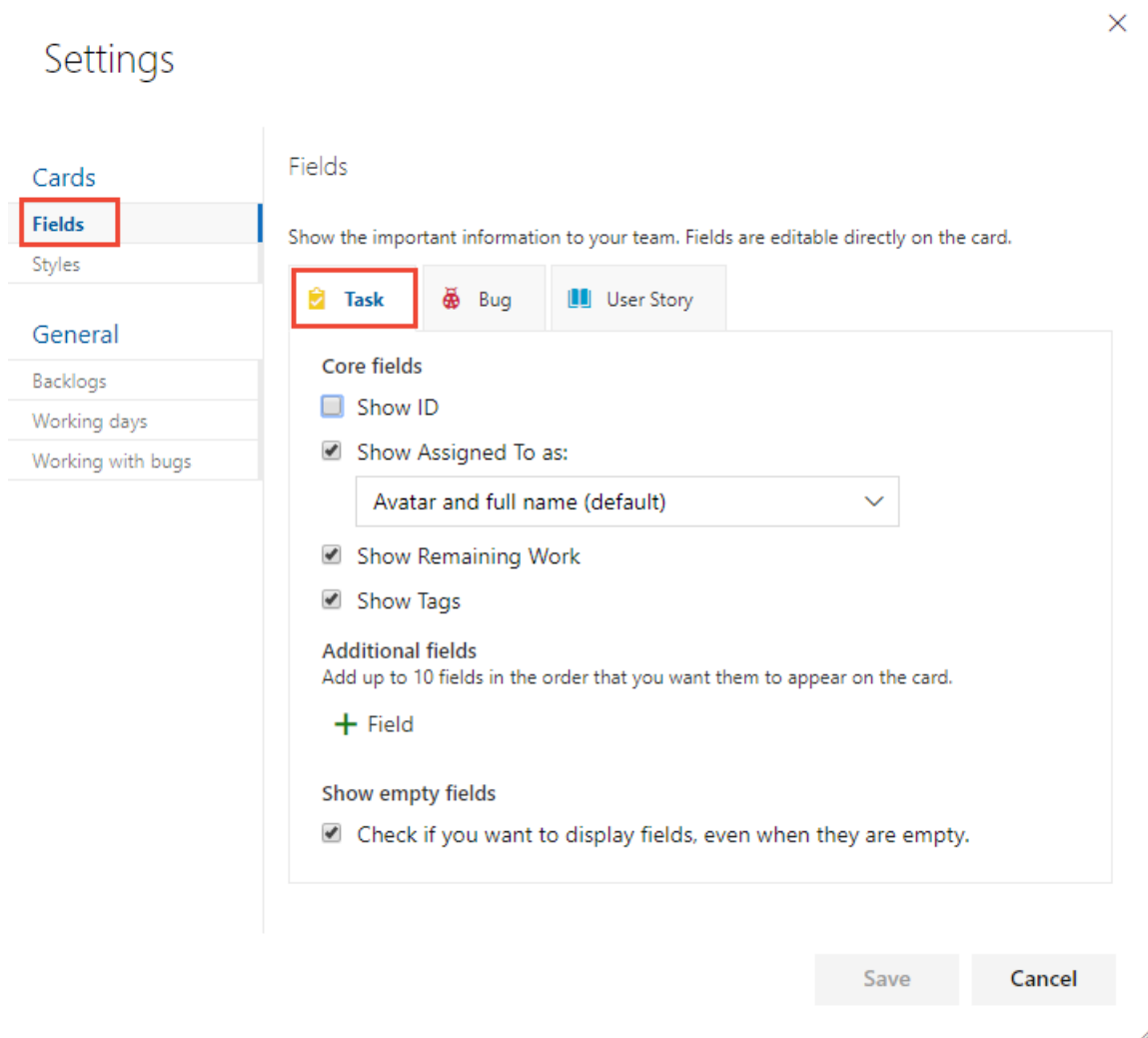
- [New navigation](#)

- [Previous navigation](#)



1. [Open the taskboard](#) for the sprint you want to customize. Remember, only [team or project administrators](#) can customize the taskboard.
2. Choose the  gear icon to open the Settings dialog.



3. Choose **Fields** and then a work item type to see all the settings you can modify.
4. Place a check mark in the check box for those fields you want to have appear on the board.



Repeat this step for each work item type you want to change. Don't be surprised if the options change when you choose a different work item type. For example, **Show Remaining Work** only applies to tasks and perhaps bugs, but not to user stories or product backlog items.



5. To add a field, choose the  plus icon and enter the name of a field you want to add.
6. To remove a field, choose the  delete icon next to the field.
7. When done with your changes, choose **Save**.

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

# Define style rules to highlight cards

You can apply style rules to change the color of cards on Kanban boards and taskboards.

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

1. [Open the Kanban board](#) or [taskboard](#) that you want to customize. If you're not a team admin, [get added as one](#). Only team and project admins can customize boards.
2. Choose the  gear icon to open the **Settings** dialog.
3. Choose **Styles** to specify a style rule. Choose the  plus icon to add a style. Select the color to apply to the card and define the criteria for the style rule.

In this example we show the **Styles** dialog for the taskboard.

Settings

Cards

Fields

Styles \*

General

Backlogs

Working days

Working with bugs

Styles

Styling rules make the cards with important information stand out. When a work item matches more than one rule, the first rule is used.

+ Styling rule

Rule Name	Preview	Enabled
Rule Name	Title	<input checked="" type="checkbox"/>

Rule name

Name

Styling

Select your style choices.

Card color

Title style 

B

I

U

Rule criteria

Your styling choices apply to all work items that match all clauses of your custom criteria.

+ X

Field

Operator

Value

Priority

=

1

+ Add new clause

Save

Cancel

Follow these rules when creating and ordering your style rules:

- The criteria you specify works in a similar fashion as when [constructing a query](#)
- All clauses are considered AND clauses, grouping clauses isn't supported
- Card rules apply to all work items that meet the rule criteria

- Rule color applies to work items based on the order in which rules are listed. If you add more than one style rule, make sure that you move them in the order of most importance. Simply drag them into the order you want them applied.
- You can quickly enable and disable a style rule

Here we add a Stale tasks rule which highlights tasks that haven't changed in the last five days.

The screenshot shows the 'SETTINGS' dialog box with the 'Styles' tab selected. The left sidebar lists 'Cards', 'Fields', 'Styles \*', 'General', 'Backlogs', 'Working days', and 'Working with bugs'. The main area is titled 'Styles' and contains a description: 'Styling rules make the cards with important information stand out. When a work item matches more than one rule, the first rule is used.' Below this is a '+ Styling rule' button. A rule named 'Stale tasks' is shown with a red background color and an 'Enabled' checkbox. The rule criteria are defined by two clauses: 'Changed Date' is greater than '@Today - 5' and 'Work Item Type' is equal to 'Task'. At the bottom are 'Save', 'Save and close', and 'Cancel' buttons.

**SETTINGS**

**Styles**

Styling rules make the cards with important information stand out. When a work item matches more than one rule, the first rule is used.

+ Styling rule

**Stale tasks** Stale tasks ☒ **Enabled** \*\*\*

**Rule name**

Name

**Color**  
Choose the background color of the card.

Stale tasks

**Rule criteria**  
Cards that match all clauses of the criteria appear with the selected card color.

	Field	Operator	Value
+ X	Changed Date	>	@Today - 5
+ X	Work Item Type	=	Task
+ Add new clause			

Save Save and close Cancel

4. To copy or delete a style rule, choose the \*\*\* actions icon and select **Clone** or **Delete**, respectively.
5. When done with your changes, choose **Save**.

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

## Color-code tags (Kanban boards)

Prior to setting tag colors, first [add tags to backlog items](#) that you want to highlight with color.

Requires TFS 2015.1 or later version.

1. Open the Settings dialog for the Kanban board you want to customize.
2. Choose **Tag colors** and then choose the + plus icon to add a tag color. Then, select the tag and the color you want to appear on the cards.

# Settings



Cards

Fields

Styles

Tag colors \*

Annotations

Tests

Board

Columns

Swimlanes

Card reordering

Charts

Cumulative flow

General

Backlogs

Working days

Working with bugs

Tag colors

Emphasize selected tags using colors. Only one color applies to a tag at a time.

+ Tag color

Tag	Color	Enabled
Web	<div></div>	<input checked="" type="checkbox"/> <input checked="" type="checkbox"/>
Service	<div></div>	<input checked="" type="checkbox"/> <input checked="" type="checkbox"/>
Phone	<div></div>	<input checked="" type="checkbox"/> <input checked="" type="checkbox"/>

Save

Cancel

SETTINGS

Cards

Fields

Styles

Tag colors \*

Board

Columns

Swimlanes

General

Backlogs

Working days

Working with bugs

Tag colors

Emphasize selected tags using colors. Only one color applies to a tag at a time.

+ Tag color

Tag	Color	Enabled
Security	<div></div>	<input checked="" type="checkbox"/>
Performance	<div></div>	<input checked="" type="checkbox"/>
Web	<div></div>	<input checked="" type="checkbox"/>

Save

Save and close

Cancel

## TIP

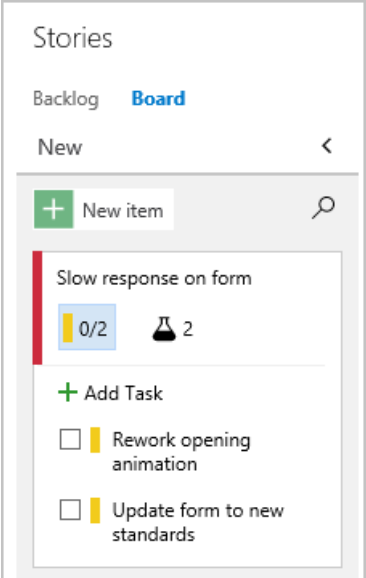
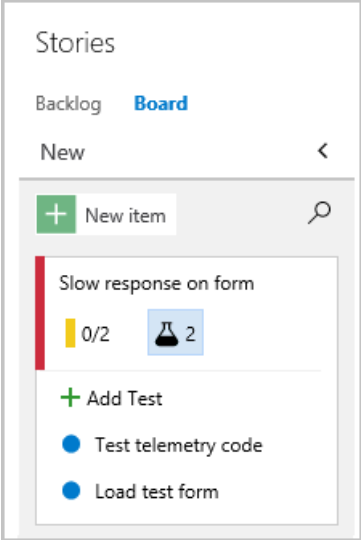
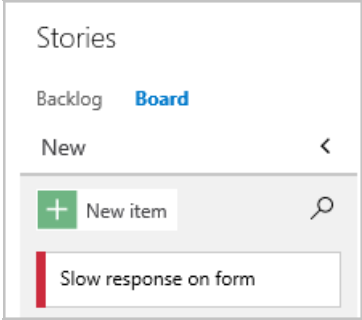
If tags don't display on the cards, choose **Fields** and make sure that you've checked **Show Tags**.

- When done with your changes, choose **Save**.

## Enable annotations (Kanban boards)

With the Kanban board, you gain a rich set of tools and a rich set of customization options. Annotations provide visual cues about work items, indicating the number of tasks or tests that have been defined for that work item. Choose an annotation to expand the set or gain more information.

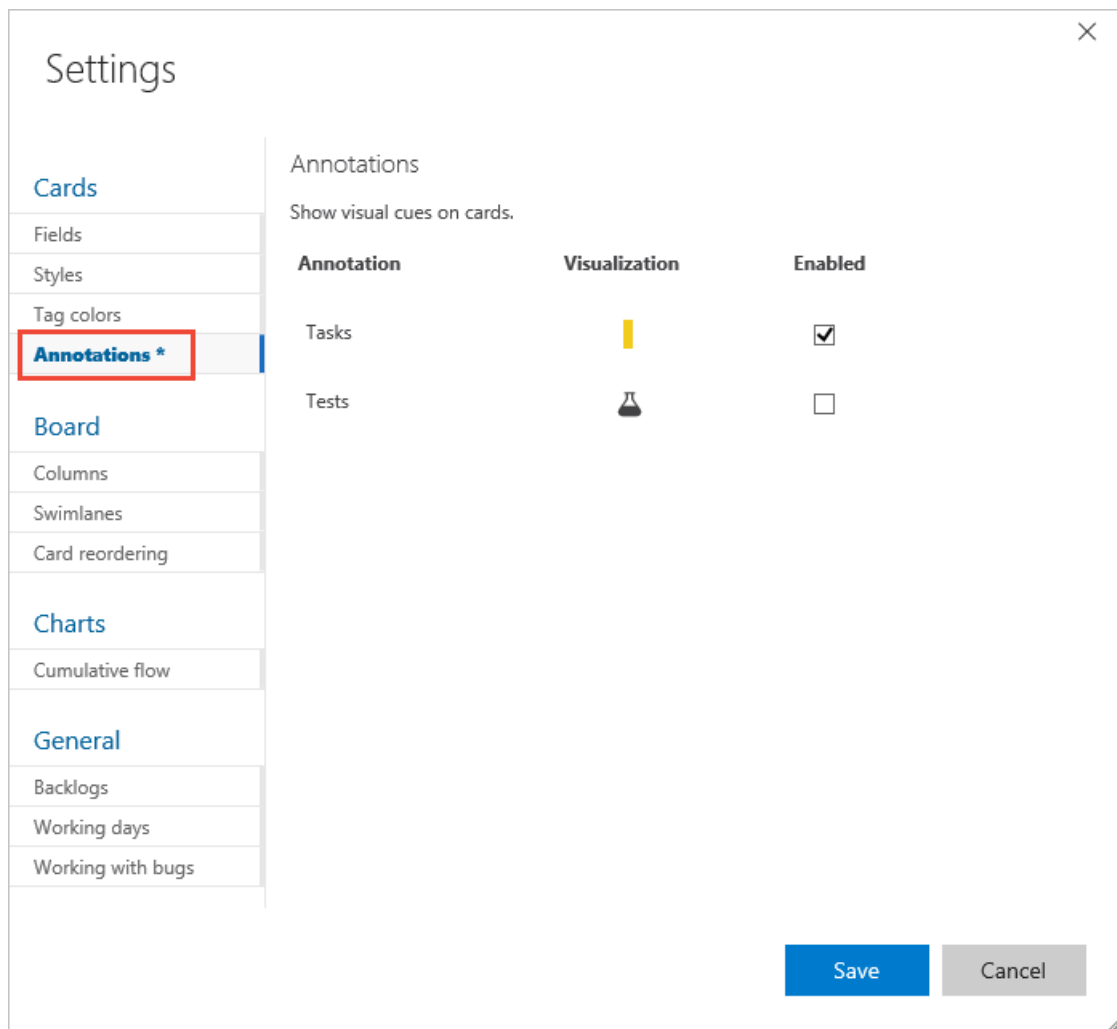
As shown in the following examples, the **Task** and **Test** annotations indicate that two each of tasks and tests have been defined for the work item. If you find that there are some features you're not using, you can disable them from the Annotations tab.

TASK ANNOTATIONS	TEST ANNOTATIONS	NO ANNOTATIONS
		

To learn more about using these features, see [Add task checklists](#) and [Add, run, and update inline tests](#).

### Enable or disable an annotation

- Open the Settings dialog for the Kanban board you want to customize.
- Choose **Annotations** and then check those annotations that you want enabled. For example, to enable tasks but disable tests, check the following boxes.



3. When done with your changes, choose **Save**.

## Configure inline tests (Kanban board)

You can control the test plan under which inline tests you add through the Kanban board are created. You can choose to create a new test plan for each new test that you add, or add all new tests to a selected test plan going forward.

1. Open the Settings dialog for the Kanban board (product backlog only) you want to customize.
2. Choose **Annotations** and make sure that **Test** annotation is enabled. This is a requirement to configure inline tests.
3. Choose **Tests**, and then choose the options you want. To select a test plan, choose the \*\*\* actions icon and select one test plan from the query provided.



# Settings



## Cards

Fields

Styles

Tag colors

Annotations

**Tests \***

## Board

Columns

Swimlanes

Card reordering

## Charts

Cumulative flow

## General

Backlogs

Working days

Working with bugs

## Tests

Configure how you want tests to appear and behave on the cards.

### Manual tests - Test plans

Configure where tests need to be created for manual tests

- ☒ Create new plan using area/iteration of selected card
- ☐ Select a test plan

Select test plan



### Manual tests - Configure test outcome settings

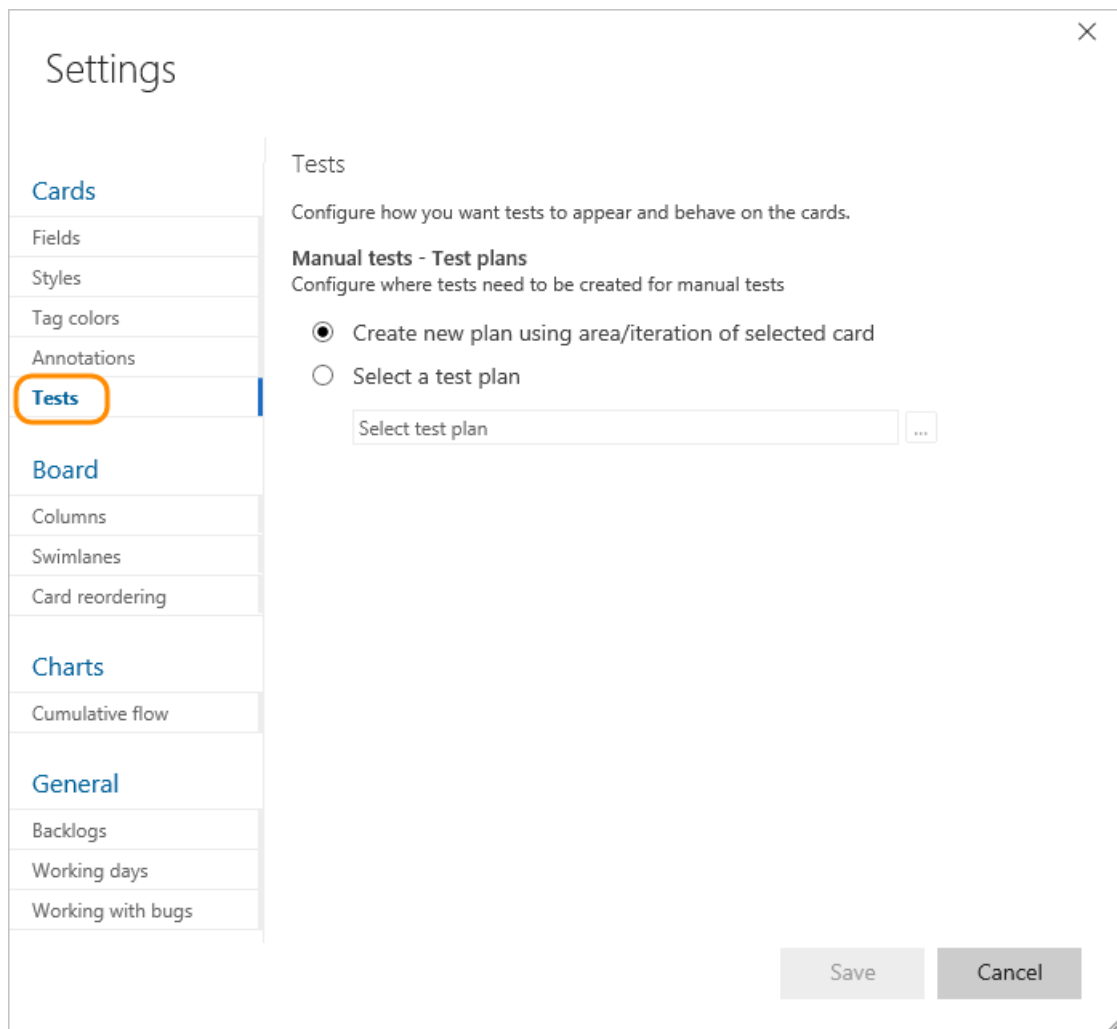
Configure how same tests across test suites under a test plan need to behave

- ☒ Show same outcome of the tests in multiple suites under the same plan

**i** Outcomes will be same for tests with same configuration


Save

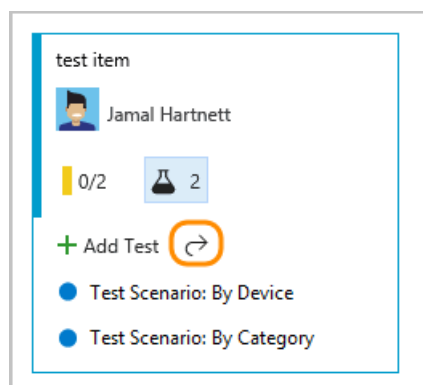
Cancel



4. Save your changes.

### Open the test plan, test suite from a card

From a card on the Kanban board, you can easily navigate to the underlying test plan and test suite under which the tests are created. Choose the  open icon to open another browser tab showing **Test** and associated test plan and test suite that controls the inline tests.



