Managing *Users*

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Working with users

You can add users to your Azure DevOps organization.

The users can be Microsoft Accounts or GitHub usernames.

The users can then be assigned to the required project.

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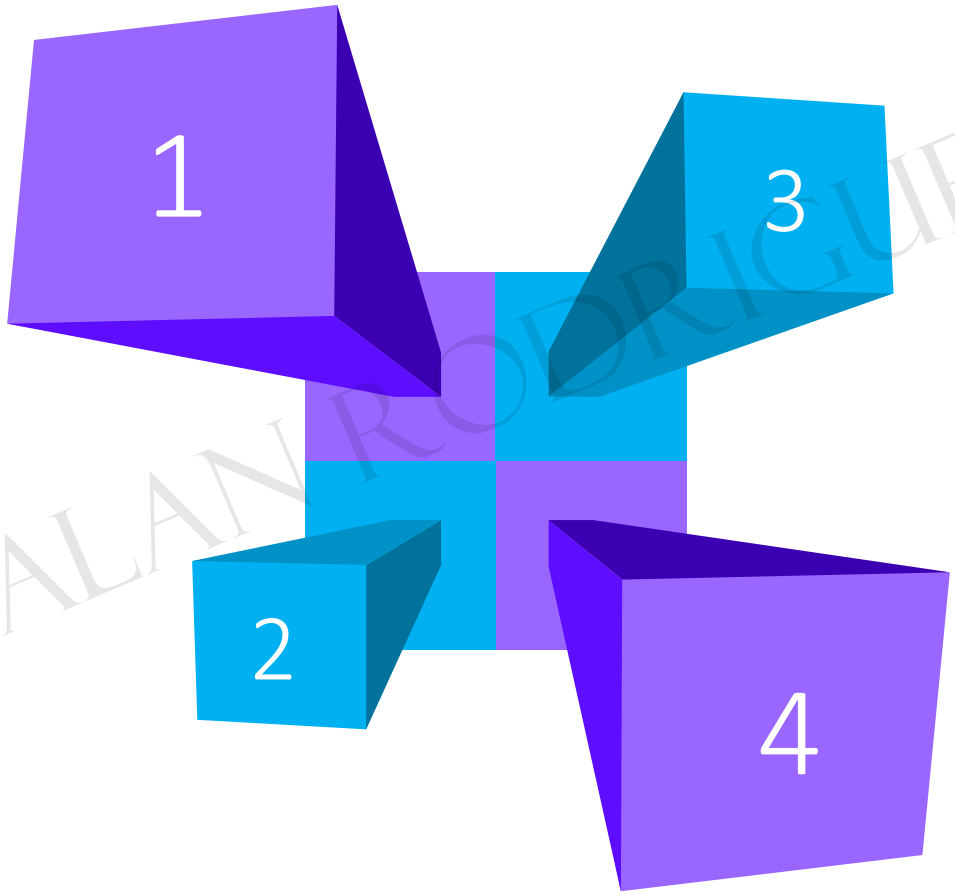
Access levels

Basic

This provides most of the features within Azure DevOps which excludes Azure Test Plans.

Basic + Test Plans

This gives access to the Basic Plan + Test Plans.



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Stakeholder

This is a free access but has limitations. Limited access to Azure Boards and Pipelines. No access to code repositories.

Visual Studio

This depends on the Visual Studio subscription assigned to the user.

Project *Wiki*

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Project Wiki

A DevOps project can have a wiki.

The wiki can be used to share information with the team so that they can understand and contribute to the project.

The project wiki uses a Git repository as the back-end.

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Project Wiki

You need to have at least the Basic access to create and modify a wiki.

Members who are part of the Contributors security group can add and edit wiki pages.

The project wiki uses a Git repository as the back-end.

To publish code as wiki, you need to have the Create Repository permission.

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Query *permissions*

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Queries

All users except those that are only assigned to the Readers group can create and edit their own queries.

They can save their queries under My Queries.

Members of the Project Administrators Group can create and edit queries and folders under Shared Queries.

Also, for saving under Shared Queries, you need to have Basic access level or higher.