## Related articles

- [Card reordering](#)
- [Show bugs on backlogs and boards](#)

1/31/2019 • 7 minutes to read • [Edit Online](#)

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

An essential Kanban practice—Work in Progress limits, aka "WIP limits"—constrains the amount of work your team undertakes at each work stage. It's designed to focus your team on completing items before starting new work. While counter-intuitive at first, many teams find WIP limits helps them increase their productivity and improve their software quality.

You define WIP limits for each work stage, corresponding to each intermediate column. The limit sets a soft constraint on the number of items allowed within the column. Nothing actually prevents you from moving more items into the column and exceeding the limit. Your Kanban board shows the count of items at each stage next to each limit.

Backlog	Analyze <span>3/8</span>	Develop <span>3/6</span>	Test <span>2/6</span>	Done
<div> <div>+</div> <div>New item</div> </div> <div> <div> <div>4</div> </div> </div>	<div> <div> <div>6</div> </div> </div> <div> <div> <div>4</div> </div> </div>	<div> <div> <div>3</div> </div> </div> <div> <div> <div>2</div> </div> </div>	<div> <div> <div>2</div> </div> </div> <div> <div> <div>8</div> </div> </div>	<div> <div> <div>10</div> </div> </div> <div> <div> <div>6</div> </div> </div>

While [setting WIP limits](#) is simple, adhering to the limits takes a team commitment. Successful adoption of WIP limits involves a culture change. It moves teams from a focus on individual productivity to one of team productivity.

## Prerequisites

- You must be added to the team administrator role for the team's settings you want to modify, or be a member of the **Project Administrators** security group. To get added, see [Add a team administrator](#) or [Set permissions at the project- or collection-level](#).
- You must be granted **Stakeholder** access or higher. For details, see [About access levels](#).

## Determine initial WIP limits

To get started, have your team determine the initial WIP limits to set and how they'll use and monitor them. Beyond that, few rules apply to what numbers to set as they can vary based on several factors. Here are two guidelines to help you determine what limits to set:

- Set limits based on current works in progress. Count the items present in your existing Kanban columns.
- Set limits that don't exceed 2 or 3 items per team member that works within a stage. For example, if you have three team members and each team member can work on no more than two tasks at a time, the resulting WIP limit is 6 (= 3 developers X 2 tasks/developer).

Starting low may help your team discover bottlenecks more quickly and identify process issues to address.

After you've defined an initial set of WIP limits, you'll likely want to fine tune them as your project progresses.




If you're new to Kanban, review [Kanban basics](#) to get an overview of how to access your board and implement

Kanban.

## Keep within WIP limits

After you've set your WIP limits, you'll want to track how well your team keeps within the limits.

Respecting WIP limits means teams don't pull items into a column if doing so causes the number of items in the column to exceed the column limit. When they do, your Kanban board provides immediate feedback. This feedback should act as a signal to the team to focus immediately on activities to reduce the number of items in the column.

Analyze	Develop <span>7/5</span>	Test <span>3/5</span>	Done
<div>Search on web</div>	<div>Welcome back page  Johnnie McLeod</div>	<div>Hello World Web Site  Jamal Hartnett 20</div>	<div>Add a sign in form</div>
<div>Search on web  Raisa Pokrovsk... 8</div>	<div>Log on 5</div>	<div>Design page</div>	

Although simple in theory, keeping within WIP limits can force individuals, teams, and organizations out of their comfort zone. Team members who like to multitask might feel unnecessarily constrained. Others might find themselves without work as they wait for work to complete at an upstream stage.

To gain the advantages of constraining work-in-progress, have your team meet frequently to discuss the process changes taking place. As a starting point, consider hosting discussions around some of the [challenges and solutions to support successful implementation of WIP limits](#) provided below.

## Identify bottlenecks

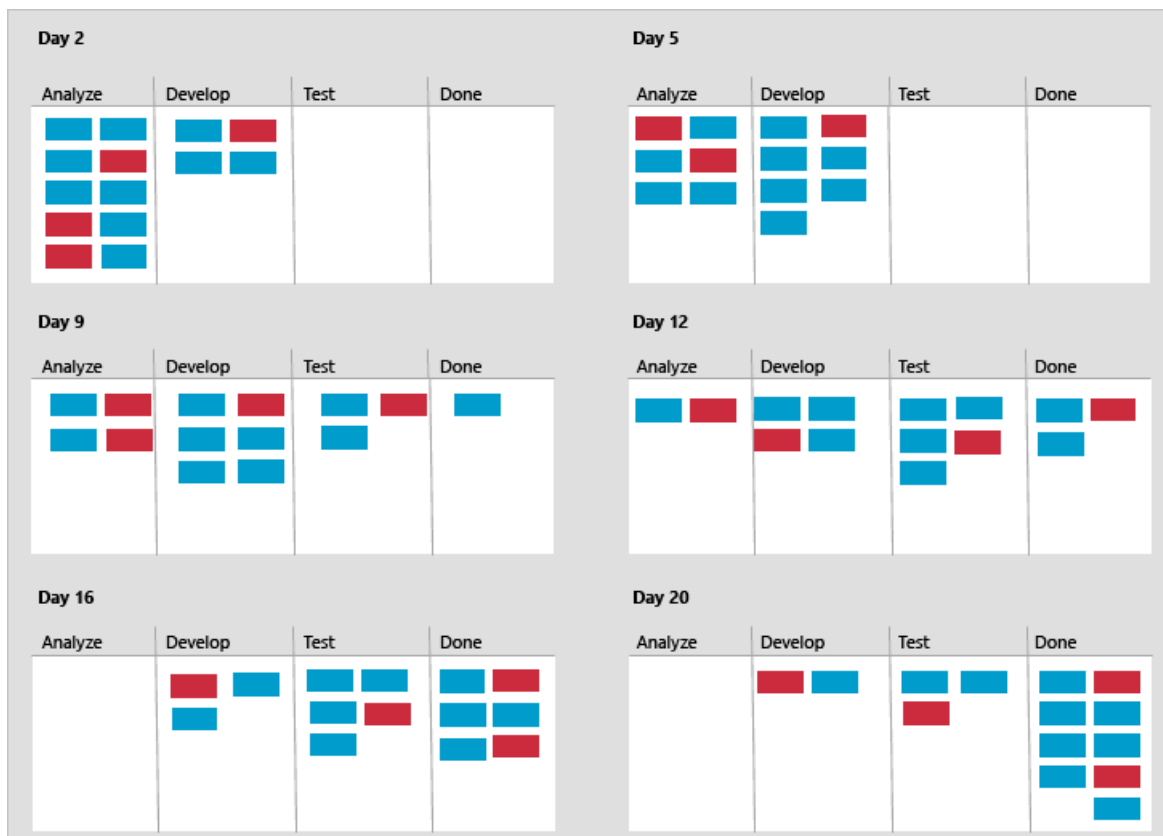
To optimize the flow of value, you naturally want to identify and eliminate bottlenecks. Bottlenecks indicate waste exists in the overall workflow process.

By monitoring your Kanban board over time, you can learn where bottlenecks occur. When several items sit in a column unworked for several days, a bottleneck has occurred. Bottlenecks typically occur when WIP limits are too high. On the other hand, no bottlenecks could indicate that WIP limits are too low.

The free eBook, [Kanban and Scrum - making the most of both](#), provides this guidance:

*Too low WIP limit => idle people => bad productivity Too high WIP limit => idle tasks => bad lead time*

Taking periodic snapshots of your Kanban board can visually catalog where work flows smoothly and where bottlenecks appear.



Such snapshots can show your team:

- How many items on average reside within a workflow stage/column
- How many items are being worked versus team members who work within a workflow stage/column
- How many and which items remained in a workflow stage/column for long periods of time
- How many items did the team complete at the end of a one, two, or three week period?

## Eliminate waste

Because bottlenecks signal waste in your workflow process, you'll want to identify the source of the waste. Kanban defines waste as anything not strictly needed to produce desired outcomes.

Common wastes in software development include:

- Unused code or features
- Defects that lead to re-work
- Delays or time spent waiting for something
- Handoffs from one person, team, or business process to another
- Insufficient requirements
- Slow or poor communication

Eliminating waste calls for team discussions to identify causes and solutions acceptable to the team. In addition to addressing the [challenges and solutions posed by WIP limits](#), the team may decide to adjust their workflow process or WIP limits.

## Set WIP limits

With an understanding of how you'll use WIP limits, here's how you set them. If you haven't yet [mapped your team's work flow to Kanban columns](#), do that first. For information about accessing your Kanban board, see [Kanban basics](#).

#### 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 your Kanban board](#). If you're not a team admin, [get added as one](#). Only team and project admins can customize the Kanban board.
  2. Choose the  gear icon to configure the board and set general team settings.



3. Choose **Columns** and then a column tab to set the WIP limit for that column.

Settings

Cards

Fields

Styles

Tag colors

Annotations

Tests

Board

Columns \*

Swimlanes

Card reordering

Charts

Cumulative flow

General

Backlogs

Columns

Columns visualize the flow of work across the board.

+ Column

Backlog

Analyze

Coding

Testing

Column name

Name

Analyze

Work in progress limit

Setting it to 0 specifies no limit.

WIP limit

8

☐ Split column into doing and done

State mapping

Specify the state this column maps to.

Bug

Approved

Save

Cancel

#### NOTE

You'll see different column titles and choices based on the [process](#) used to create your project and whether your team has chosen to [treat bugs like requirements or like tasks](#).

4. When done with your changes, choose **Save**.

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

## Related articles

- [Split columns](#)
- [Expedite work](#)
- [Definition of Done](#)
- [Customize cards](#)
- [Show bugs on backlogs and boards](#)
- [Definition of Done](#)
- [Show bugs on backlogs and boards](#)

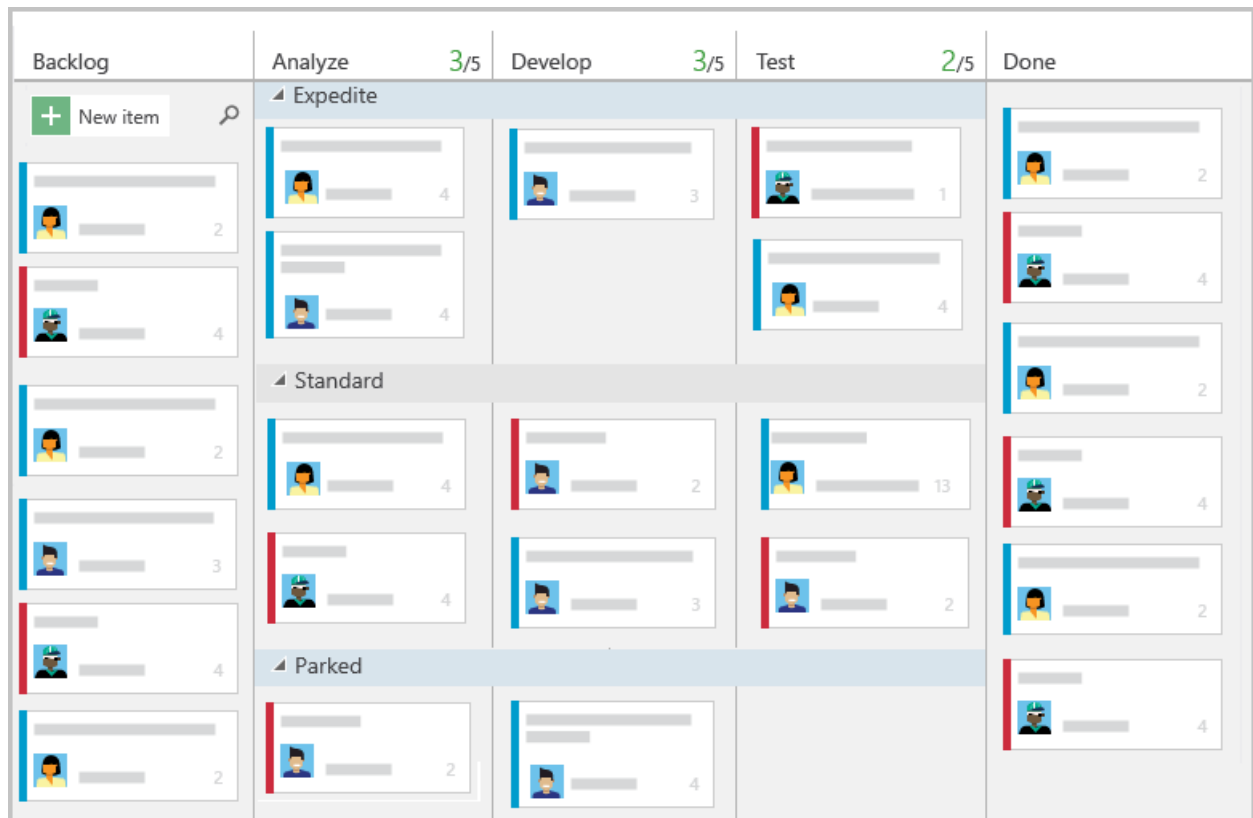
# Expedite work with swimlanes

2/7/2019 • 5 minutes to read • [Edit Online](#)

## Azure Boards | Azure DevOps Server 2019 | TFS 2018 | TFS 2017 | TFS 2015

Your Kanban board supports your ability to visualize the flow of work as it moves from new to done. When you add swimlanes, you can also visualize the status of work that supports different service-level classes. You can create a swimlane to represent any other dimension that supports your tracking needs.

For example, you can create three swimlanes—Expedite, Standard, and Parked—to track high-priority work, standard work, and work that's currently blocked.



### TIP

Type **o** to expand all swimlanes and **u** to collapse all swimlanes. To move the focus up or down, enter the **↑** **↓** up/down arrows. For more tips, see [kanban board keyboard shortcuts](#).

## Prerequisites

- You must be added to the team administrator role for the team's settings you want to modify, or be a member of the **Project Administrators** security group. To get added, see [Add a team administrator](#) or [Set permissions at the project- or collection-level](#).
- You must be granted **Stakeholder** access or higher. For details, see [About access levels](#).

## Types of swimlanes

You can use swimlanes to sort work on your Kanban board to track items that you differentiate as follows:



- High priority items
- Service-level class
- Date-driven requirement
- Dependency for or from another team
- Blocked items
- Technical debt or other engineering work that's not a specific user story

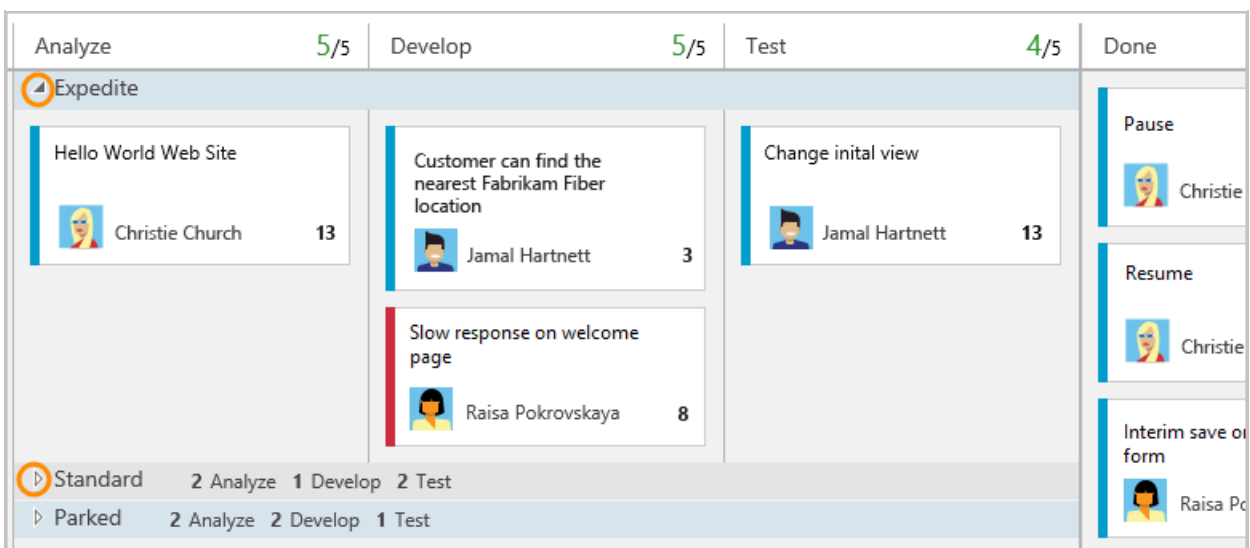
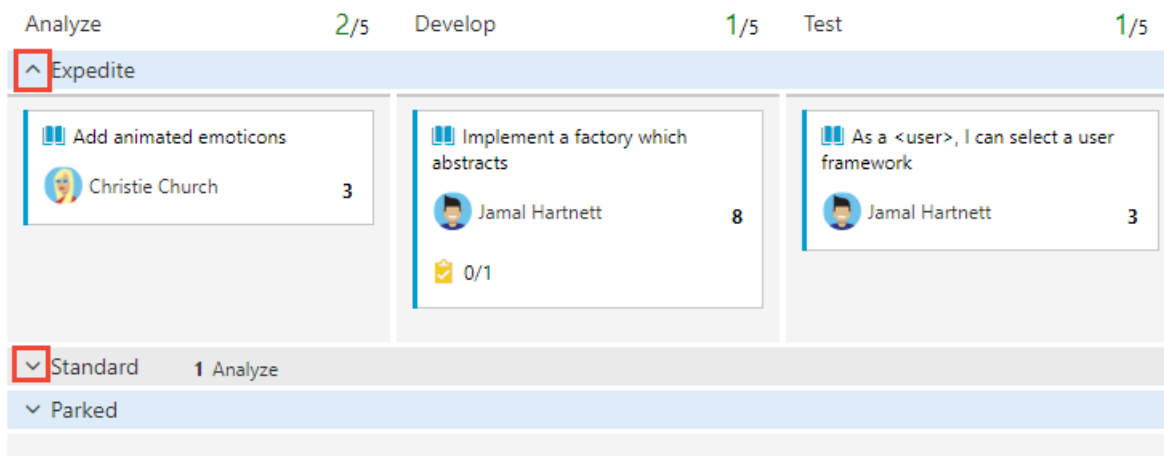
## Track work in swimlanes

Once you've set up your swimlanes, you can drag items into a swimlane as well as reorder them within the lane.

The screenshot shows a Jira board with swimlanes. The top navigation bar includes 'New', 'Analyze' (4/5), 'Develop' (7/5), and 'Test'. The board is divided into two swimlanes: 'Expedite' and 'Standard'. The 'Expedite' swimlane contains three items: 'Hello World Web Site' by Jamal Hartnett, 'Add animated emoticons' by Christie Church, and 'Check issues with permissions' by Raisa Pokrovskaya. The 'Standard' swimlane contains one item: 'Welcome back page' by Raisa Pokrovskaya. A red arrow points from the 'Standard' swimlane to the 'Expedite' swimlane, indicating a drag action.