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Managing *Dashboards*

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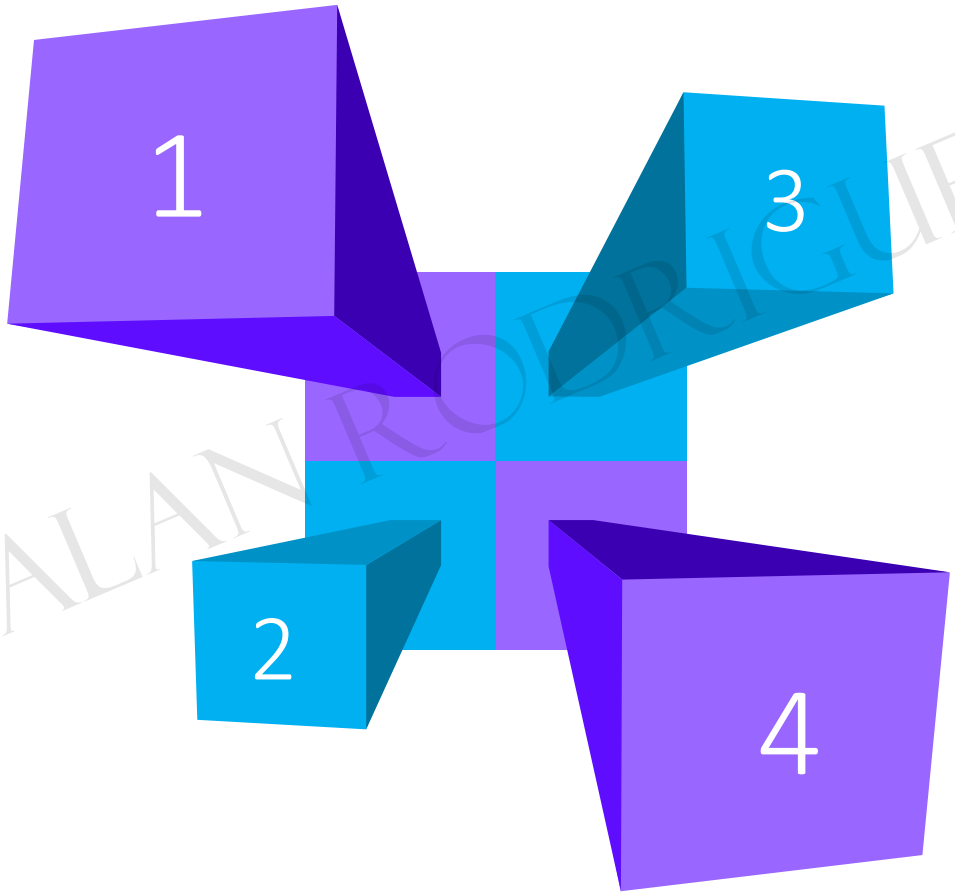
Dashboards

Purpose

These are customizable interactive signboards. They help to provide real-time information.

Charts

Here you can create charts based on the work items.



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Widgets

These display configurable information and charts on the dashboard.

In-context reports

These are system generated charts based on specific services.

Dashboard *permissions*

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Dashboard permissions

Dashboards are viewable by all members that are part of the Project Valid Users group.

Members of the Project Administrators group can set the default dashboard permissions for the teams.

To add, edit and manage a team dashboard, you must also have Basic access or greater.

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Widgets

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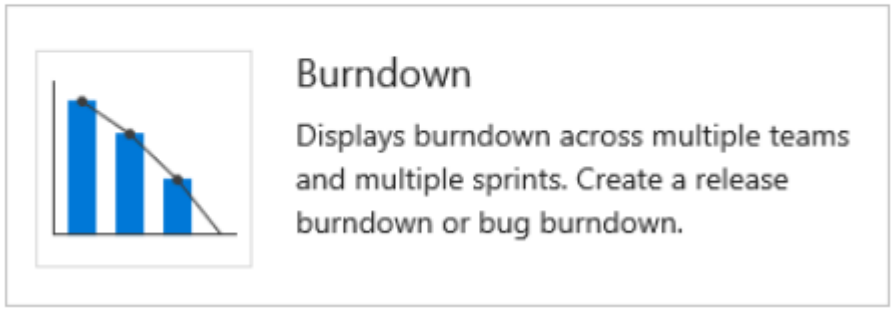
Widgets

Burndown chart



Purpose

These charts focus on the remaining work within a specified period of time.

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Widgets

Cycle time

Purpose

This defines the time taken to close a work item after work on it has started.

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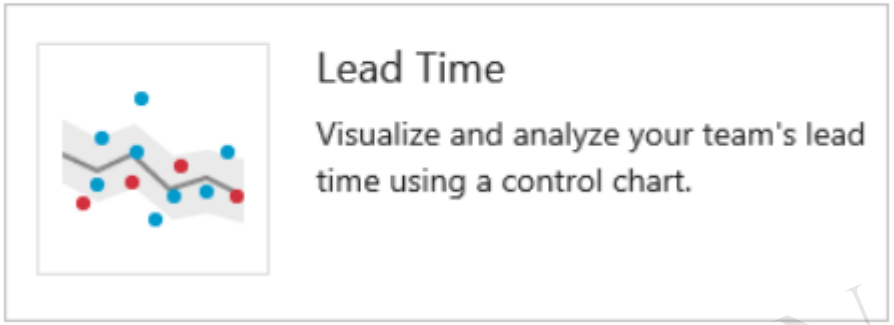
Widgets

Lead time



Purpose

This defines the time taken to close a work item after it was created.

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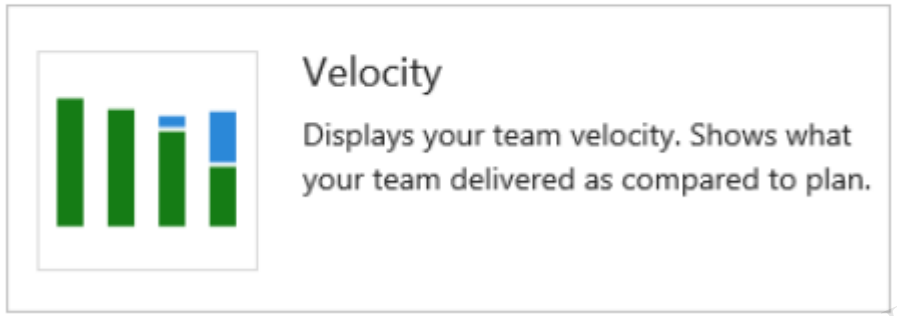
Widgets

Velocity



Purpose

This tracks the team's capacity to deliver work sprint after sprint.