The screenshot shows a Jira board with swimlanes. The top navigation bar includes 'Backlog', 'Board', 'Analyze' (5/5), 'Develop' (5/5), and 'Test'. The board is divided into two swimlanes: 'Expedite' and 'Standard'. The 'Expedite' swimlane contains three items: 'Hello World Web Site' by Christie Church, 'Customer can find the nearest Fabrikam Fiber location' by Jamal Hartnett, and 'Show response on welcome page' by Raisa Pokrovskaya. The 'Standard' swimlane contains three items: 'Interim save on long forms' by Raisa Pokrovskaya, 'Resume' by Jamal Hartnett, and 'Autolocate state state sessions' by Raisa Pokrovskaya. An orange arrow points from the 'Standard' swimlane to the 'Expedite' swimlane, indicating a drag action.

You can also focus on a single swimlane by collapsing all other lanes.



## Configure swimlanes

So, what swimlanes will support your tracking needs?

Once you've identified one or two, add them to your Kanban board.

### 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

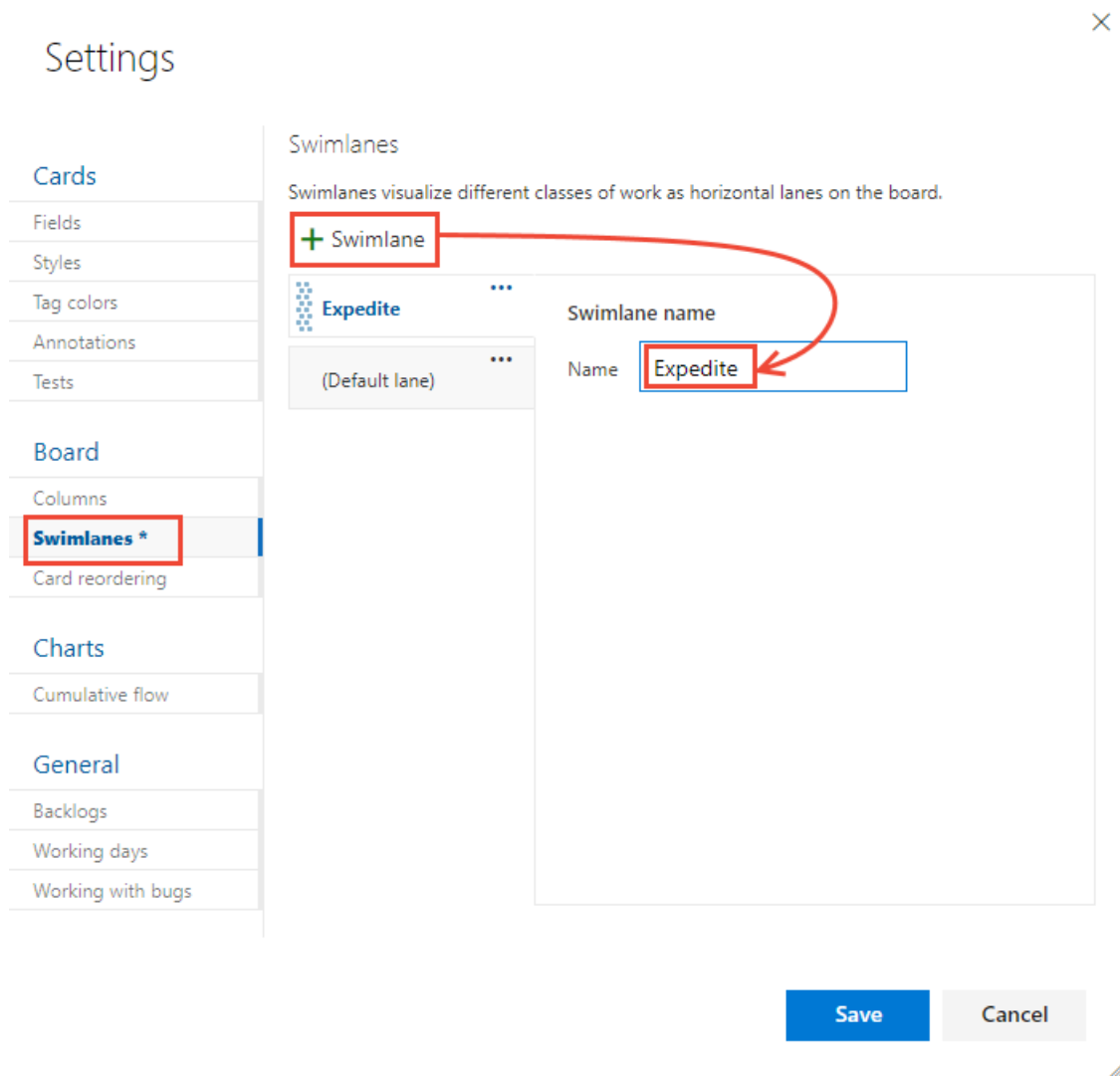
Choose the **Previous navigation** tab for guidance. TFS 2018 and earlier versions only support the previous navigation user interface. For more information, see [Web portal navigation](#).

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

1. [Open your Kanban board](#). If you're not a team admin, [get added as one](#). Only team and project admins can customize the Kanban board.
2. Choose the ⚙️ gear icon to configure the board and set general team settings.



3. Choose **Swimlanes** and then choose the + plus icon and enter the name of the swimlane you want to add.

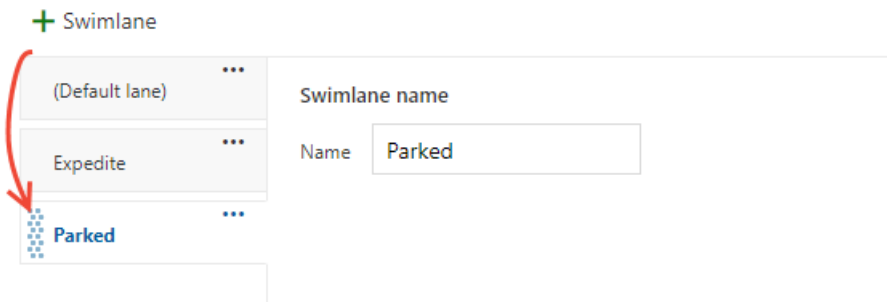


The default lane appears unlabeled on the Kanban board. You can rename it to anything you like, however, you can't delete it. Also, you can rename it directly from the Kanban board.

4. To reorder your swimlanes, simply grab the lane and move it up or down.

## Swimlanes

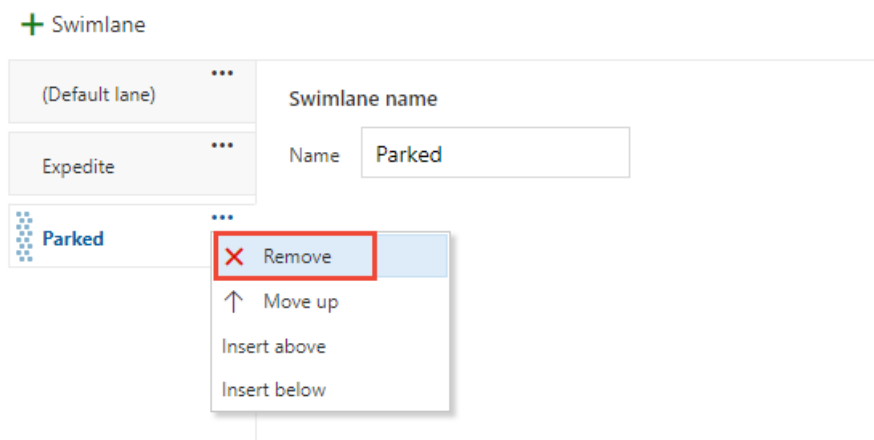
Swimlanes visualize different classes of work as horizontal lanes on the board.



5. If you need to delete a swimlane, first move all items out of the lane. Then open the Settings dialog, choose the **...** actions icon and select **Remove**.

## Swimlanes

Swimlanes visualize different classes of work as horizontal lanes on the board.



6. When done with your changes, choose **Save**.

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

## Track lane moves

You can track Kanban board swimlane moves by creating a query and using the [Board Lane field](#).



## Track lane moves

### For TFS 2015.1 and later versions

You can track Kanban board swimlane moves by creating a query and using the [Board Lane field](#).

### For TFS 2015

Similar to the way [column moves are tracked](#), swimlane moves are captured in the history field.

DISCUSSION ONLY ALL CHANGES		
 Jamal Hartnett made field changes (less than a minute ago)		
Fields		
Field	New value	Old value
Rev	9	8
[Fabrikam Fiber\Fabrikam Fiber Team] Stories Lane	Expedite	
 Jamal Hartnett made field changes (3 days ago)		
Fields		
Field	New value	Old value
Rev	8	7
[Fabrikam Fiber\Fabrikam Fiber Team] Stories Lane		Normal

For TFS 2015 and earlier versions, you can't [query](#) for all items in a particular swimlane. To perform such a query, you'd have to assign a value to a field, such as the Priority field, or [tag](#) each item in a similar way.

## Related articles

As you can see, swimlanes provides another way to organize and visualize the flow of work using [Kanban](#). Here are a few more options you have for customizing the look and feel of your Kanban board.

- [Query by assignment or workflow changes](#)
- [Add columns](#)
- [Split columns](#)
- [Customize cards](#)

### REST API resources

To programmatically interact with the Kanban board and other team settings, see the [REST API, Boards reference](#).

# Split columns

1/31/2019 • 5 minutes to read • [Edit Online](#)

## Azure Boards | Azure DevOps Server 2019 | TFS 2018 | TFS 2017 | TFS 2015

You use your Kanban board to visualize the flow of work, and monitor how items are or aren't progressing. Because each column corresponds to a stage of work, you can quickly see the number of items in progress at any each stage.

However, a lag often exists between when work gets moved into a column and when work actually starts. To counter that lag and reveal the actual state of work in progress, you can turn on split columns.

When split, each column contains two sub-columns, Doing and Done.

Backlog	Analyze 4/5		Develop 6/5		Test 4/5		Done
	Doing	Done	Doing	Done	Doing	Done	
<div>+ New item</div> <div><div></div><div></div><div></div></div>	<div><div></div><div></div><div></div></div>	<div><div></div><div></div><div></div></div>	<div><div></div><div></div><div></div></div>	<div><div></div><div></div><div></div></div>	<div><div></div><div></div><div></div></div>	<div><div></div><div></div><div></div></div>	<div><div></div><div></div><div></div></div>

Split columns lets your team implement a pull mechanism within the workflow process. Without split columns, teams push work forward, to signal that they've completed their stage of work. However, pushing it to the next stage doesn't necessarily mean that a team member immediately starts work on that item.

By contrast, with split columns, your team knows exactly how many items sit idle, waiting for work to begin. You now have greater visibility into the quantity of items that sit idle at each stage throughout your workflow process.

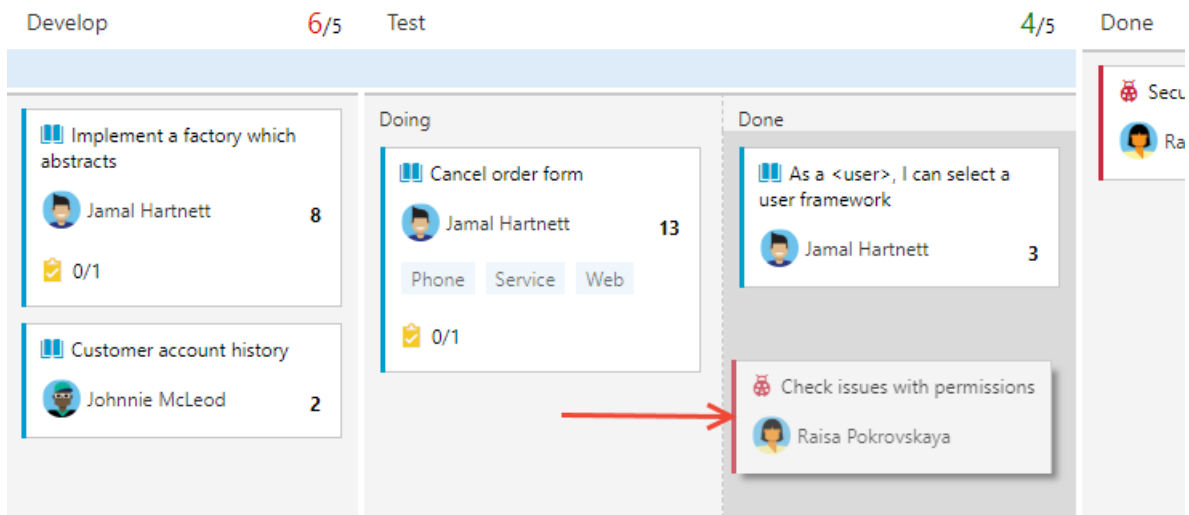
## Prerequisites

- You must be added to the team administrator role for the team's settings you want to modify, or be a member of the **Project Administrators** security group. To get added, see [Add a team administrator](#) or [Set permissions at the project- or collection-level](#).
- You must be granted **Stakeholder** access or higher. For details, see [About access levels](#).

## Push items into Done, pull items into Doing

With split columns turned on, you update status of items on the Kanban board in the same way you have before. However, now when you've completed work on an item, you move it into Done, instead of a downstream column. When the next team member becomes free to work on the next high priority item, she pulls it into Doing and reassigns it to herself.

For example, as a team member completes his coding task, he moves the item into Done under the Develop column. When the tester is ready to test the item, she pulls it into Doing under the Test column.

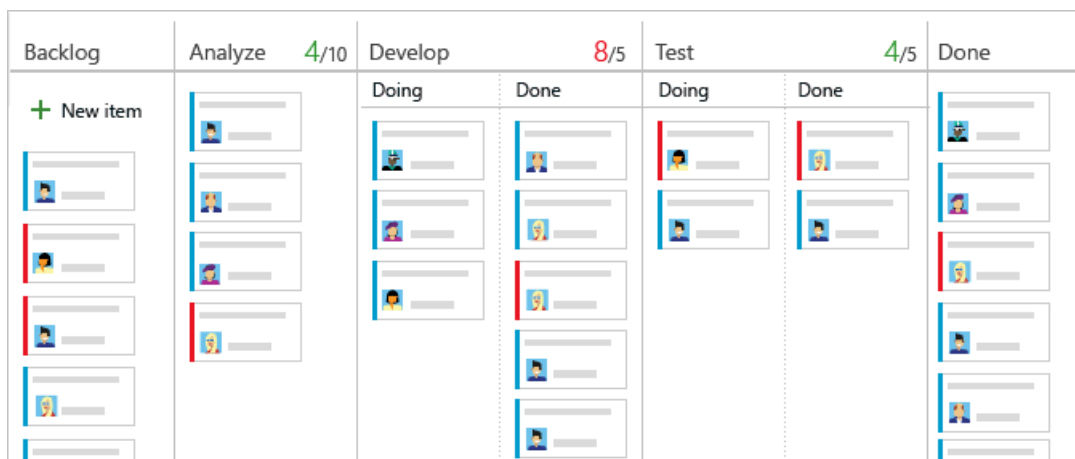


If you're new to Kanban, review [Kanban basics](#) to get an overview of how to access your board and implement Kanban.

## Identify bottlenecks, drive toward a perfect flow scenario

How can you use split columns to improve workflow?

Split columns provides you even greater insight into how many items sit idle in a Done column. Your team can readily see when items pile up, which signal a potential bottleneck.



By reviewing the frequency of pile ups and where they occur, your team can adjust their processes to eliminate the bottlenecks. Workflow processes that incur no or very few bottlenecks correspond to perfect flows. No item sits in a queue for any

## Choose which columns you want to split

Now that you understand how your team can use split columns, here's how to turn them on. Before you split columns, you'll want to have [mapped each stage of your team's process to a Kanban column](#).

Only split columns where clear hand-offs exist and you want teams to pull the item into the next stage.

### 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 your Kanban board](#). If you're not a team admin, [get added as one](#). Only team and project admins can customize the Kanban board.
2. Choose the  gear icon to configure the board and set general team settings.



3. Choose **Columns** and then choose the column tab that you want to split. Place a check in the checkbox to cause the column to split.

#### NOTE

You'll see different column titles and choices based on the [process](#) used to create your project and whether your team has chosen to [treat bugs like requirements or like tasks](#).



# Settings

Cards

Fields

Styles

Tag colors

Annotations

Tests

Board

Columns \*

Swimlanes

Card reordering

Charts

Cumulative flow

General

Backlogs

Working days

Working with bugs

Columns

Columns visualize the flow of work across the board.

+ Column

New ...

Analyze ...

Develop ...

Test ...

Done ...

Column name

Name

Work in progress limit  
Setting it to 0 specifies no limit.

WIP limit

☒ Split column into doing and done

State mapping  
Specify the state this column maps to.

Bug

User Story

Definition of done  
Enter plain text or format using markdown.

Save

Cancel

4. When done with your changes, choose **Save**.

## TIP

You can filter queries and create charts using the [Board Column Done](#) field.

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

## Related articles

- [Add columns](#)
- [Work in Progress limits](#)
- [Add swimlanes, expedite work](#)
- [Definition of Done](#)
- [Customize cards](#)

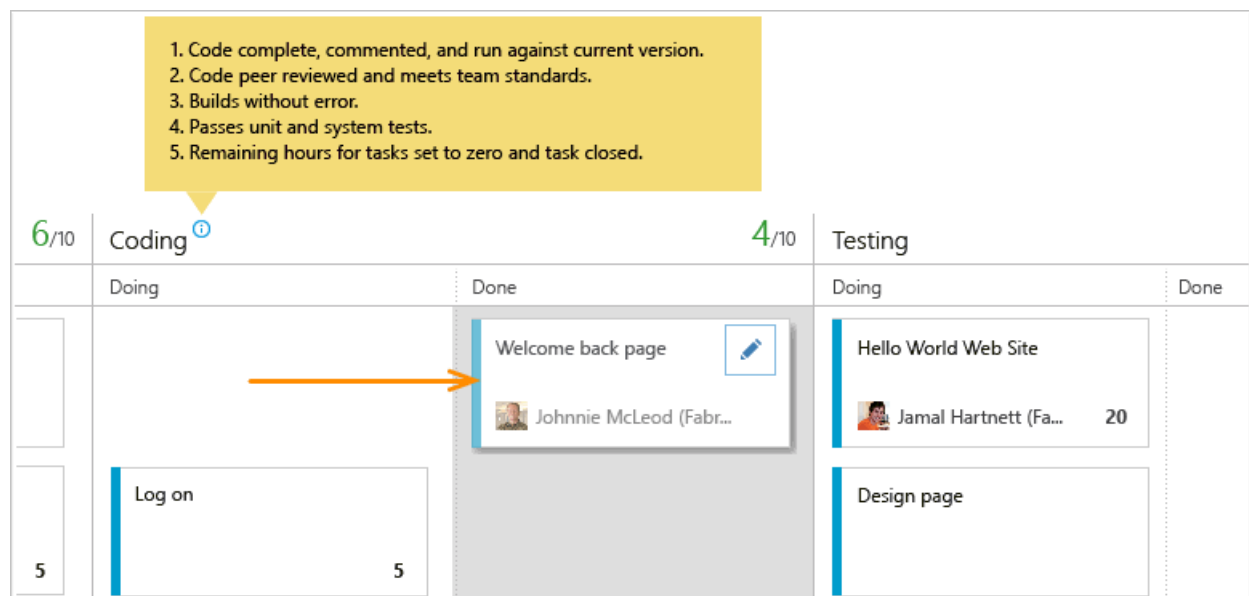
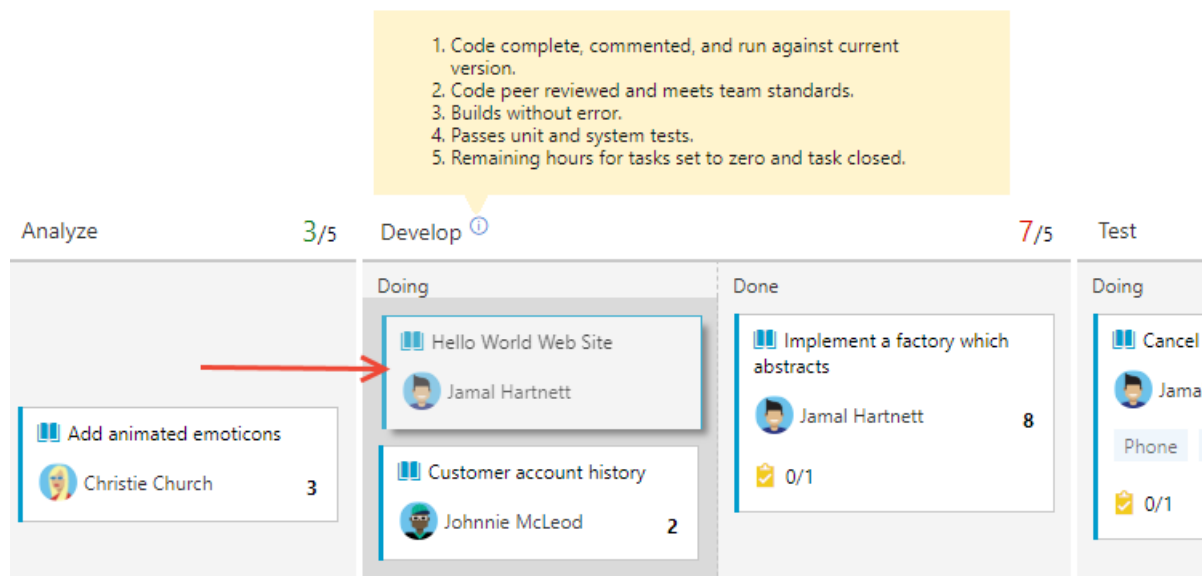
# Definition of Done

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

## Azure Boards | Azure DevOps Server 2019 | TFS 2018 | TFS 2017 | TFS 2015

As your team updates the status of work as it progresses from one stage to the next, it helps that they agree on what "done" means. By specifying the Definition of Done criteria for each Kanban column, you help share the essential tasks to complete before moving an item into a downstream stage. Also, you'll have implemented one of the core Kanban tenets: **make processes and policies explicit**.

When set, team members can quickly double-check the done criteria.



If you're just getting started, review [Kanban basics](#) to get an overview of how to implement Kanban.

## Prerequisites

- You must be added to the team administrator role for the team's settings you want to modify, or be a member of the **Project Administrators** security group. To get added, see [Add a team administrator](#) or [Set permissions at the project- or collection-level](#).

- You must be granted **Stakeholder** access or higher. For details, see [About access levels](#).

## Specify the Definition of Done for a column

### NOTE

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### NOTE

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### 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 your Kanban board.

If you're not a team admin, [get added as one](#). Only team and project admins can customize the Kanban board.

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



### 3. Choose **Columns** and then a column tab to configure the Definition of Done for that column.

Settings

Cards

Fields

Styles

Tag colors

Annotations

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Board

Columns \*

Swimlanes

Card reordering

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Cumulative flow

General

Backlogs

Working days

Working with bugs

Columns

Columns visualize the flow of work across the board.

+ Column

New

Analyze

Develop

Test

Column name

Name

Develop

Work in progress limit

Setting it to 0 specifies no limit.

WIP limit

5

☒ Split column into doing and done

State mapping

Specify the state this column maps to.

Bug

Active

User Story

Active

Definition of done

Enter plain text or format using markdown.

1. Code complete, commented, and run against current version.

2. Code peer reviewed and meets team standards.

3. Builds without error.

4. Passes unit and system tests.

5. Remaining hours for tasks set to zero and task closed.

Save

Cancel

4. When done with your changes, choose **Save**.

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

Team members can quickly check that they have met the criteria by choosing the Information tooltip ⓘ info icon.

## Related articles

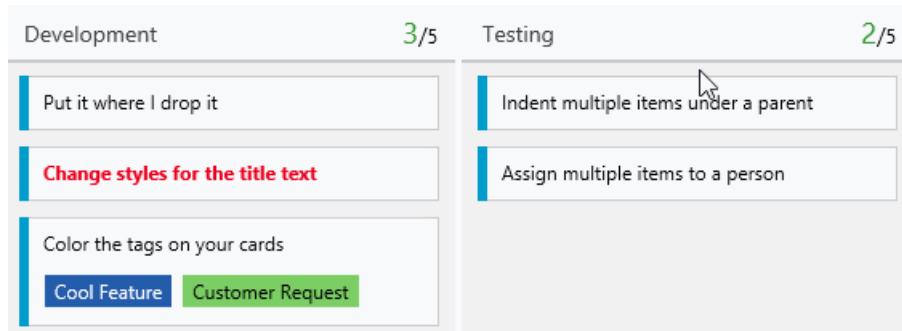
- [Add, rename, move, and delete columns](#)
- [Work in Progress limits](#)
- [Add swimlanes, expedite work](#)
- [Split columns](#)
- [Customize cards](#)

# Reorder cards

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

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

You can drag any work item to any column or swimlane on the Kanban board. You can even change the order of items as you move a card to a new column.



The last column, typically the **Closed** or **Done** column, is always ordered by *Closed Date* with the most recently closed items appearing towards the top of the column. In all other columns, cards are ordered by the backlog order or they are reorder based on the Card reordering setting selected.

## Prerequisites

- You must be added to the team administrator role for the team's settings you want to modify, or be a member of the **Project Administrators** security group. To get added, see [Add a team administrator](#) or [Set permissions at the project- or collection-level](#).
- You must be granted **Stakeholder** access or higher. For details, see [About access levels](#).

## Set card reordering team preference

If you want to preserve the backlog priority when you move a card to a new column, you can change the Kanban board card reordering setting for your team.

### 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

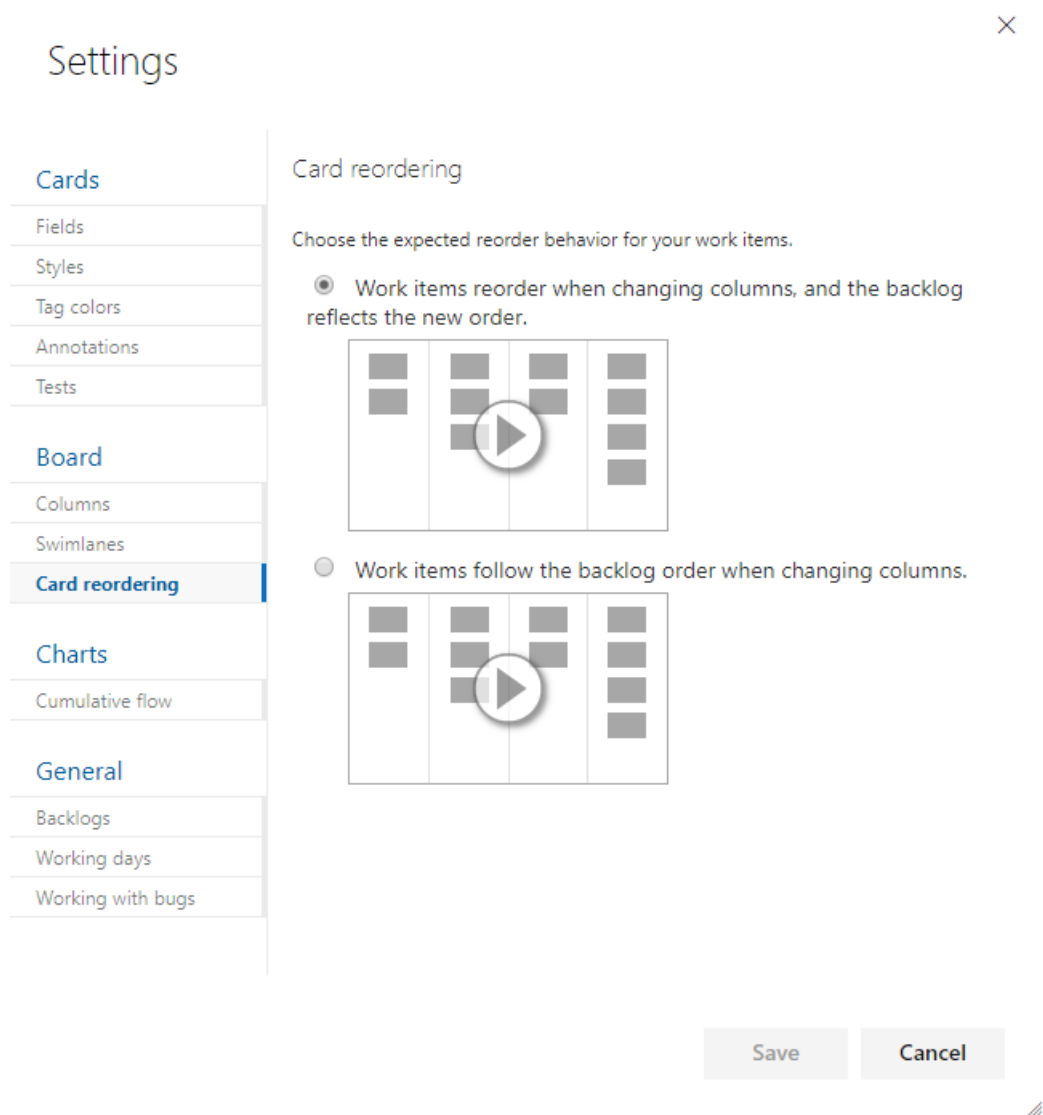
Choose the **Previous navigation** tab for guidance. TFS 2018 and earlier versions only support the previous navigation user interface. For more information, see [Web portal navigation](#).

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

1. [Open your Kanban board](#). If you're not a team admin, [get added as one](#). Only team and project admins can customize the Kanban board.
2. Choose the  gear icon to configure the board and set general team settings.



3. Choose **Card reordering** and select from the two reordering behaviors listed.



The setting you choose applies to all active Kanban boards for your team.

4. When done with your changes, choose **Save**.

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

versions.

## Related articles

- [Backlog priority or stack rank order](#)
- [Customize cards](#)

# Filter your Kanban board

1/31/2019 • 4 minutes to read • [Edit Online](#)

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

Depending on the size of your team and the number of stories in progress, your Kanban board can get a bit crowded. With filtering, you can selectively choose what cards display to focus on what's of interest in the moment. With parent work item filters, you can focus on one or more select features or epics.

## Filter using keywords and tags

To filter the Kanban board, first customize the board settings so that the cards display the fields or tags that contain keywords that you want to filter on. Otherwise, the keywords you enter will filter work items based on title.

For example, to filter by Assign To, Iteration Path, or Work Item Type—or the contents of any other field—you add those fields to show on the cards. For details, see [Customize cards](#).

Settings

**Cards**

- Fields \*
- Styles
- Tag colors
- Annotations
- Tests

**Board**

- Columns
- Swimlanes
- Card reordering

**Charts**

- Cumulative flow

**General**

- Backlogs
- Working days
- Working with bugs

**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) v
- ☒ 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

Iteration Path v X

**Show empty fields**

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

Save Cancel



Settings

Cards

Fields

Styles

Tag colors

Board

Columns

Swimlanes

Card reordering

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Backlogs

Working days

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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

Iteration Path

Work Item Type

Show empty fields

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

Save

Cancel

The filter function displays work items based on any visible/displayed column or field, including tags, based on the keyword that you enter.

For example, here we filter the backlog to only show items that include 'Web' in any one of the displayed column fields.

Stories

Backlog

Board

Web

Types

Assigned to

Tags

Iteration

Parent Work Item

Clear

Backlog

Analyze

5/10

Develop

6/6

Test

New item

Coverage map on web

Raisa Pokrovskaya

Cancel order form

Johnnie McLeod

13

Phone

Service

Web

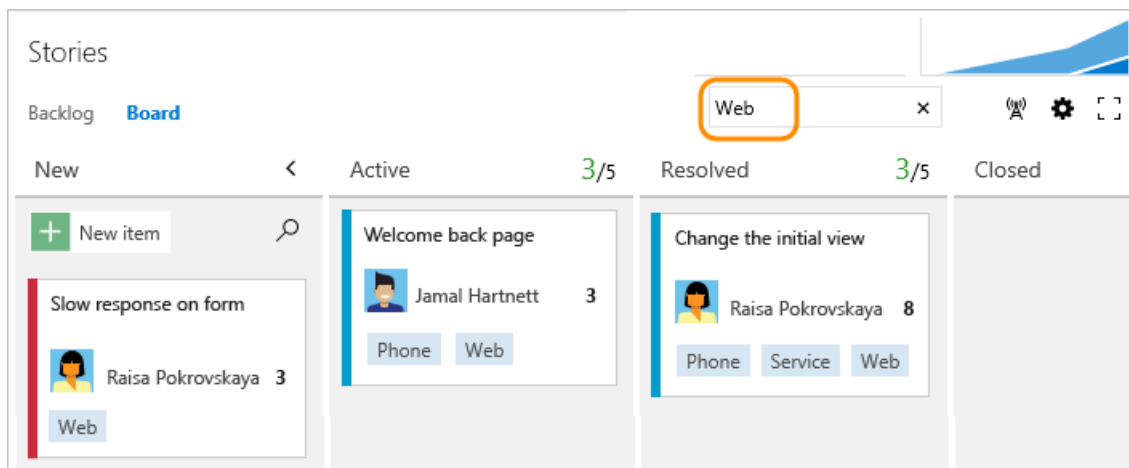
0/4

1

Hello World Web Site

Jamal Hartnett

0/3



#### TIP

Type **f** to move your cursor to the filter box. To move the focus up or down within a column, enter the **↑** **↓** up/down arrows.

For more tips, see [Kanban board keyboard shortcuts](#).

If you want to filter for a specific work item ID, you must choose to show IDs on the cards.

The filter criteria ignores the following characters: **,** (comma), **.** (period), **/** (forward slash), and **\** (back slash).

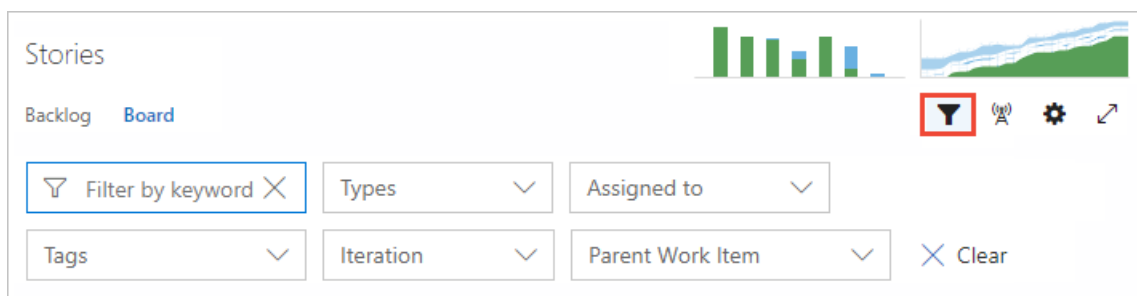
The filter criteria ignores the following characters when the field value starts with the characters:

{ ( [ ! @ # \$ % ^ & \* ~ ` ' " }

## Filter using select field values

You can filter by select field values using the Kanban board for your product backlog (Stories, Product Backlog Items, or Requirements) or a portfolio backlog (Features or Epics).

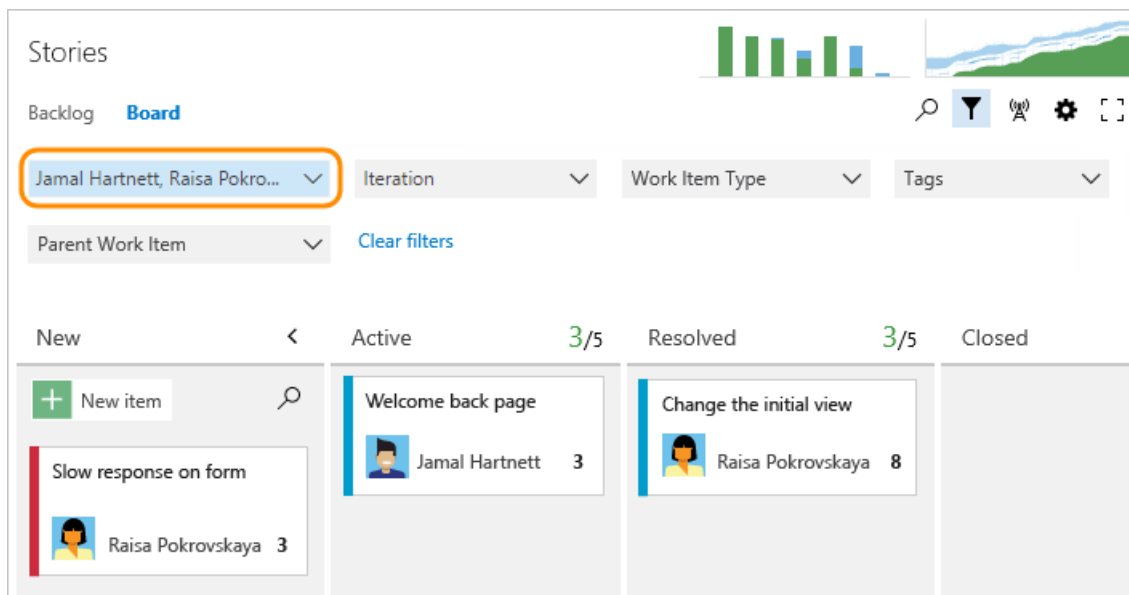
To start filtering, click the  Kanban board filter icon.



Choose one or more values from the multi-select drop-down menu for each field. The values for these fields are populated as follows:

- **Assigned To:** All users who are currently assigned to work items on the board plus Unassigned
- **Iteration:** All Iteration Paths [activated for the current team](#)
- **Work item type:** Work item types defined for the Requirements Category (product backlog) or Features or Epic categories (feature or epic portfolio backlogs)
- **Tags:** All tags assigned to work items on the board
- **Parent Work Items:** All features defined for the team, or all epics defined for the team when viewing the Features board (The Parent Work Items field doesn't appear when viewing the Epic or top-level Kanban board)

For example, here we filter for all items assigned to Jamal and Raisa.



Filters remain in place until you explicitly clear them by clicking **Clear filters**. When you refresh your Kanban board or sign in from another browser, filters remain set to your previous values.

Once the board is filtered, you can click the filter icon to hide the drop downs and view the applied filters on the board. The filter icon also turns opaque to signify a filtered board.


## Filter by specifying parent work items

You can use the **Filter by parent** feature to filter by select parent work items using the Kanban board for your product backlog (Stories, Product Backlog Items, or Requirements) or a portfolio backlog (Features).