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Tagging *in Git*

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Tagging

It can be used to specify which commit is important in the repository.

You can mark release points with the use of tags.

Two types of tags – **lightweight** and **annotated**.

Lightweight tag is just a pointer to a specific commit.

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Tagging

Annotated

These are stored as full objects in the Git database.

These are checksummed, they contain the tagger name, the email and date, have a message.

It can also be signed and verified with GNU Privacy Guard.

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Team Foundation *Version Control*

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Team Foundation Version Control

This is a centralized version control tool.

Its different from Git which is a distributed version control tool.

With Team Foundation Version Control, a team member has only one version of each file on their local machine.

The historical data for the files is held on the server.

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Team Foundation Version Control

Before developers can make changes to a file, they need to first check out the file from the server.

When it comes to each file, you can apply permissions at the file level.

This contrasts with Git where the permissions can be set on the repository or branch level.

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Azure *Pipelines*

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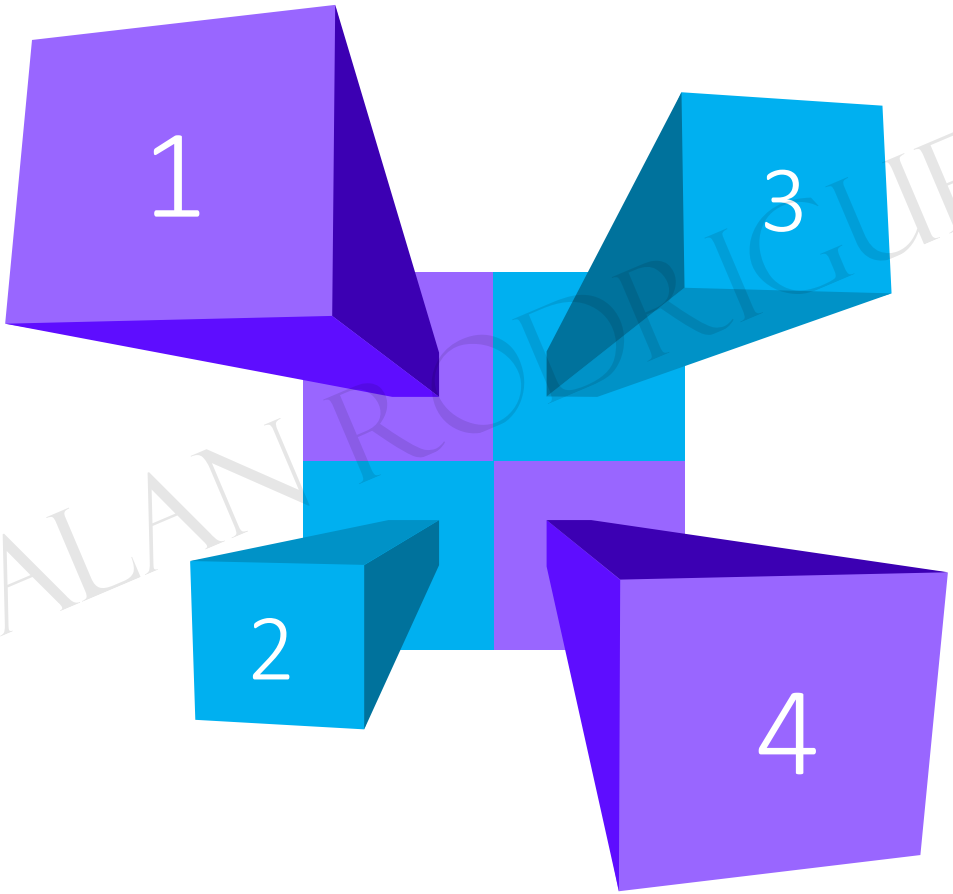
Azure Pipelines

Automation

Build and test your code projects.

Functionality

You can use Azure Pipelines for both continuous integration and continuous delivery.



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Languages

It has support for languages – Python, Java, PHP, Ruby, C#.

Deployment

You can deploy your application to multiple targets or environments.

Using Azure Pipelines

YAML syntax

You can define your pipeline in YAML syntax.

Here a file called azure-pipelines.yml will be created and version controlled along with your code.

This helps to easily identity changes in the pipeline that could break the deployment.

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Using Azure Pipelines

Classic Interface

This gives you a graphical interface.

You can then define your pipelines with the use of this interface.

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What is *Terraform*

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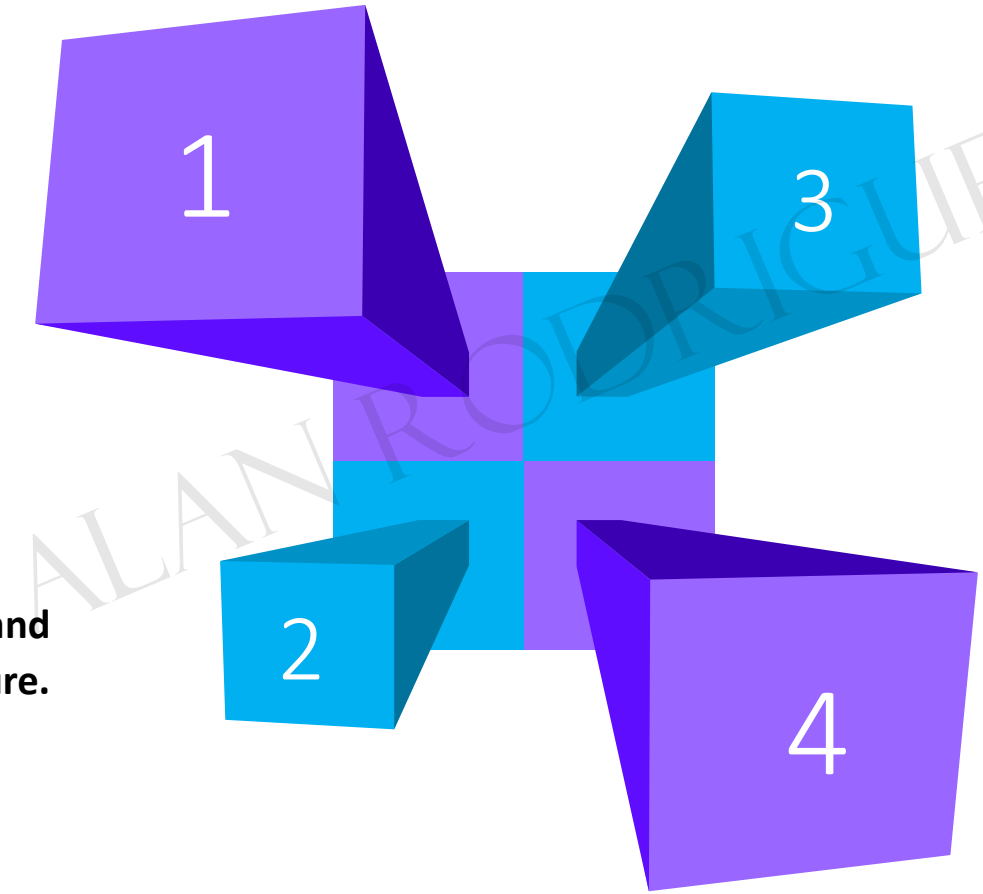
What is Terraform

Tool

Open-source tool developed by HashiCorp.

Language

It uses a declarative language to define the code.



Infrastructure

It helps to automate and manage your infrastructure.

Cloud

You can use it to build infrastructure on multiple cloud environments.

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Terraform *Terms*

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Workflow

Core Terraform workflow

1. Write – Here you create the code configuration file.

2. Plan – Here you can see the changes that are going to be made by Terraform.

3. Apply – This will apply the changes.

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Terms

Terraform configuration – This is the complete document in the Terraform language. This tells terraform how to manage the infrastructure.

Providers – These are plugins for Terraform. This helps Terraform to work with cloud providers.

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Using *Variables*

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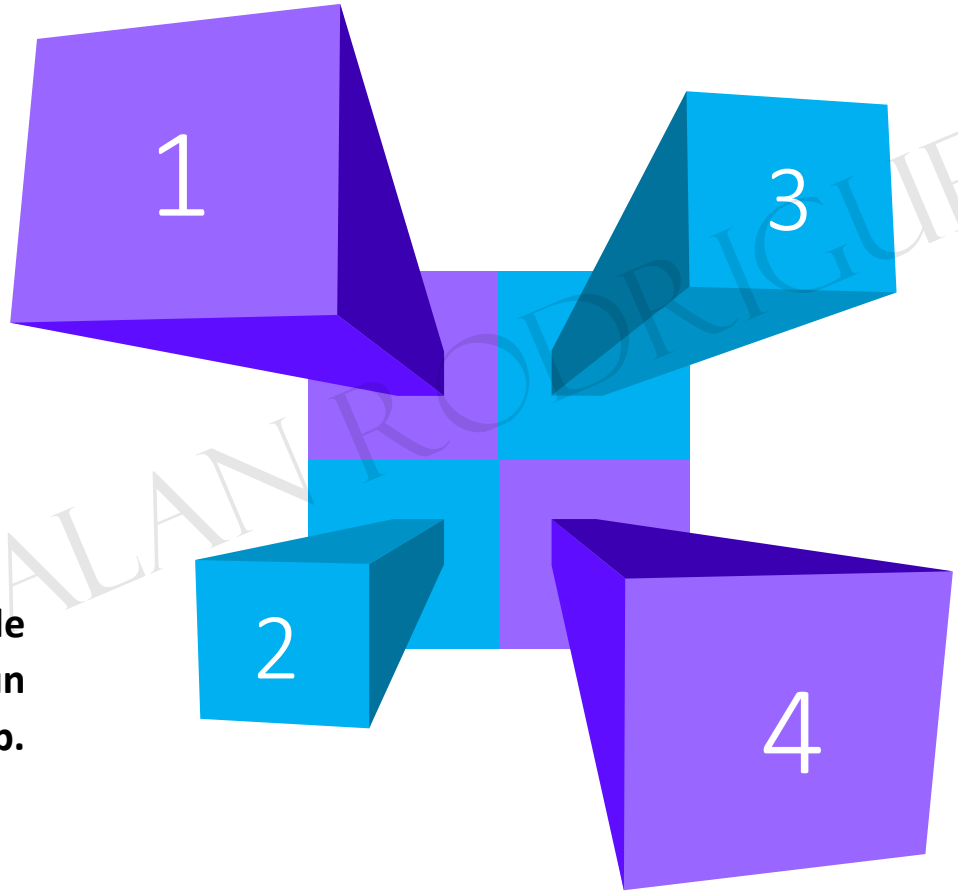
Using Variables

Usage

Helps to define and reuse a value within the pipeline.