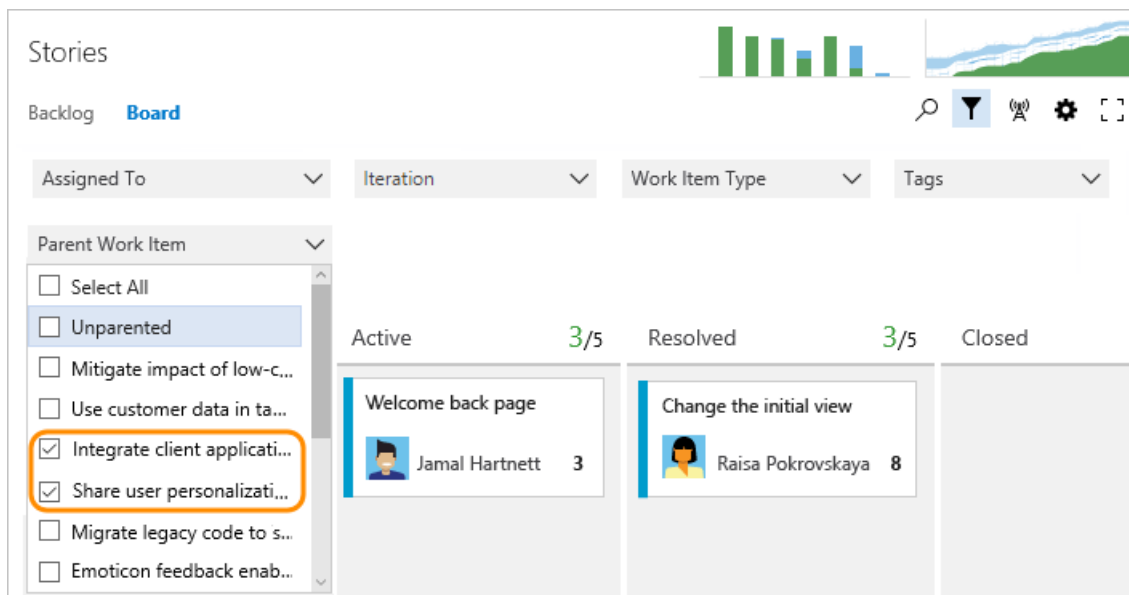
You can use this feature only when you've created features or epics and linked them to user stories or features, respectively. A quick and easy way to create the links is to [map them using drag-and-drop](#). Mapping creates parent-child links between the work items.

### NOTE

The **Filter by parent** feature doesn't support filtering of parent work items of the same work item type. For example, you can't filter the Stories backlog by specifying user stories that are parents of nested user stories.

To start filtering, click the  Kanban board filter icon. Choose one or more values from the multi-select drop-down menu for the Parent Work Item. These values are derived from the [Features](#) you've defined.

Here, we choose two features on which to filter the board.



The final board displays just those stories linked as child work items to the selected features.

## Kanban board filter logic

Cards are filtered based on the assignments made in the following order and logic:

1. **Assigned to:** Show all cards that are assigned to user 1 ☐ OR ☐ user 2  
☐ AND
2. **Iteration:** Show all cards that are assigned to Iteration 1 ☐ OR ☐ Iteration 2  
☐ AND
3. **Work Item type:** Show all cards that are work item type 1 ☐ OR ☐ work item type 2  
☐ AND
4. **Tags:** Show all cards that have tag 1 ☐ AND ☐ or ☐ OR ☐ tags 2, based on your selection of ☐ AND ☐ OR ☐.
5. **Parent Work Items:** Show all cards that have Parent Work Item 1 ☐ OR ☐ Parent Work Item 2.

## Related articles

- [Tags](#)
- [Customize cards](#)

# Set permissions and access for work tracking

2/5/2019 • 8 minutes to read • [Edit Online](#)

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

You grant or restrict access to various work tracking features by granting users or groups specific permissions for an object, project, or collection. Or, when you assign a user as a team administrator, they have permissions to manage all assets for the specific team. Add users to the Contributors group to provide access to most features as listed in [Permissions and access for work tracking](#).

### NOTE

For public projects, Stakeholder access gives users greater access to work tracking features and full access to Azure Pipelines. To learn more, see [About access levels](#), [Stakeholder access](#).

ROLE OR PERMISSION LEVEL	FUNCTIONAL AREAS SET
<b>Team administrator role</b>	<ul style="list-style-type: none"><li>• <a href="#">Manage teams and configure team tools</a></li><li>• <a href="#">Define and edit team dashboards</a></li><li>• <a href="#">Add and manage team-level work item templates</a></li><li>• <a href="#">Add team administrators</a></li></ul> <p>To add a user to the team administrator role, see <a href="#">Add a team administrator</a>.</p>
<b>Object-level permissions</b>	<ul style="list-style-type: none"><li>• <a href="#">Modify work items under an area path</a></li><li>• <a href="#">Create and edit nodes under an area path or iteration path</a></li><li>• <a href="#">Define and edit queries or query folders</a></li><li>• <a href="#">Define and edit Delivery Plans</a></li></ul>
<b>Project-level permissions</b>	<ul style="list-style-type: none"><li>• <a href="#">Create work item tags</a></li><li>• <a href="#">Delete and restore work items</a></li><li>• <a href="#">Move work items out of a project</a></li><li>• <a href="#">Permanently delete work items</a></li><li>• <a href="#">Delete test artifacts</a></li><li>• <a href="#">Edit shared work item queries</a></li><li>• <a href="#">Add teams and team administrators</a></li><li>• <a href="#">Create and manage area and iteration paths</a></li><li>• <a href="#">Edit project-level permissions</a></li><li>• <a href="#">Customize a project (On-premises XML or Hosted process models)</a></li></ul>
<b>Project collection-level permissions</b>	<ul style="list-style-type: none"><li>• <a href="#">Create, delete, or edit a process (Inheritance process model)</a></li><li>• <a href="#">Delete field from account (Inheritance process model)</a></li><li>• <a href="#">Manage process permissions (Inheritance process model)</a></li><li>• <a href="#">Edit collection level permissions</a></li></ul> <p>Project collection-level permissions include all permissions you can set at the project-level.</p>

## Edit project-level or collection-level/instance-level information

The **Edit project-level information** and **Edit instance-level information** (also referred to as Edit collection-level information) provide permissions to several work tracking features as summarized below. To add users or set permissions at these levels, see [Add administrators, set permissions at the project-level or project collection-level](#).

EDIT PROJECT-LEVEL INFORMATION	EDIT INSTANCE-LEVEL INFORMATION
<ul style="list-style-type: none"> <li>• Add and administer teams and all team-related features</li> <li>• Create and modify areas and iterations</li> <li>• Edit shared work item queries</li> <li>• Edit project level permission ACLs</li> <li>• Manage process templates</li> <li>• Customize a project</li> <li>• Create and modify global lists</li> <li>• Edit event subscriptions (email or SOAP) on project level events.</li> </ul>	<ul style="list-style-type: none"> <li>• Add and administer teams and all team-related features</li> <li>• Create and modify areas and iterations</li> <li>• Edit check-in policies</li> <li>• Edit shared work item queries</li> <li>• Edit project level and collection level permission ACLs</li> <li>• Manage process templates</li> <li>• Customize a project or process</li> <li>• Create and modify global lists</li> <li>• Edit event subscriptions (email or SOAP) on project or collection level events.</li> </ul>

## Create child nodes, modify work items under an area path

Area path permissions let you grant or restrict access to edit or modify work items, test cases, or test plans assigned to those areas. You can restrict access to users or groups. You can also set permissions for who can add or modify areas or iterations for the 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](#).

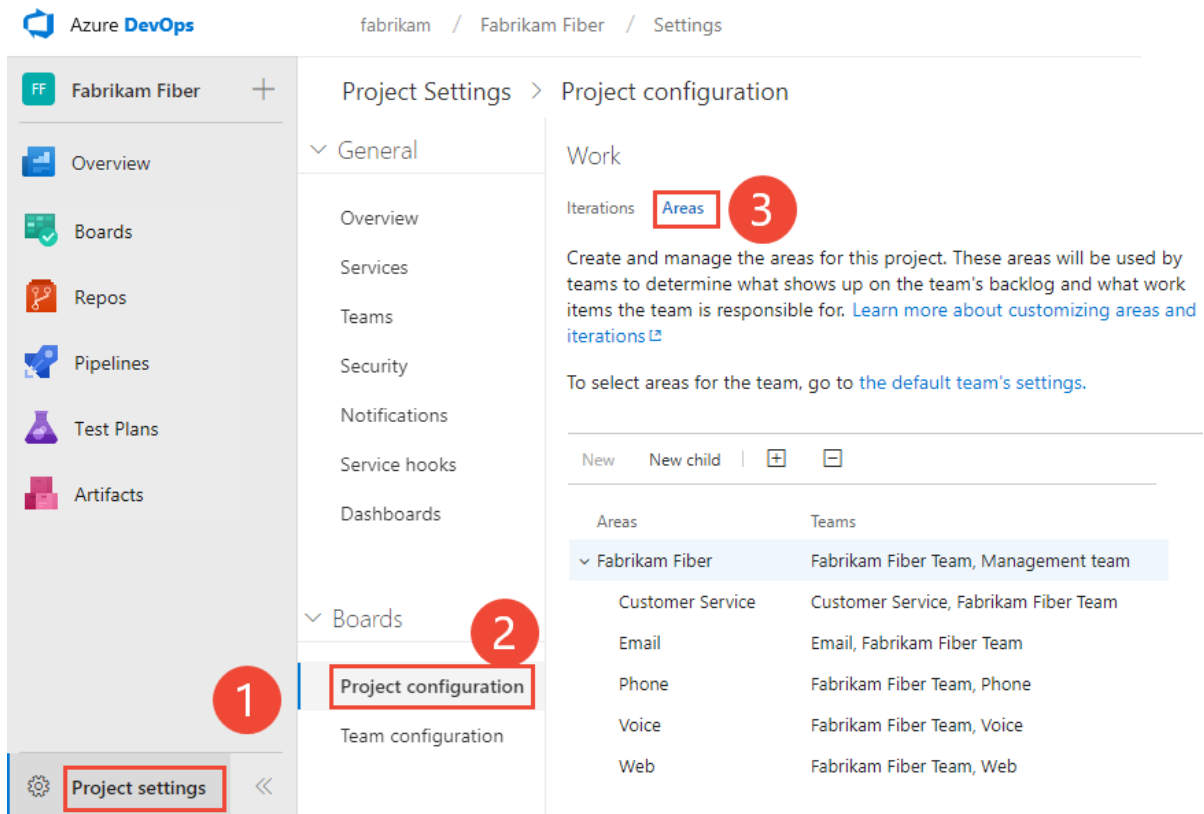
### NOTE

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](#).

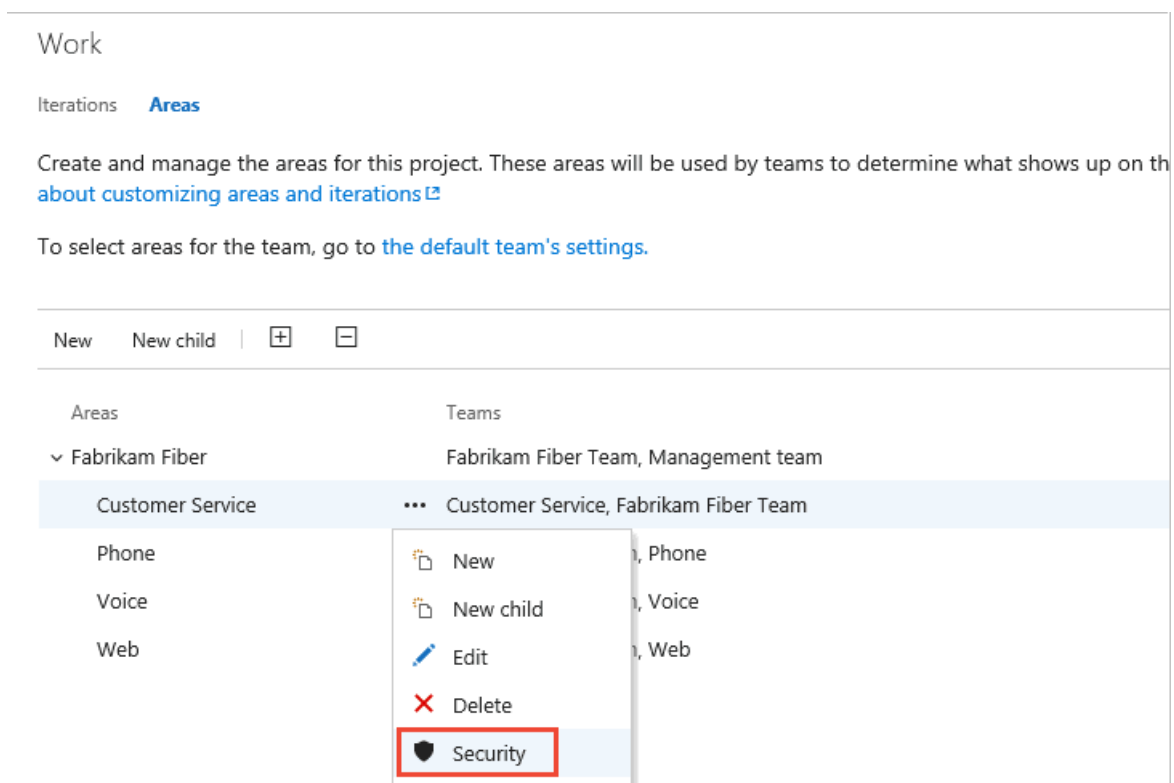
- [New navigation](#)
- [Previous navigation](#)

You define both areas and iterations for a project from the **Project Settings>Work>Project configuration**.

1. Choose (1) **Project Settings**, expand **Work** if needed, and choose (2) **Project configuration** and then (3) **Areas**.

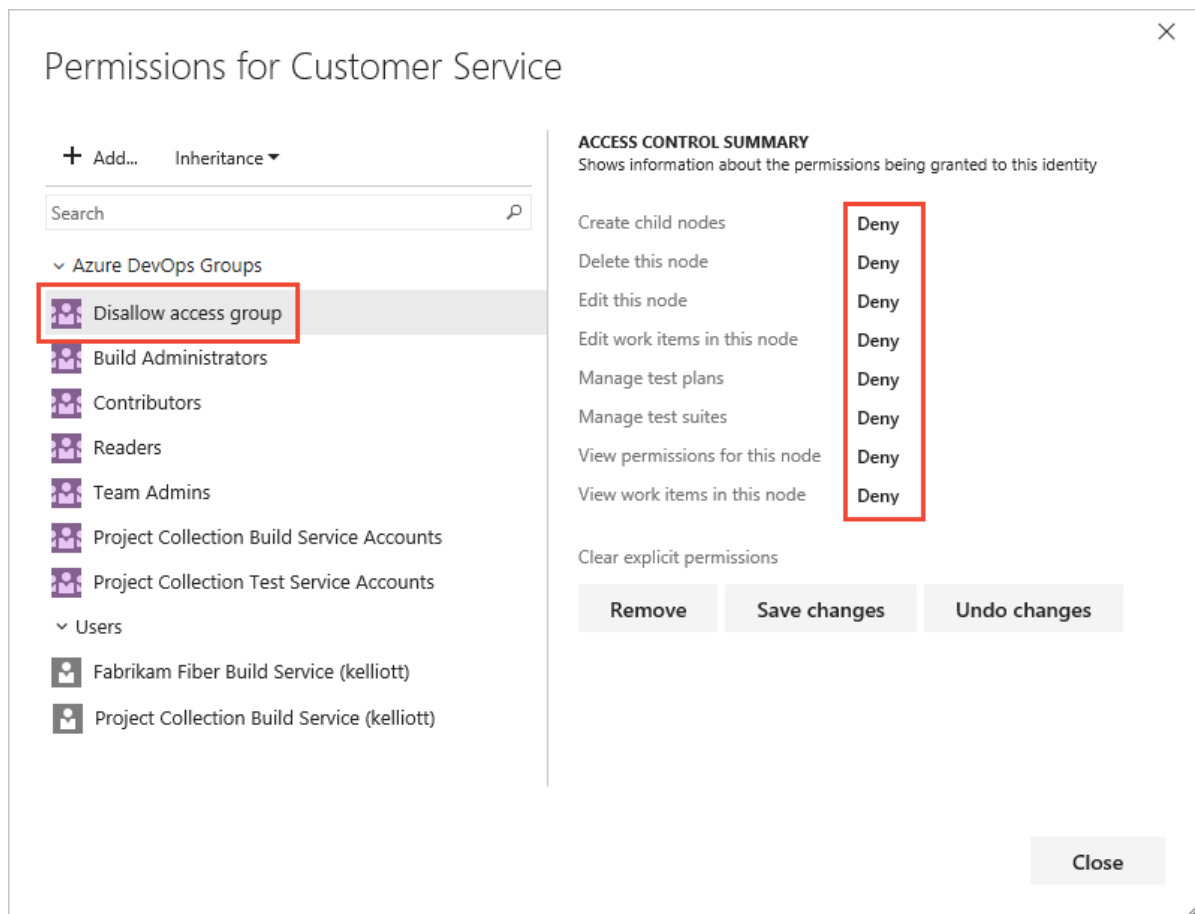


2. Choose the ... context menu for the node you want to manage and select **Security**.



3. Select the group or team member, and then change the permission settings. If you don't see the group you want, try adding it first.

For example, here we've added the Disallow Access Group, and disallowed members of this group the ability to view, modify, or edit work items in the Customer Service area path.



You can specify two explicit authorization states for permissions: **Deny** and **Allow**. In addition, permissions can exist in one of three additional states. To learn more, see [About permissions and groups](#).

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

## Define and edit queries or query folders

You can specify who can add or edit query folders or queries at the object-level. To manage permissions for a query or query folder, you must be the creator of the query or folder, a member of the Project Administrators or Project Collection Administrators group, or granted explicit access through the object's Security dialog.

### Query folder Permissions dialog



## Permissions for Shared Queries/Service Delivery team

+ Add... Inheritance ▼

Search

▼ DevOps Groups

Service Delivery

Build Administrators

Contributors

Project Administrators

Readers

Project Collection Administrators

▼ Users

Project Collection Build Service (fabrikam)

ACCESS CONTROL SUMMARY

Shows information about the permissions being granted to this identity

Contribute	Allow
Delete	Allow
Manage Permissions	Not set
Read	Allow (inherited)

Clear explicit permissions

Remove Save changes Undo changes

Close

For details, see [Set permissions on a shared query or query folder](#). To learn more about queries, see [Create managed queries to list, update, or chart work items](#).

## Edit or manage permissions for Delivery Plans

Delivery Plans are an object within a project. You manage plan permissions for each plan similar to the way you manage permissions for shared queries or query folders. The creator of a Delivery Plan as well as all members of the Project Collection Administrators and Project Administrators groups have permissions to edit, manage, and delete plans.

### Delivery Plan Permissions dialog

+ Add...

Search

▼ Azure DevOps Groups

Project Administrators

Project Collection Administrators

Project Collection Valid Users

▼ Users

Raisa Pokrovskaya

Jamal Hartnett

ACCESS CONTROL SUMMARY

Shows information about the permissions being granted to this identity

Delete	Allow
Edit	Allow
Manage	Allow
View	Allow (inherited)

Clear explicit permissions

Remove Save changes Undo changes

Close

To learn more, see [Edit or manage Delivery Plan permissions](#). To learn more about Delivery Plans, see [Review team plans](#).

## Move or permanently delete work items

By default, Project Administrators and Contributors can change the work item type and delete work items by moving them to the Recycle bin. Only Project Administrators can permanently delete work items and test artifacts. Project admins can grant permissions to other team members as needed.

For example, as a project admin you can grant a user, team group, or other group you've created to have these permissions. Open the Security page for the project and choose the user or group you want to grant permissions. (To learn how to access project-level **Security**, see [Set permissions at the project-level or project collection-level](#).)

In this example, we grant members assigned to the team administrator role, who belong to the Team Admin groups, permissions to move work items to another project and to permanently delete work items.