Define

You can define the same variable in different places. The most locally scoped variable will take effect.

Change

The value of the variable can change from run to run or from job to job.

Expressions

You can also use variables within expressions.

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Variable Groups

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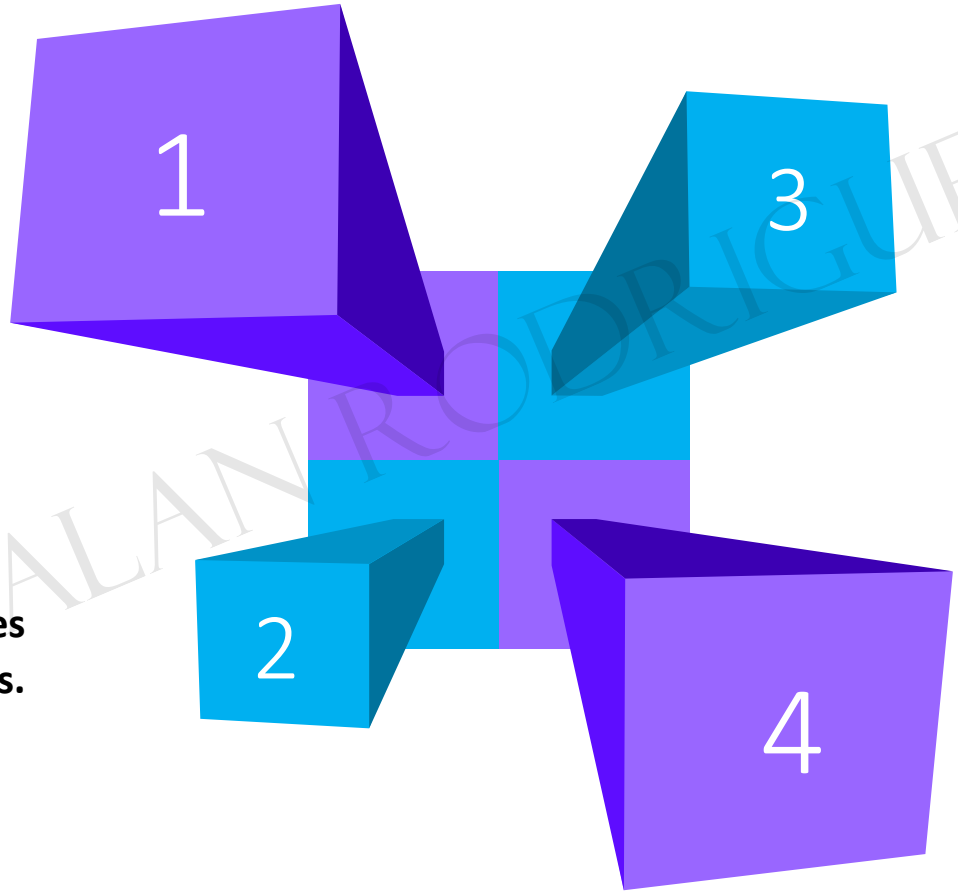
Variable groups

Storage

Here you can store values and secrets.



Usage

Variable groups can be used across multiple pipelines in a project.

Pipelines

You can access the values from the YAML pipelines.

Azure CLI

You can also use the Azure CLI to work with variable groups.

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Azure *Artifacts*

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Azure Artifacts

Feeds is just a mechanism that allows you to store, manage and group packages together.

Normally the feeds are project-based. Here only people within the project can access the feed.

You can also create a public feed.

The public feed allows you to share packages within anyone on the Internet.

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Azure Artifacts

Requirements for public feeds

They need to be created within public projects.

They cannot have upstream sources.

Public users cannot download universal packages.

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Azure Artifacts

Upstream sources

Here you can store packages from different sources onto your feed.

Here the copy of the package from the upstream source will be stored in the feed.

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Azure Artifacts

Feed views

Feed views helps to share certain packages.

The default views are @Local, @Prerelease and @Release.

By default all packages are released to the @Local view.

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Azure *App Configuration*

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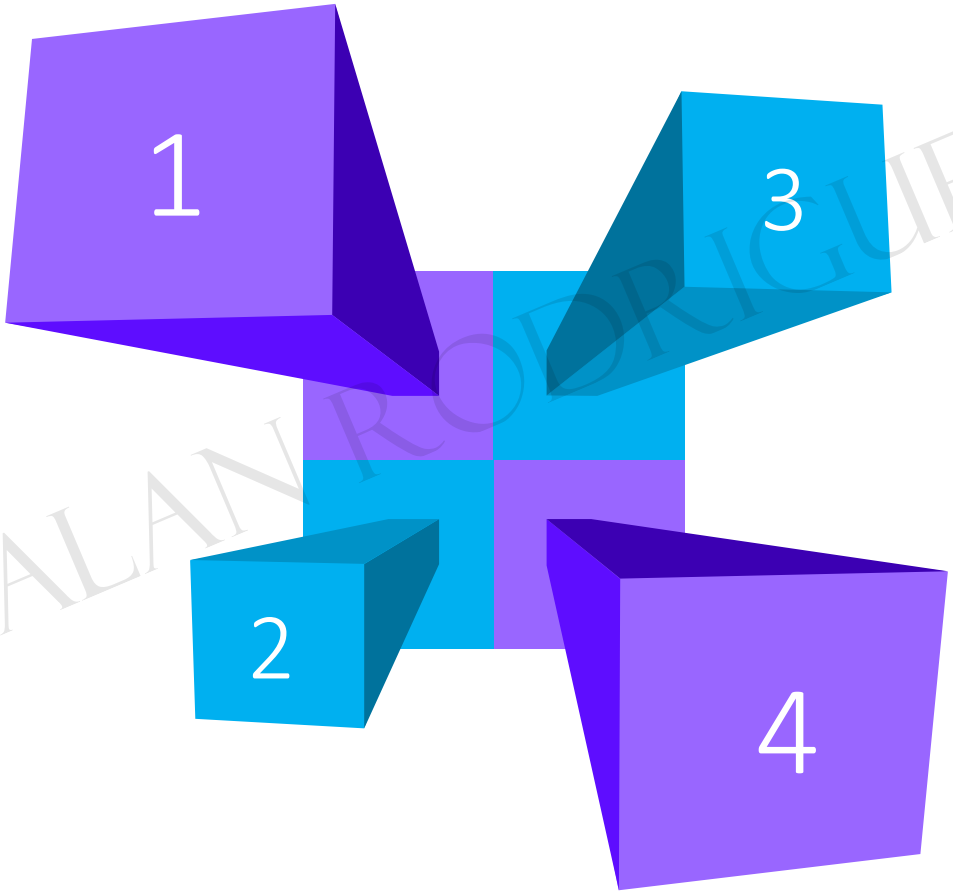
Azure App Configuration

Central Service

Provides a central service for managing application settings and feature flags .



Encryption

It provides encryption of sensitive information at rest and in transit.

Managed

This is a fully managed service.

Frameworks

It integrates with popular frameworks.

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Test *Plans*

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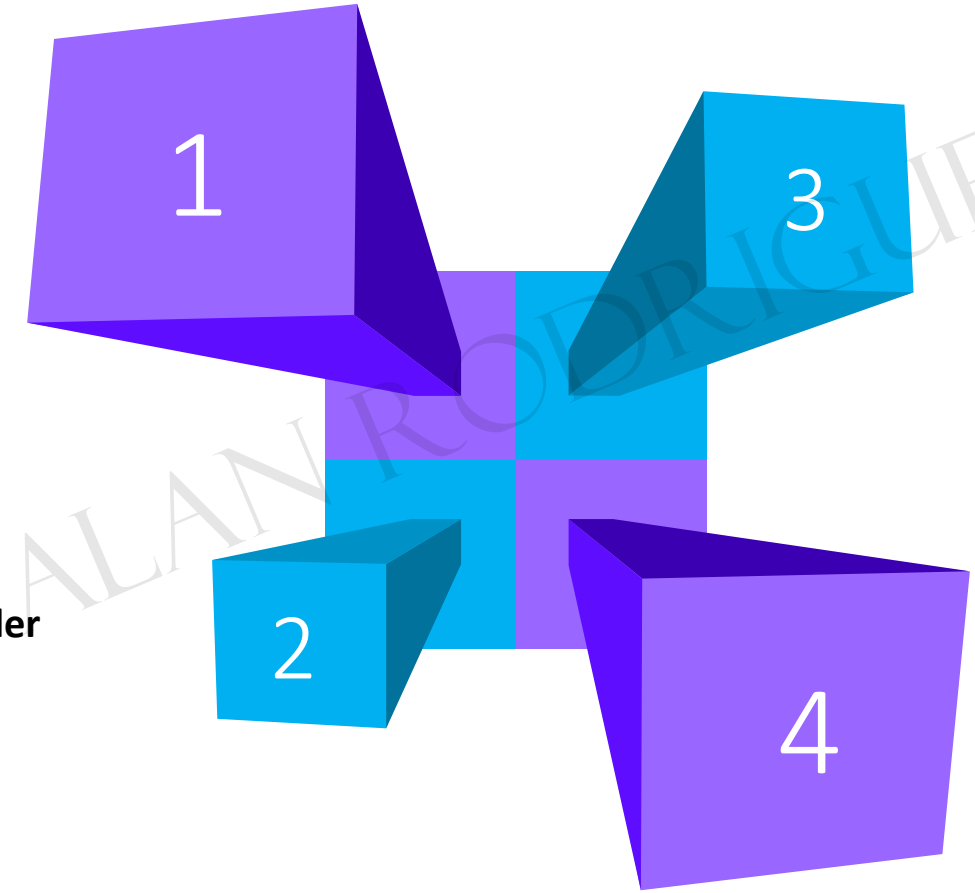
What are Azure Test Plans

Testing

Planned Manual testing, user acceptance testing. Capture test results.



Pipelines

There is integration with Azure Pipelines.

Feedback

You can also get stakeholder feedback.

Traceability

The test cases and suites can be linked to the user stories features to provide end to end traceability.