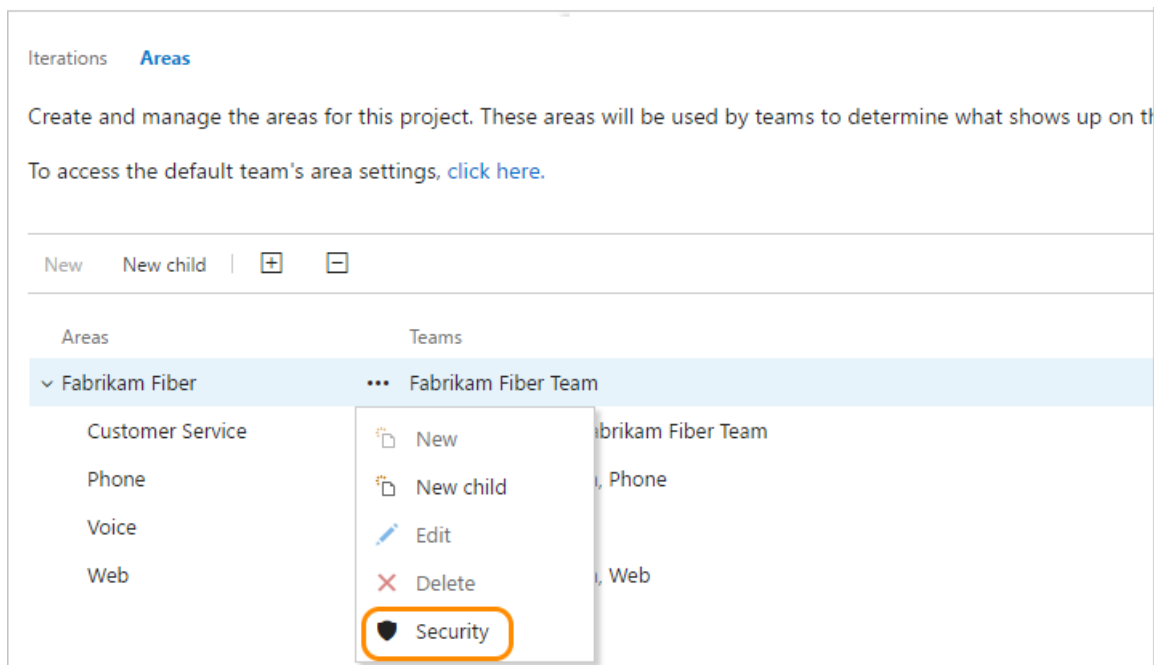
The screenshot shows the 'Create group' dialog on the left and the 'Permissions' page for the 'Fabrikam Fiber' project on the right. The 'Team Admins' group is selected in the left pane. The right pane shows a list of permissions for this group, with 'Move work items out of this project' and 'Permanently delete work items' both set to 'Allow'.

Permissions	Members	Member of
Create tag definition		Allow
Create test runs		Allow
Delete and restore work items		Not set
Delete team project		Allow
Delete test runs		Not set
Edit project-level information		Not set
Manage project properties		Not set
Manage test configurations		Not set
Manage test environments		Not set
Move work items out of this project		Allow
Permanently delete work items		Allow
Rename team project		Not set
View project-level information		Not set
View test runs		Not set

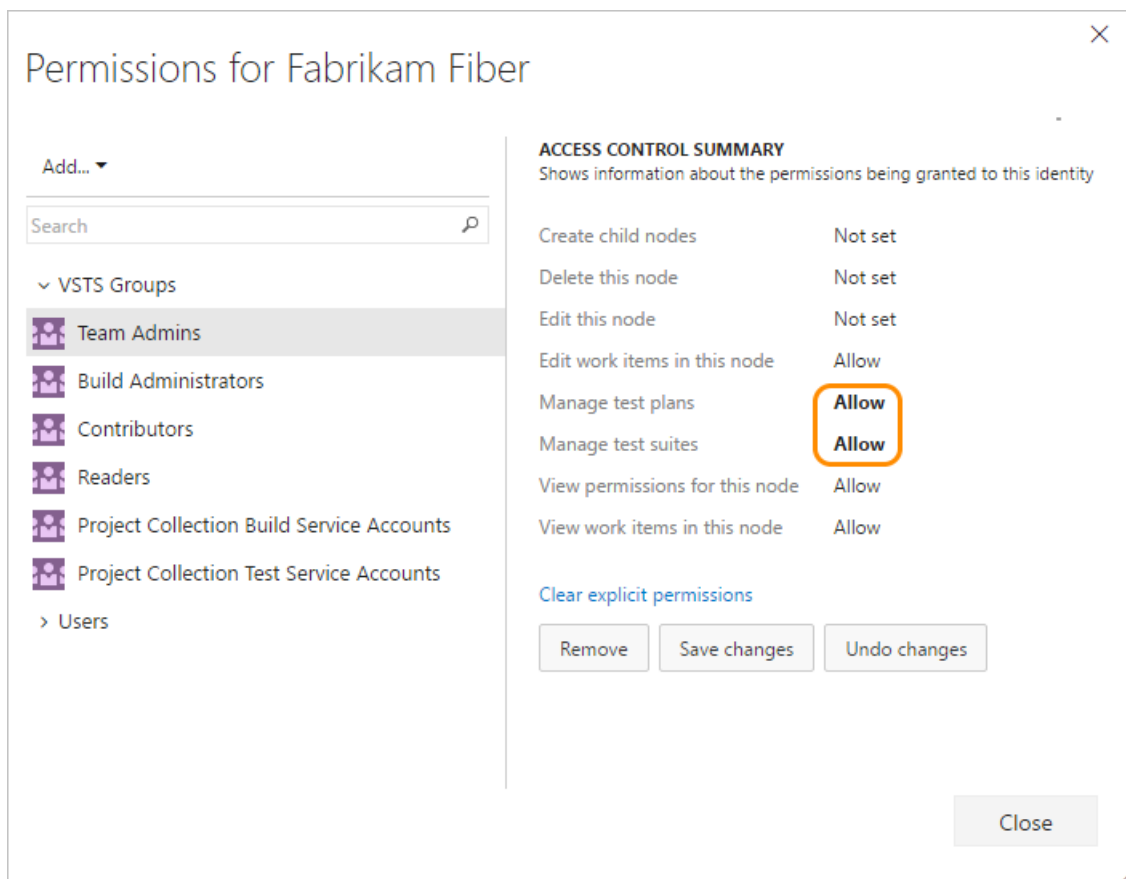
## Manage test artifacts

In addition to the project-level permissions set in the previous section, team members need permissions to manage test artifacts which are set for an area path.

Open the **Security** page for area paths and choose the user or group you want to grant permissions.



Set the permissions for **Manage test plans** and **Manage test suites** to **Allow**.



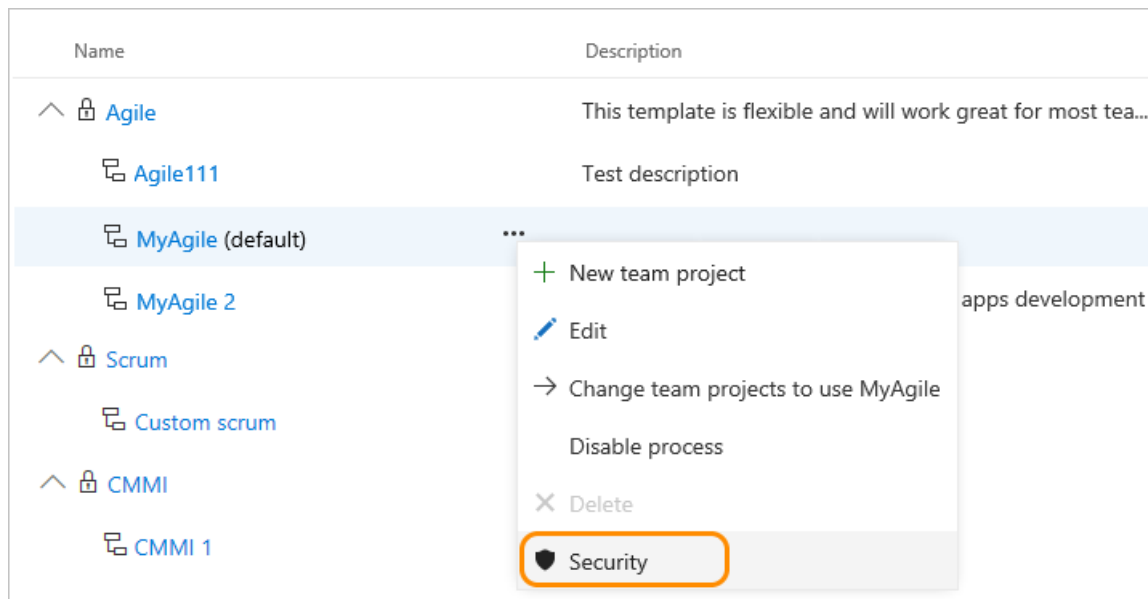
To have full access to the Test feature set, your [access level must be set to Advanced](#). Users with Basic access and with permissions to permanently delete work items and manage test artifacts can only delete orphaned test cases.

## Customize an inherited process

By default, only Project Collection Administrators can create and edit processes. However, these admins can grant permissions to other team members by explicitly setting the **Create process**, **Delete process**, or **Edit process** permissions at the collection level for a specific user.

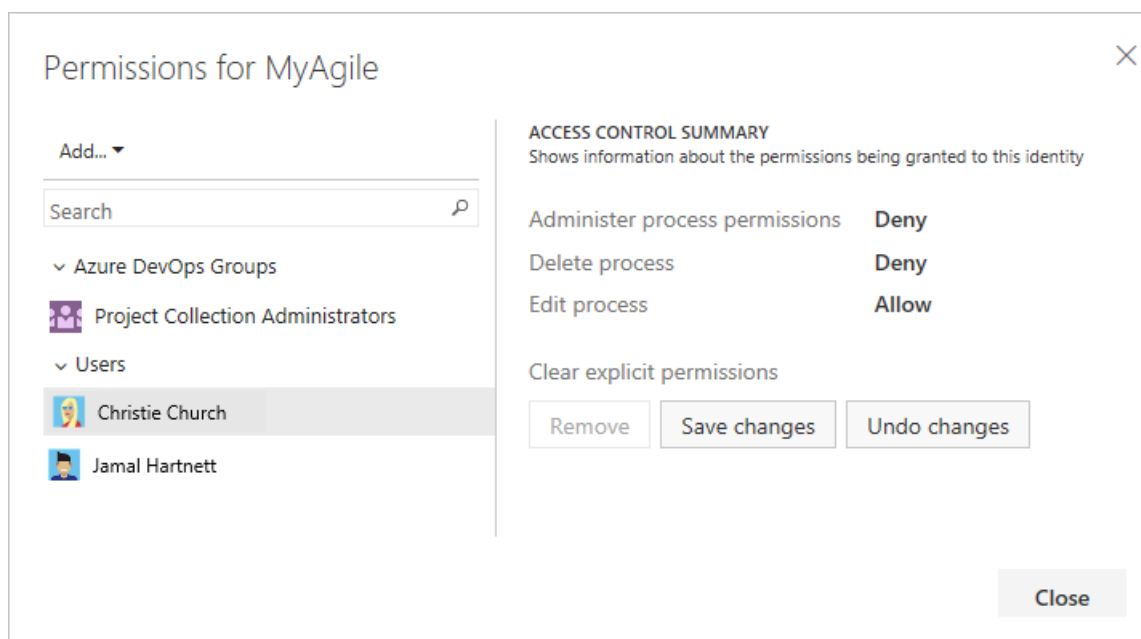
To customize a process, you need to grant **Edit process** permissions to a user account for the specific process.

1. Open the ... context menu for the inherited process and choose **Security**. To open this page, see [Customize a project using an inherited process](#).



2. Add the account name of the person you want to grant permissions to, set the permissions to **Allow** that you want them to have, and then choose **Save changes**.

Here we add Christie Church and allow her to edit the process.



#### NOTE

Each process is a securable unit and has individual access control lists (ACLs) that govern creating, editing, and deleting inherited processes. At the collection level, project collection administrators can choose which processes can be inherited from and by whom. When you create a new inherited process, the process creator as well as project collection administrators have full control of the process and can also set individual ACLs for other users and groups to edit and delete the process.

## Additional options for restricting access to work items

#### NOTE

You can use one or more of the following options with the On-premises XML process models. To learn more about process models, see [Customize work tracking experience](#).

You can restrict access to work tracking objects in one of two ways:

- By [adding WITs to the Hidden Categories group](#), you can prevent the majority of project contributors from creating them. You [can create a hyperlink to a template](#) that opens the work item form and share that link with those team members who you do want to create them.
- [Set a condition field rule](#), [a condition-based field rule](#) or a combination of the two that applies to a group. You can restrict changes from being made to a field by specifying a qualifying rule and making it apply for a specific group. Conditional rules can include **CANNOTLOSEVALUE**, **EMPTY**, **FROZEN**, **NOTSAMEAS**, **READONLY**, and **REQUIRED** elements.

For more information about how to customize WITs, see [Modify or add a custom work item type \(WIT\)](#).

## Related articles

- [Set permissions on queries and query folders](#)
- [Permissions and access for work tracking](#)
- [Permissions and groups reference](#)

# Query by assignment or workflow changes

2/7/2019 • 14 minutes to read • [Edit Online](#)

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

Workflow states support tracking the status of work as it moves from a new state to a closed or a done state. Kanban query fields support tracking the status of work as it moves from one column or swimlane to another on the Kanban board.

Each workflow consists of a set of states, valid transitions between states, and reasons for transitioning the work item to the selected state. [Workflow states and reasons](#) differ among the work item types (WITs) and default processes used to create your project.

Most work items move from a New, Active, or Proposed state to a Done or Closed state. As each work item moves from one state to another, the item might also be reassigned to various members of the team. For example, a tester might create a bug that is assigned to another team member during triage. When the other team member resolves the bug, it is reassigned to the tester who created it.

For example, you can find all work items that were closed but then reactivated. By specifying the Changed Date field, you can focus on reactivations that occurred today, yesterday, or in the last week.

The screenshot shows the TFS query editor interface. At the top, there are three tabs: 'Flat list of work items' (selected), 'Work items and direct links', and 'Tree of work items'. Below the tabs, there is a section titled 'Filters for top level work items'. This section contains a table with five rows of filters. Each row has a green plus icon, a red X icon, and a checkbox. The table columns are 'And/Or', 'Field', 'Operator', and 'Value'. The filters are: 1. Team Project = @Project, 2. Work Item Type = Bug, 3. State = Active, 4. State = Was Ever Closed, 5. Changed Date >= @Today - 7.

	And/Or	Field	Operator	Value
+ X <input type="checkbox"/>		Team Project	=	@Project
+ X <input type="checkbox"/>	And	Work Item Type	=	Bug
+ X <input type="checkbox"/>	And	State	=	Active
+ X <input type="checkbox"/>	And	State	Was Ever	Closed
+ X <input type="checkbox"/>	And	Changed Date	>=	@Today - 7

You can also use the Activated By and Activated Date fields, or other workflow fields.

### TIP

Not all fields are valid for all WITs. Jump to [Workflow and Kanban query fields](#) for the set of fields you can include in queries and which WITs they apply to.

If you're new to creating queries, see [Use the query editor to list and manage queries](#).

## Supported operators and macros

Query clauses that specify an Identity or workflow-associated field can use the operators and macros listed in the following table. To learn what the field data type is, see the [Workflow and Kanban board fields](#) provided later in this article.

DATA TYPE	SUPPORTED OPERATORS AND MACROS
Boolean <sup>1</sup>	= , <> , =[Field] , <>[Field]

<b>DateTime</b>	= , <> , > , < , >= , <= , =[Field], <>[Field], >[Field], <[Field], >=[Field], <=[Field], In, Not In, Was Ever <b>Macros:</b> @Today, @Today +/- n valid with any <b>DateTime</b> field
<b>Identity</b>	= , <> , > , < , >= , <= , =[Field], <>[Field], >[Field], <[Field], >=[Field], <=[Field], Contains, Does Not Contain, In, Not In, In Group, Not In Group, Was Ever <b>Macros:</b> @me valid for all Identity fields
<b>Single text (String)</b>	= , <> , > , < , >= , <= , =[Field], <>[Field], >[Field], <[Field], >=[Field], <=[Field], Contains, Does Not Contain, In, Not In, In Group, Not In Group, Was Ever

#### Notes:

1. The **Boolean** data type field is supported for TFS 2017 and later versions.

Use the **In** and **Not In** operators when you want to filter for or exclude two or more picklist entries or a delimited set of items. Use the **In Group** or **Not In Group** operators to filter for items that belong or don't belong within a category group, team security group, or other security group. For more information, see [Query fields, operators, and macros](#).

## Identity based queries

You can use the search box or query editor to quickly find work items based on an assignment made to an **Identity** field. Also, you can filter for work items based on who changed, resolved, or closed a work item. By specifying a time period, you can scope your query even further which can help with performance.

Use = to find current assignments, **Was Ever** to list items based on past assignments, and **@Me** to scope to your user identity.

FILTER FOR	INCLUDE THESE QUERY CLAUSES
Active items assigned to me	<div>Assigned To _ = _ @Me</div> <div>And _ State _ = _ Active</div>
Closed items that at some point was assigned to me	<div>Assigned To _ Was Ever _ @Me</div> <div>And _ State _ = _ Closed</div>
Active user stories assigned to my (Web) team	<div>Work Item Type = User Story</div> <div>And _ State _ = _ Active</div> <div>And _ Assigned To _ In Group _ [FabrikamFiber]\Web</div>
Items I've modified in the last 30 days	<div>Changed By _ = _ @Me</div> <div>And _ Changed Date _ &gt;= _ @Today-30</div>
Unassigned items (leave the Value blank)	<div>Assigned To _ = _</div>

## Team or group membership queries

To filter on items assigned to someone who belongs to a team or security group, use the **In Group** operator.

Filters for top level work items

	Field	Operator	Value
<input type="checkbox"/> And/Or	Assigned To	In Group	[Fabrikam]\ProjectAdministrators
<input type="checkbox"/> Add new clause			

You can use the **In Group** or **Not In Group** operators to filter a query based on several values that are members of a group, or that are not members of a group. Examples of groups are teams, built-in security groups, custom security groups, Active Directory groups, and work item categories.

## Workflow change based queries

You use the State, Reason, and Resolved Reason fields to query for items based on workflow changes.

FILTER FOR	INCLUDE THESE QUERY CLAUSES
Resolved stories	<div>Work Item Type _ = _ User Story</div> <div>And _ State _ = _ Resolved</div>
Stories, bugs, and tasks that are new or active	<div>Work Item Type _ In _ User Story,Bug,Task</div> <div>And _ State _ In _ New,Active</div>
Items removed as they're duplicate	<div>State _ = _ Removed</div> <div>And _ Reason _ = _ Duplicate</div>
Items failing acceptance tests	<div>Resolved Reason = Acceptance tests fail</div>
Items closed within the last 15 days	<div>State _ = _ Closed</div> <div>And _ Closed Date _ &gt; _ @Today-15</div>

## Workflow changes and Identity based queries

You can quickly find items that you changed, resolved or closed. You can also find items that were changed by other team members. Several fields—such as the Created By, Changed By, Resolved By, and Closed By—are populated based on changes to the workflow.

FILTER FOR	INCLUDE THESE QUERY CLAUSES
User Stories that I closed	<div>Work Item Type _ = _ User Story</div> <div>And _ Closed By _ = _ @Me</div>
Items I resolved in the last week	<div>Resolved By _ = _ @Me</div> <div>And _ Resolved Date _ &gt;= _ @Today-7</div>

## Kanban board change queries

Using the Kanban query fields—Board Column, Board Column Done, and Board Lane—you can list work items according to their flow status on the Kanban board. And, you can create a [status or trend chart](#) based on these queries.



Kanban query fields are available with TFS 2015.1 or later versions.