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Access Levels

Scenario and tasks	Stakeholder	Basic	Basic +Test Plans
Test planning • Create test plans and test suites • Manage test plan run settings • Manage configurations			✔
Test execution • Run tests on any platform (Windows, Linux, Mac) with Test Runner		✔	✔
Perform exploratory testing with the Test & Feedback extension	✔	✔	✔
Analyze and review tests • Create charts with various pivots like priority, configuration, etc., to track test progress • Browse test results • Export test plans and test suites for review • User Acceptance Testing – Assign tests and invite by email		✔	✔

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Reference - https://docs.microsoft.com/en-us/azure/devops/test/overview?view=azure-devops

Running Tests

Test Runner

Here you can run the tests for your web and desktop applications.

Here you can mark tests and passed or failed.

The test outcomes can also gather results such as screen recordings and screen captures.

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Running Tests

Test & Feedback extension

This is a browser-based extension that works with web applications.

You can get stakeholder feedback with the extension.

The test outcomes can also gather results such as screen recordings and screen captures.

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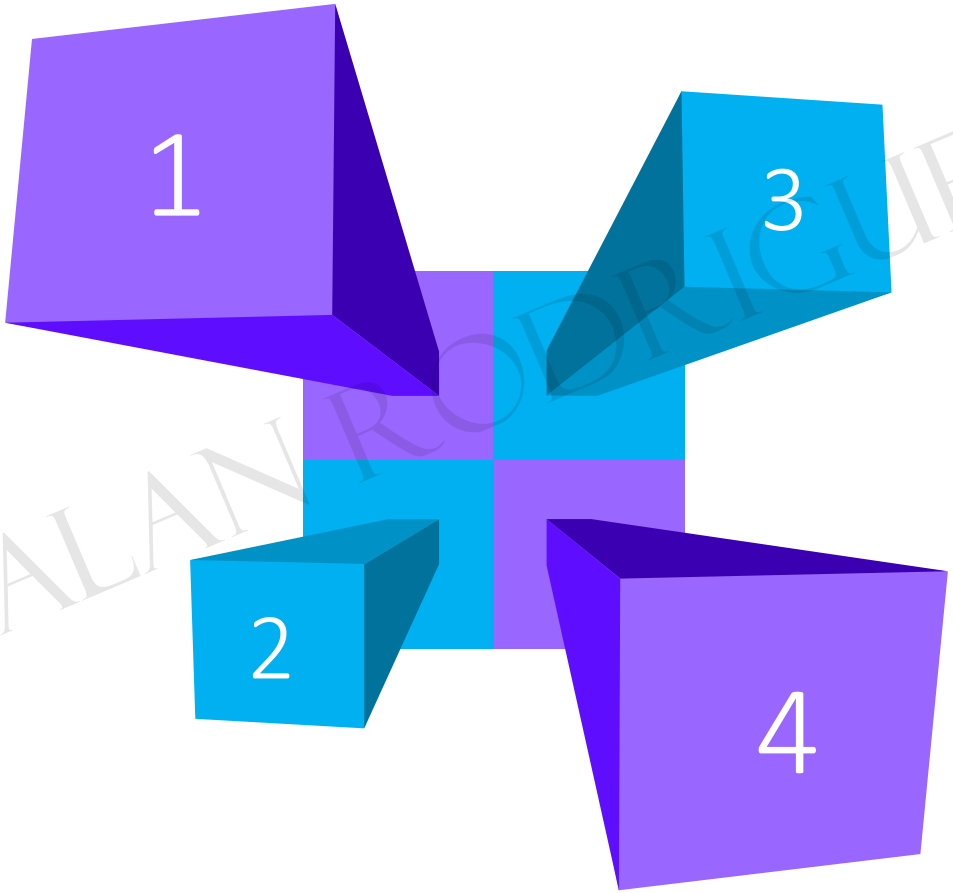
Azure Test Plans

Test plans

This is used to group test suites and test cases.



Test cases

This is used to define the actual steps required to test the application.

Test suite

This is used to group test cases into separate testing scenarios.

Shared steps

You can have shared steps that need to be shared across test cases.

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Scale Set *health*

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Virtual Machine Scale Set – Application Health Extension

You can monitor the health of your individual instances.

This can be useful when it comes to rolling upgrades for your instances.

You can monitor the application health of each instance in the scale set and perform instance repairs.

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Dynamic *Thresholds*

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Azure Monitor

Dynamic thresholds

Here Azure Monitor uses machine learning to check the historical behavior of metrics.

Based on the historical data, it can then identify patterns and anomalies that could indicate possible issues.

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Azure Monitor

Sensitivity

High – Here the alert rule will be triggered even for the smallest deviation.

Medium – Here you have more balanced thresholds and fewer alerts will be generated.

Low – Here alerts will only triggered on large deviations.