Type of query ☒ Flat list of work items ☐ Query across projects

Filters for top level work items

	<input type="checkbox"/> And/Or	Field	Operator	Value
+ X	<input type="checkbox"/>	Area Path	=	Fabrikam Fiber\Voice
+ X	<input type="checkbox"/> And	Board Column	=	Analysis
+ X	<input type="checkbox"/> And	Board Lane	=	Engineering
+ Add new clause				

Queries are now scoped to the current project by default. Check the **Query across projects** to find work items defined in other projects within the collection.

FILTER FOR	INCLUDE THESE QUERY CLAUSES
User Stories in the Code/Doing column	<div data-bbox="898 1057 1219 1088">Work Item Type = User Story</div> <div data-bbox="821 1097 1161 1128">And _ Board Column _ = _ Code</div> <div data-bbox="821 1137 1228 1169">And _ Board Column Done _ = _ False</div>
Items in the Expedite swimlane	<div data-bbox="821 1220 1118 1252">Board Lane _ = _ Expedite</div>
Items in any swimlane that contains "Test"	<div data-bbox="821 1301 1152 1332">Board Lane _ Contains _ Test</div>

Work items that appear on more than one team's Kanban board can yield query results that don't meet your expectations. Because each team can customize the Kanban board columns and swimlanes, the values assigned to work items which appear on different boards may not be the same. The primary work around for this issue is to maintain single ownership of work items by [team area path](#). Another option is to [add custom workflow states](#) which all teams can use.

You can use the following fields to filter your queries or build reports. Some of these fields are populated with information as a work item progresses from one state to another, or you move an item in the [Kanban board](#) to a different column or swimlane. Several of these fields do not appear on the work item form, but they are tracked for those WITs listed in the following table.

For more information about field attributes, see [Work item fields and attributes](#).

FIELD NAME	DESCRIPTION	DATA TYPE	WORK ITEM TYPE
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FIELD NAME	DESCRIPTION	DATA TYPE	WORK ITEM TYPE
Activated By <sup>1, 2</sup>	The name of the team member who created the work item or changed its status from closed, completed, or done state to a new or active state. Reference name=Microsoft.VSTS.Common.ActivatedBy	String (Identity)	All
Activated Date <sup>2</sup>	The date and time when the work item was created or when its status was changed from closed, completed, or done to a new or active state. Reference name=Microsoft.VSTS.Common.ActivatedDate	DateTime	All
Assigned To <sup>1, 2, 3</sup>	The name of the team member who currently owns the work item. For additional information, see <a href="#">Note 1 on synchronization and person-name fields</a> and <a href="#">Assign work items to a team member</a> . Reference name=System.AssignedTo	String (Identity)	All
Board Column	The current Kanban board column assignment of the work item, for example: Active, Closed, Committed, Done, or other custom column assignment. Reference name=System.BoardColumn	String	Requirement Category <sup>4</sup>
Board Column Done	The current assignment of the work item to Doing (False) or Done (True) Kanban column. Only assigned when <a href="#">split-columns</a> has been enabled for a Kanban board column. Reference name=System.BoardColumnDone	Boolean	Requirement Category <sup>4</sup>
Board Lane	The current Kanban board swimlane assignment of the work item, for example: Default, Expedite, Blocked, or other custom swimlane assignment. Reference name=System.BoardLane	String	Requirement Category <sup>4</sup>
Closed By <sup>1, 2</sup>	The name of the team member who set the state to closed, completed, or done. Reference name=System.ClosedBy	String	All
Closed Date	The date and time when a work item was closed. Reference name=Microsoft.VSTS.Common.ClosedDate	DateTime	All
Created By <sup>1, 2</sup>	The name of the team member who created the work item. Reference name=Microsoft.VSTS.Common.CreatedBy	String (Identity)	All

FIELD NAME	DESCRIPTION	DATA TYPE	WORK ITEM TYPE
Created Date	<p>The date and time when a work item was created.</p> <p>Reference name=Microsoft.VSTS.Common.CreatedDate</p>	DateTime	All
Reason <sup>2, 3</sup>	<p>The reason why the work item is in the current state. Values are defined within the <b>WORKFLOW</b> section of the WIT definition using the <b>REASON</b> element. To modify the defined reasons, see <a href="#">Change the workflow for a work item type</a>.</p> <p>Reference name=System.Reason</p>	String	All (except Test Case and Shared Steps)
Resolved By <sup>1, 2</sup>	<p>The date and time when the work item was moved into a resolved or done state.</p> <p>Reference name=Microsoft.VSTS.Common.ResolvedBy</p>	String (Identity)	All
Resolved Date <sup>2</sup>	<p>The date and time when the work item was moved into a resolved or done state.</p> <p>Reference name=Microsoft.VSTS.Common.ResolvedDate</p>	DateTime	All
Resolved Reason <sup>2</sup>	<p>The reason why a work item was resolved. For example, the user story is code complete or the bug is fixed. This field is read-only and only valid for Agile and CMMI work item types.</p> <p>Reference name=Microsoft.VSTS.Common.ResolvedReason</p>	String	All (Agile, CMMI)
Reviewed By	<p>The name of the team member who responded to a code review request and is cataloged in the code review response.</p> <p>Reference name=Microsoft.VSTS.Common.ReviewedBy</p>	String (Identity)	Code Review Response
State <sup>2, 3</sup>	<p>The current state of the work item. This field allows you to update the status of a work item as it progresses from new or active to a done or closed state. Values are defined within the <b>WORKFLOW</b> section of the WIT definition using the <b>STATE</b> element. To add a custom state to Azure Boards, see <a href="#">Customize the workflow for a process</a>. To add or modify States or the workflow for TFS, see <a href="#">Change the workflow for a work item type</a>.</p> <p>Reference name=System.State</p>	String	All

FIELD NAME	DESCRIPTION	DATA TYPE	WORK ITEM TYPE
State Changed Date	The date and time when the value of the State field changed. Reference name=Microsoft.VSTS.Common.StateChangeDate	DateTime	All

#### Notes

1. By default, the server synchronizes system-defined person-name fields with Active Directory or Azure Active Directory, if these are configured. These fields include: Activated By, Assigned To, Closed By, Created By, and Resolved By. You can grant access to a project by adding security groups that you created in AD or Azure AD or by adding accounts to existing or custom groups defined from the collection setting **Security** page. See [Set up Active Directory or Azure Active Directory](#).  
  
For on-premises deployments, you can enable or disable synchronization for a person-name field by using the **witadmin changefields** command-line tool. You can also synchronize custom person-name fields by specifying the **syncnamechanges** attribute. See [Manage work item fields](#) and [FIELD \(Definition\) element reference](#).
2. Reportable field with attribute set to Dimension. Reportable data is exported to the data warehouse and can be included in Excel or SQL Server reports. For on-premises TFS, use the **witadmin changefield** command to change the reportable attribute for a field.
3. Indexed field. Enabling indexing for a field may increase the performance of finding work items whose queries specify that field. For on-premises TFS, use the **witadmin indexfield command** to change the index attribute for a field.
4. This field applies to all work item types that appear on the Kanban board. This includes all WITs added to the Requirement Category and may include those added to the Bug Category based on the team setting for [Show bugs on boards and backlogs](#). If you want to modify a board-related field, such as Board Column or Board Lane, from the work item form, you must add it to the form. For more information, see [Add and manage fields \(Inheritance process model\)](#) or [Add or modify a work item field \(On-premises XML process model\)](#).

## Workflow fields

You can use the following fields to filter your queries or build reports. Some of these fields are populated with information as a work item progresses from one state to another. Several of these fields do not appear on the work item form, but they are tracked for those WITs listed in the following table. For more information about field attributes, see [Work item fields and attributes](#).

FIELD NAME	DESCRIPTION	DATA TYPE	WORK ITEM TYPE
Activated By <sup>1, 2</sup>	The name of the team member who created the work item or changed its status from closed, completed, or done state to a new or active state. Reference name=Microsoft.VSTS.Common.ActivatedBy	String (Identity)	All
Activated Date <sup>2</sup>	The date and time when the work item was created or when its status was changed from closed, completed, or done to a new or active state. Reference name=Microsoft.VSTS.Common.ActivatedDate	DateTime	All

FIELD NAME	DESCRIPTION	DATA TYPE	WORK ITEM TYPE
Assigned To <sup>1, 2, 3</sup>	<p>The name of the team member who currently owns the work item. For additional information, see <a href="#">Note 1 on synchronization and person-name fields</a> and <a href="#">Assign work items to a team member</a>.</p> <p>Reference name=System.AssignedTo</p>	String (Identity)	All
Closed By <sup>1, 2</sup>	<p>The name of the team member who set the state to closed, completed, or done.</p> <p>Reference name=System.ClosedBy</p>	String	All
Closed Date	<p>The date and time when a work item was closed.</p> <p>Reference name=Microsoft.VSTS.Common.ClosedDate</p>	DateTime	All
Created By <sup>1, 2</sup>	<p>The name of the team member who created the work item.</p> <p>Reference name=Microsoft.VSTS.Common.CreatedBy</p>	String (Identity)	All
Created Date	<p>The date and time when a work item was created.</p> <p>Reference name=Microsoft.VSTS.Common.CreatedDate</p>	DateTime	All
Reason <sup>2, 3</sup>	<p>The reason why the work item is in the current state. Values are defined within the <code>WORKFLOW</code> section of the WIT definition using the <code>REASON</code> element. To modify the defined reasons, see <a href="#">Change the workflow for a work item type</a>.</p> <p>Reference name=System.Reason</p>	String	All (except Test Case and Shared Steps)
Resolved By <sup>1, 2</sup>	<p>The date and time when the work item was moved into a resolved or done state.</p> <p>Reference name=Microsoft.VSTS.Common.ResolvedBy</p>	String (Identity)	All
Resolved Date <sup>2</sup>	<p>The date and time when the work item was moved into a resolved or done state.</p> <p>Reference name=Microsoft.VSTS.Common.ResolvedDate</p>	DateTime	All
Resolved Reason <sup>2</sup>	<p>The reason why a work item was resolved. For example, the user story is code complete or the bug is fixed. This field is read-only and only valid for Agile and CMMI work item types.</p> <p>Reference name=Microsoft.VSTS.Common.ResolvedReason</p>	String	All (Agile, CMMI)

FIELD NAME	DESCRIPTION	DATA TYPE	WORK ITEM TYPE
Reviewed By	The name of the team member who responded to a code review request and is cataloged in the code review response.  Reference name=Microsoft.VSTS.Common.ReviewedBy	String (Identity)	Code Review Response
State <sup>2, 3</sup>	The current state of the work item. This field allows you to update the status of a work item as it progresses from new or active to a done or closed state.  Values are defined within the <b>WORKFLOW</b> section of the WIT definition using the <b>STATE</b> element. To add a custom state to Azure Boards, see <a href="#">Customize the workflow for a process</a> . To add or modify States or the workflow for an on-premises server, see <a href="#">Change the workflow for a work item type</a> .  Reference name=System.State	String	All
State Changed Date	The date and time when the value of the State field changed.  Reference name=Microsoft.VSTS.Common.StateChangeDate	DateTime	All

#### Notes

1. By default, the server synchronizes system-defined person-name fields with Active Directory or Azure Active Directory, if these are configured. These fields include: Activated By, Assigned To, Closed By, Created By, and Resolved By. You can grant access to a project by adding security groups that you created in AD or Azure AD or by adding accounts to existing or custom groups defined from the collection setting **Security** page. See [Set up Active Directory or Azure Active Directory](#).

You can enable or disable synchronization for a person-name field by using the **witadmin changefields** command-line tool. You can also synchronize custom person-name fields by specifying the **syncnamechanges** attribute. See [Manage work item fields](#) and [FIELD \(Definition\) element reference](#).

2. Reportable field with attribute set to Dimension. Reportable data is exported to the data warehouse and can be included in Excel or SQL Server reports. For on-premises server, use the **witadmin changefield** command to change the reportable attribute for a field.
3. Indexed field. Enabling indexing for a field may increase the performance of finding work items whose queries specify that field. For on-premises server, use the **witadmin indexfield** command to change the index attribute for a field.

## Related articles

- [Query quick reference](#)
- [Work item fields and attributes](#)

### REST API

To programmatically interact with queries, see one of these REST API resources:

- [Azure DevOps Services REST API Reference](#)
- [Queries](#)
- [Work item query language](#)

- [Work item query language \(WIQL\) syntax](#)
- [Fetch work items with queries programmatically](#)

**SDK resources**





To programmatically interact with queries, see [Query for Bugs, Tasks, and Other Work Items](#).





# Kanban board controls


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

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


You can quickly switch from the backlog view to the board view using the **Backlog** and **Board** links. Use the following icons to enable other user interface features.

CONTROL	FUNCTION
<b>Backlog</b>	<a href="#">Switch to backlog view</a>
<b>Board</b>	<a href="#">Switch to Kanban board view</a>
	<a href="#">Filter by keywords, tags, or fields</a>
	<a href="#">Enable live updates</a>
	Customize the board and configure team settings: <a href="#">Cards</a>   <a href="#">Card reordering</a>   <a href="#">Columns</a>   <a href="#">Swimlanes</a>   <a href="#">CFD chart</a>   <a href="#">Backlogs</a>   <a href="#">Working days</a>   <a href="#">Working with bugs</a>
	Enter or exit full screen mode

CONTROL	FUNCTION
<b>Backlog</b>	<a href="#">Switch to backlog view</a>
<b>Board</b>	<a href="#">Switch to Kanban board view</a>
	<a href="#">Filter by keywords, tags, or fields</a>
	<a href="#">Enable live updates</a>
	Customize the board and configure team settings: <a href="#">Cards</a>   <a href="#">Card reordering</a>   <a href="#">Columns</a>   <a href="#">Swimlanes</a>   <a href="#">CFD chart</a>   <a href="#">Backlogs</a>   <a href="#">Working days</a>   <a href="#">Working with bugs</a>
	Enter or exit full screen mode

CONTROL	FUNCTION
<b>Backlog</b>	<a href="#">Switch to backlog view</a>
<b>Board</b>	<a href="#">Switch to Kanban board view</a>
	<a href="#">Filter by keyword or tag</a>



CONTROL	FUNCTION
	Customize the board and configure team settings: <a href="#">Cards</a>   <a href="#">Card reordering</a>   <a href="#">Columns</a>   <a href="#">Swimlanes</a>   <a href="#">CFD chart</a>   <a href="#">Backlogs</a>   <a href="#">Working days</a>   <a href="#">Working with bugs</a>

# Keyboard shortcuts

Enter **?** to open the Kanban board keyboard shortcuts.

Work	Kanban board	
<b>l</b> Open backlog	<b>n</b> Add new item	<b>ctrl+shift+up</b> Move item to swimlane above
<b>b</b> Open board	<b>c</b> Add new child item	<b>ctrl+shift+down</b> Move item to swimlane below
<b>i</b> Open current iteration	<b>home</b> Select first item	<b>f2</b> Rename item
<b>t</b> Open task board	<b>enter</b> Open item	<b>e</b> Show/hide empty fields
<b>q</b> Open queries	<b>ctrl+up</b> Move item up	<b>o</b> Expand all swimlanes
<b>z</b> Toggle full screen mode	<b>ctrl+down</b> Move item down	<b>u</b> Collapse all swimlanes
	<b>ctrl+left</b> Move item left	<b>shift+pageup</b> Select first/next swimlane above
	<b>ctrl+right</b> Move item right	<b>shift+pagedown</b> Select last/next swimlane below
	<b>ctrl+home</b> Move item to top of column	
	<b>ctrl+end</b> Move item to bottom of column	


Global keyboard shortcuts are available from TFS 2015.2 and later versions.

# Enable live updates

Enable live updates to automatically refresh your Kanban board when changes occur. With live updates enabled, you no longer have to press **F5** to see the latest changes.

**NOTE**  
Live updates is supported on TFS 2017 and later versions.

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

Choose the  view options icon and move the slider for **Live updates** to On.



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](#).

# Kanban board keyboard shortcuts

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


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

Global keyboard shortcuts are available from TFS 2015.2 and later versions.

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>  <b>n</b> Add new item <b>c</b> Add new child item  <b>Home</b> Select first item <b>Enter</b> Open item  <b>Ctrl+Shift+f</b> Filter results  <b>Ctrl+</b> <input type="text"/> Move item up <b>Ctrl+</b> <input type="text"/> Move item down <b>Ctrl+</b> <input type="text"/> Move item left <b>Ctrl+</b> <input type="text"/> Move item right  <b>Ctrl+Home</b> Move item to top of column <b>Ctrl+End</b> Move item to bottom of column <b>Ctrl+Shift+</b> <input type="text"/> Move item to swimlane above <b>Ctrl+Shift+</b> <input type="text"/> Move item to swimlane below  <b>F2</b> Rename item <b>e</b> Show/hide empty fields <b>o</b> Expand all swimlanes <b>u</b> Collapse all swimlanes  <b>Shift+Pageup</b> Select first/next swimlane above <b>Shift+Pagedown</b> Select last/next swimlane below
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## Related articles

- [Keyboard shortcuts for Azure DevOps and Team Explorer](#)

# Work item field index

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

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

Use this index to look up a description of each field used to track work items. This reference includes all fields defined within the core system processes/process templates: [Basic](#), [Agile](#), [Scrum](#), and [CMMI](#). The fields and work item types (WITs) available to you depend on the process you chose when you [created your project](#).

To support additional tracking needs, you can [define your own custom work item fields](#).

To support additional tracking needs, you can [modify or add a custom field](#).

## Alphabetical index

Values in parenthesis indicate the following:

- **System:** Core system field assigned to all work item types for all processes
- **Agile:** Used only by the [Agile process](#)
- **CMMI:** Used only by the [CMMI process](#)
- **Scrum:** Used only by the [Scrum process](#)
- **TCM:** Used to support Test case management

**A**

- [Acceptance Criteria](#) (Scrum)
- [Accepted By](#)
- [Accepted Date](#)
- [Activated By](#)
- [Activated Date](#)
- [Activity](#)
- [Actual Attendee 1-8](#) (CMMI)
- [Analysis](#) (CMMI)
- [Application Launch Instructions](#)
- [Application Start Information](#)
- [Application Type](#)
- [Area ID](#) (System)
- [Area Path](#) (System)
- [Assigned To](#)
- [Associated Context](#)
- [Associated Context Code](#)
- [Associated Context Owner](#)
- [Associated Context Type](#)
- [Attached File Count](#)
- [Authorized As](#) (Not used)
- [Automated Test Id](#) (TCM)
- [Automated Test Name](#) (TCM)
- [Automated Test Storage](#) (TCM)
- [Automated Test Type](#) (TCM)
- [AutomatedTestId](#) (TCM)
- [AutomatedTestName](#) (TCM)
- [Automation Status](#) (TCM)

**B**

- [Backlog Priority](#) (Scrum)
- [Blocked](#)
- [Board Column](#)
- [Board Column Done](#)
- [Board Lane](#)
- [Business Value](#)

**C**

- [Called By](#) (CMMI)
- [Called Date](#) (CMMI)
- [Changed By](#) (System)
- [Changed Date](#) (System)
- [Closed By](#) (System)
- [Closed Date](#) (System)
- [Closed Status](#)
- [Closed Status Code](#)
- [Closing Comment](#)
- [Comment Count](#)
- [Comments](#) (CMMI)
- [Committed](#) (CMMI)
- [Completed Work](#)
- [Contingency Plan](#) (CMMI)
- [Corrective Action Actual Resolution](#) (CMMI)
- [Corrective Action Plan](#) (CMMI)
- [Created By](#) (System)
- [Created Date](#) (System)

**D-E-F**

- [Discipline](#) (CMMI)
- [Description](#) (System)
- [Due Date](#)
- [Effort](#)
- [Escalate](#) (CMMI)
- [External Link Count](#)
- [Finish Date](#)
- [Found In Build](#) (TCM)
- [Found In Environment](#) (CMMI)

**H**

- [History](#) (System)
- [How Found](#) (CMMI)
- [Hyperlink Count](#)

**I**

- [ID](#) (System)
- [Impact Assessment](#) (CMMI)
- [Impact on Architecture](#) (CMMI)
- [Impact on Development](#) (CMMI)
- [Impact on Technical Publications](#) (CMMI)
- [Impact on Test](#) (CMMI)
- [Impact on User Experience](#) (CMMI)
- [Integrated in Build](#) (TCM)
- [Issue](#) (TCM)
- [Iteration Id](#) (System)
- [Iteration Path](#) (System)

**J-L-M-N**

- [Justification](#) (CMMI)
- [Link Comment](#) (System)
- [Link Description](#) (System)
- [Local Data Source](#) (TCM)
- [Meeting Type](#) (CMMI)
- [Minutes](#) (CMMI)
- [Mitigation Plan](#) (CMMI)
- [Mitigation Triggers](#) (CMMI)
- [Node Name](#) (System)

**O-P-Q**

- [Optional Attendee 1-8](#) (CMMI)
- [Original Estimate](#)
- [Parameters](#) (TCM)
- [Priority](#)
- [Probability](#) (CMMI)
- [Proposed Fix](#) (CMMI)
- [Purpose](#) (CMMI)
- [Query Text](#) (TCM)

**R**

- [Rating](#)
- [Reason](#) (System)
- [Related Link Count](#) (System)
- [Remaining Work](#)
- [Remote Link Count](#) (System)
- [Repro Steps](#)
- [Required Attendee 1-8](#) (CMMI)
- [Requirement Type](#) (CMMI)
- [Requires Review](#) (CMMI)
- [Requires Test](#) (CMMI)
- [Resolution\]](#) (Scrum)
- [Resolved By](#)
- [Resolved Date](#)
- [Resolved Reason](#)
- [Reviewed By](#)
- [Reviewed Date](#)
- [Rev](#) (System)
- [Risk](#) (Agile)
- [Root Cause](#) (CMMI)

**S**

- [Severity](#)
- [Size](#) (CMMI)
- [Stack Rank](#)
- [Start Date](#)
- [State](#) (System)
- [State Change Date](#)
- [State Code](#)
- [Steps](#) (TCM)
- [Steps to Reproduce](#) (TCM)
- [Story Points](#) (Agile)
- [Subject Matter Expert](#) (CMMI)
- [Symptom](#) (CMMI)
- [System Info](#) (TCM)

**T**

- [Tags](#)
- [Target Date](#)
- [Target Resolve Date](#) (CMMI)
- [Task Type](#) (CMMI)
- [Team Project](#) (System)
- [Test Suite Audit](#) (TCM)
- [Test Suite Type](#) (TCM)
- [Test Suite Type ID](#) (TCM)
- [Time Criticality](#)
- [Title](#) (System)
- [Triage](#) (CMMI)

**U-V-W**

- [User Acceptance Test](#) (CMMI)
- [Value Area](#)
- [Watermark](#) (System)
- [Work Item Type](#) (System)

---

By using the system fields or other fields you have added to your project collection, you can enable meaningful cross-project reports and queries. In addition, any non-system field that is referenced in the workflow or forms section of the work item type definition must have a **FIELD** element that defines it in the **FIELDS** section of the work item type definition XML file. Also, you must specify any non-system field that you might want to use to generate a query or report in the **FIELDS** section.

## Field reference topics

The following articles describe fields that are used in common by several WITs, or those that are functionally specific to just one or a few WITs.

### Fields common to many work types

- [Titles, IDs, and descriptive fields](#)
- [History and revision changes](#)
- [Areas and iterations](#)
- [Assignments and account-specific fields](#)
- [Planning, ranking, and priorities](#)
- [Work estimates, activity, and other numeric fields](#)
- [Build and test integration fields](#)
- [Links and attachment related fields](#)

### Fields used by specific work item types

- [Code Review Request](#)
- [Code Review Response](#)
- [Feedback Request](#)
- [Feedback Response](#)
- [Shared Steps](#)
- [Test Case](#)

### Fields used to track CMMI work items

- [Requirements](#)
- [Bugs](#)
- [Change Requests](#)
- [Issues](#)
- [Review Meetings](#)
- [Risks](#)

## Related articles

- [About work item fields](#)
- [Create managed queries](#)
- [Define a query](#)
- [Choose a process](#)
- [Reportable fields reference](#) (on-premises TFS only)


# Permissions and access for work tracking

2/5/2019 • 10 minutes to read • [Edit Online](#)

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

As a member of an Azure DevOps project, you can use the majority of features to track work. 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. The built-in security groups—**Readers**, **Contributors**, and **Project Administrators**—and team administrator role grant permissions to specific features.

As a member of an Azure DevOps project, you can use the majority of features to track work. 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 features under the **Work** hub. **Stakeholder** access level provides partial support to select features, allowing users to view and modify work items, but not use all features. The built-in security groups—**Readers**, **Contributors**, and **Project Administrators**—and team administrator role grant permissions to specific features.

In the tables provided in this article, a  checkmark indicates that the corresponding access level or security group has access to a feature by default.
















### 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](#).

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.

## 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				
Add work items, add tags to work items (Stakeholders can assign existing tags to work items, but can't add new tags)				
Change work item type				
Move work item to another project				
Email work items				

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 (Stakeholders can assign existing tags to work items, but can't add new tags)	<input type="checkbox"/>		<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"/>

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 (Stakeholders can assign existing tags to work items, but can't add new tags)	<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"/>
<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"/>

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 (Stakeholders can assign existing tags to work items, but can't add new tags)	<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"/>
<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"/>

## 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 (Stakeholders assigned as a team administrator or Project Administrator can configure team settings)	<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 <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 <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 <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 backlogs and open work items	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Add work items to a backlog <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 <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 <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 <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 <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 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 <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 <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="text"/>	<input type="text"/>
Use bulk edit features	<input type="text"/>		<input type="text"/>	<input type="text"/>
Define sprints, set sprint dates				<input type="text"/>
Customize a sprint backlog or taskboard, configure team settings <i>(Stakeholders assigned as a team administrator or Project Administrator can configure team settings)</i>	<input type="text"/>			<input type="text"/>

## 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="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
Create and save managed My queries	<input type="text"/>		<input type="text"/>	<input type="text"/>
Create and save managed Shared queries <i>(Stakeholders can't save Shared queries even if granted permissions)</i>				<input type="text"/>
View query charts		<input type="text"/>	<input type="text"/>	<input type="text"/>
Create query charts			<input type="text"/>	<input type="text"/>
Powerful semantic work-tracking search	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>

TASK	STAKEHOLDERS	READERS	CONTRIBUTORS	TEAM ADMINS
View and run managed queries	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
Create and save managed queries <i>(Stakeholders can't save shared queries)</i>	<input type="text"/>		<input type="text"/>	<input type="text"/>
View query charts		<input type="text"/>	<input type="text"/>	<input type="text"/>
Create query charts			<input type="text"/>	<input type="text"/>

## 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 (Contributors can only edit or delete plans that they create)			<input type="checkbox"/>	<input type="checkbox"/>
Manage permissions for a delivery plan (Contributors can only manage permissions for plans that they create)				<input type="checkbox"/>

## Test management feature access

Test plans, test suites, test cases and other test artifacts are specific work item types that support manual and exploratory testing. You set [test permissions at the project level](#) from the admin context Security page.

TASK	STAKEHOLDERS	READERS	CONTRIBUTORS	PROJECT ADMINS
Provide feedback using the Test & Feedback extension	✓	✓	✓	✓
Exploratory testing, view test runs		✓	✓	✓
Manage test plans and test suites Manage test configurations and test environments Exploratory testing, create and delete test runs Request feedback using the Test & Feedback extension			✓	✓
Test Manager (purchased separately)			✓	✓

Area permissions for web-based test case management and test execution control access to the following actions.

The **Manage test suites** permission enables users to:

- Create and modify test suites
- Add or remove test cases to/from test suites
- Change test configurations associated with test suites
- Modify the suite hierarchy by moving a test suite

The **Manage test plans** permission enables users to:

- Create and modify test plans
- Add or remove test suites to or from test plans
- Change test plan properties such as build and test settings

## Resources defined for the project

You set project-level information permissions from **Project Settings>Security**. You set permissions for area and iteration paths under **Project Settings>Boards**. These resources are defined for a project which all valid users of the project can view.

TASK	STAKEHOLDERS	READERS	CONTRIBUTORS	TEAM ADMINS	ACCOUNT OWNER/ PROJECT ADMINS
<a href="#">View project-level information</a>	✓	✓	✓	✓	✓
Area node: <a href="#">Edit work items under the node</a>			✓	✓	✓
Area nodes and Iteration nodes: <a href="#">Create, delete, edit child nodes</a>					✓
<a href="#">Edit project-level information</a>				✓	

The **Edit project-level information** permission includes the ability to perform these tasks for the project:

- Create and modify areas and iterations
- Edit check-in policies
- Edit shared work item queries
- Edit project level permission ACLs
- Create and modify global lists
- Edit [event subscriptions](#) (email or SOAP) on project level events.

## Team administrator role and permissions

The following table summarizes a subset of the default permissions assigned to the project Readers, Contributors and Project Administrators groups and the Team Administrator role. Team admin permissions extend only to the team for which they're an administrator. Project administrator permissions extend across all teams defined for the project.

PERMISSION	READERS	CONTRIBUTORS	TEAM ADMINISTRATORS	PROJECT ADMINISTRATORS
<a href="#">Add a team administrator</a>			✓	✓
<a href="#">Add team members</a>			✓	✓
<a href="#">View shared work item queries</a>	✓	✓	✓	✓
<a href="#">Manage shared query and query folder permissions</a> (Contribute, Delete, Manage Permissions)				✓
<a href="#">Add and edit dashboards</a>			✓	✓

## Stakeholder access

Stakeholder access supports business owners and analysts and other team members who don't contribute to code, build, and test activities. They contribute by adding ideas to the backlog, adding context and information to work items, and reviewing status and progress. All members of an organization who don't use Visual Studio but want to contribute to work item tracking and monitor progress can be assigned as a stakeholder. To learn more

about stakeholder access, see [Work as a stakeholder](#).

For a comparison chart of stakeholder versus basic access, see the [Feature Matrix](#).

For information about each access levels, see [About access levels](#). To assign access levels, see:

- **Azure DevOps Services:** [Add users and assign licenses in Azure DevOps](#)
- **Azure DevOps Server, TFS:** [Change access levels](#)

## Grant team members additional permissions

For teams to work autonomously, you may want to provide them with permissions that they don't have by default. Suggested tasks include providing team administrators or team leads permissions to:

- [Create and edit child nodes under their default area path](#)
- [Create and edit child nodes under an existing iteration node](#)
- [Create shared queries and folders under the Shared Queries folder](#).

By default, team members inherit the permissions afforded to members of the project Contributors group. Members of this group can add and modify source code, create and delete test runs, and create and modify work items. They can [collaborate on a Git project](#) or collaborate with other team members and [check in work to the team's code base \(TFVC\)](#).

Code	Work	Build	Test
<b>Object and project-level:</b>	<b>Area-node level</b>	<b>Object-level:</b>	<b>Area-node level</b>
<b>TFVC:</b> Check in Check out Label Lock Merge Read	Edit work View permissions View work items	Edit build quality Queue builds View build definition View builds	Manage test plans Manage test suites
<b>Git repositories</b> Administer Branch creation Contribute Note management Read Rewrite and destroy history Tag creation	<b>Shared queries</b>  Read		
	<b>Project-level</b>  View project-level information	Edit build quality Queue builds View build definition View builds	Create test runs Delete test runs Manage test configurations Manage test environments View test runs

If your on-premises deployment includes reporting, add users to those resources. See [Grant permissions to view or create SQL Server reports in TFS](#).

```
::: moniker range="<= tfs-2017"
```

If your on-premises TFS deployment includes reporting or SharePoint Products, add users to those resources. See [Grant permissions to view or create SQL Server reports in TFS](#) and [Set SharePoint site permissions](#).

## Related notes

- [Set permissions and access for work tracking](#)
- [Get started as a Stakeholder](#)
- [Add another team](#)
- [Manage teams and configure team tools](#)

# Backlogs

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

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

Start planning your project by quickly adding user stories or requirements to your product backlog. Once you have your plan in place, you can start driving your code development efforts.

Start planning your project by quickly adding user stories or requirements to your product backlog.

If you're a project administrator just getting started, review the [Configure settings and manage your Azure Boards project](#) to learn more about defining area and iteration paths and customizing your work item types. If you want to add another product backlog, you do that by adding a team. For details, see [About teams and Agile tools](#).

## 5-Minute Quickstarts

- [Create your backlog](#)
- [Drive Git development](#)
- [Define area paths](#)
- [Define iteration paths](#)

## 5-Minute Quickstarts

- [Create your backlog](#)
- [Define area paths](#)
- [Define iteration paths](#)

## Step-by-Step Tutorials

- [Define features & epics](#)
- [Organize backlogs](#)
- [Bulk modify work items](#)

## Concepts

- [About teams and Agile tools](#)
- [Refine your backlog](#)
- [About permissions and access](#)
- [Share information in work items and social tools](#)

## How-to Guides

- [Filter backlogs & queries](#)
- [Change column options](#)
- [Email/print work items](#)

## Reference

- [Permissions and access for work tracking](#)

- [Work item field index](#)
- [Backlog keyboard shortcuts](#)

## Resources

- [Work Items](#)
- [Boards \(Kanban\)](#)
- [Sprints \(Scrum\)](#)
- [Queries](#)
- [Work item customization](#)
- [What is Agile?](#)
- [What is Agile development?](#)
- [Agile culture](#)



# Sprints (Scrum)

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

With Scrum, you can schedule and plan sprints, update your taskboard, and monitor your sprint burndown. For an overview of the Scrum lifecycle, see [What is Scrum?](#).

## 5-Minute Quickstarts

Start tracking work by adding work items, creating your backlog, or scheduling sprints.

- [Schedule sprints](#)
- [Define iteration paths](#)

## Step-by-Step Tutorials

Whether you use scrum, Kanban, or a combination of Agile methods, you can get started tracking bugs, driving your Git development, and more using the Agile tools available to you.

1. [Assign backlog items to a sprint](#)
2. [Add tasks to backlog items](#)
3. [Set sprint capacity](#)
4. [Adjust work to fit sprint capacity](#)
5. [Share your sprint plan](#)
6. [Update the Taskboard](#)

## Concepts

- [Scrum best practices](#)
- [Sprints and Scrum key concepts](#)
- [Scrum and sprint planning tools](#)
- [About areas and iterations](#)
- [About permissions and access](#)
- [Share information in work items and social tools](#)

## How-to Guides

- [Filter backlogs & queries](#)
- [Copy list of work items](#)
- [Bulk add or modify \(Web\)](#)

## Reference

- [Permissions and access for work tracking](#)
- [Work item field index](#)
- [Backlog keyboard shortcuts](#)

# Resources

- [Backlogs](#)
- [Kanban](#)
- [Work item queries](#)
- [Work item customization](#)
- [What is Scrum?](#)
- [What is Agile development?](#)

# Queries

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

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

List bugs, user stories, or other work items based on field criteria you specify. Then, you can review with your team, triage, or perform bulk updates.

If you're just getting started, read [View, run, or email a work item query](#). For a quick reference to query editor tasks and sample queries, see [Query quick reference](#).

## 5-Minute Quickstarts

- [View, run, or email a query](#)
- [Perform an ad hoc search \(search box query\)](#)

## Step-by-Step Tutorials

- [Create or edit a managed query](#)
- [Triage work items](#)
- [Bulk modify work items](#)

## Samples

- [Query by title, ID, or description](#)
- [Query by assignment or workflow changes](#)
- [Query by area or iteration path](#)
- [Query by date or current iteration](#)
- [Query history](#)
- [Query a numeric field](#)
- [Query by picklist value](#)
- [Query by build & test integration fields](#)
- [Query by links or attachments](#)

## How-to Guides

- [Configure work item query-based charts](#)
- [Organize queries, add a query folder](#)
- [Change column options](#)
- [Email/print work items](#)

## Reference

- [Query quick reference](#)
- [Query fields, operators & macros](#)
- [Query keyboard shortcuts](#)
- [Work item field index](#)
- [WIQL syntax](#)

- [Permissions and access for work tracking](#)

## Resources

- [Backlogs](#)
- [Kanban](#)
- [Scrum](#)
- [Work item customization](#)
- [Wiql Editor \(Marketplace extension\)](#)
- [Enhanced Export \(Marketplace extension\)](#)

# Customization

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

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

You customize your work tracking experience to support your business and reporting needs. The most common customizations include adding a custom field, modifying a work item form, or adding a custom work item type.

Most customers use the [Inheritance process model](#), which provides a convenient user interface to support customization of the work tracking experience.

A select few customers use the Hosted XML process model, which requires that they have opted into this method. This model relies on updating XML files and then importing the process template of these files. To learn more, see [Customize your work tracking experience](#).

With Azure DevOps Server 2019, you have a choice of using the Inheritance process model or the On-premises XML process model to support customizations. The choice is made when you create a project collection and choose the process model for the projects that you'll create in the collection. For details, see [On-premises XML process model](#).

Team Foundation Server uses the On-premises XML process model to support customizations. This model relies on updating and importing XML files using the **witadmin** command line tool. For details, see [On-premises XML process model](#).

## 5-Minute Quickstarts

- [Define area paths](#)
- [Define iteration paths or sprints](#)
- [Add a custom field](#)
- [Add a custom work item type](#)

## 5-Minute Quickstarts

- [Define area paths](#)
- [Define iteration paths or sprints](#)

## Tutorials

- [Customize a project](#)
- [Create and manage a process](#)

## Concepts

- [About areas and iterations](#)
- [Differences between process models](#)
- [Workflow states & state categories](#)
- [Inheritance process model](#)
- [Hosted XML process model](#)
- [On-premises XML process model](#)

# How-to Guides

Use the guidance provided in the following topics based on the process model or process template that you want to customize.

- **Inheritance process model**
  - [Customize a project](#)
  - [Create and manage a process](#)
- **Hosted XML process model**
  - [Supported upgrade operations](#)
  - [Clone a Hosted XML process to Inheritance](#)
  - [Change a project from Hosted XML to Inheritance](#)
  - [Customize a Hosted XML process](#)
  - [Import a process](#)
- **On-premises XML process model**
  - [Add or modify a field](#)
  - [Add or modify a work item type](#)
- **Process templates**
  - [Upload or download a process template](#)
  - [Customize a process template](#)

## Reference

- [Index to XML element reference](#)
- [All WITD XML elements reference](#)
- [All FIELD XML elements reference](#)
- [All WORKFLOW XML elements reference](#)
- [WebLayout and Control elements](#)
- [Process configuration XML element reference](#)

## Resources

- [Azure Boards](#)
- [Scale & configure teams](#)
- [Marketplace extensions](#)
- [Extensibility and REST APIs](#)

# Scale & configure teams

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

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

Give your teams the autonomy they need as your organization grows. Add teams to give each team their set of Agile tools which they can configure their way.

## 5-Minute Quickstarts

- [Define area paths & assign to a team](#)
- [Define iteration paths \(sprints\) & configure team iterations](#)
- [Add a team, move from one default team to several teams](#)
- [Add a team administrator](#)
- [Manage teams and configure team tools](#)
- [Add users to a project or team](#)

## Concepts

- [Area & iteration paths \(aka sprints\)](#)

## How-to Guides

- [Manage teams and configure team tools](#)

## Reference

- [Default permissions and access](#)

## Resources

- [Web portal navigation](#)
- [Manage projects](#)
- [Security & identity](#)