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Service *Map*

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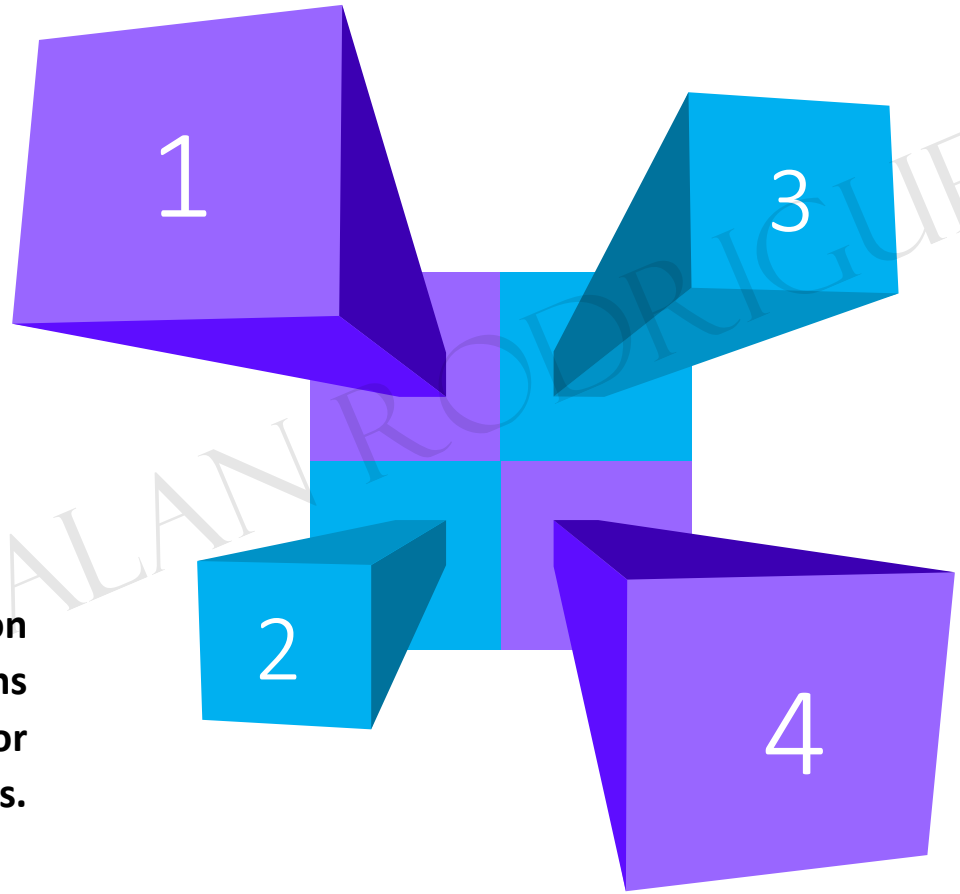
Service Map

Discovery

Helps to discover application components on Windows and Linux systems.

Information

You can see information such as connections between servers, latency for connections.



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Log Analytics

The machines need to connected to a Log Analytics workspace.

Agent

The machines also need to have the Dependency agent installed.

Application *Insights*

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Application Insights

Monitoring

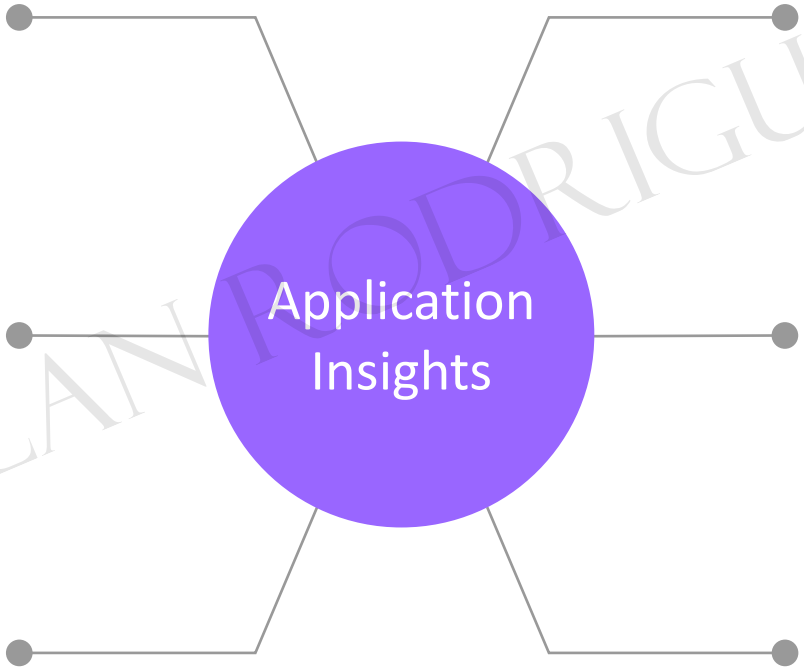
This provides the feature of application performance management and monitoring of live web applications.

Aspects

Here you can see aspects such as detecting performance issues or any other issues.

Support

There is support for .NET, Node.js, Java and Python.



Applications

This works for applications hosted in Azure, on-premises environments, or other cloud platforms.

Integration

It has Integration with the Visual Studio IDE.

Users

You can also see how users interact with your application.

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Application Insights

How does it work

You can install a small instrumentation package (SDK) for your application. Or use the Application Insights agent.

You can instrument web applications, background components and JavaScript in web pages.

The telemetry data sent by Application Insights has very little impact on the performance of your application.

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Application *Insights*

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Application Insights

Users, Sessions and Events

Users – Here you can see how many people have used your application and its features.

Session – You can see sessions of user activity. This includes certain pages and features of the application.

Events – This gives a view of how often certain pages and features have been used in the application.

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Application Insights

Funnels – Here you can have multiple stages like a pipeline. And then you can see how users are progressing through your application as an entire process.

Cohorts – This is a set of users, sessions, events or operations that have something in common. It helps to analyze a particular set of users or events.

Impact – Here you can see how load times and other aspects of your application impact the conversion rate for your application.

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Application Insights

Retention – Here you can analyze how many users return back to your application.

User flows – This can help in answering useful questions such as

1. *What do users click on a page within the application*

2. *Where are the places within the application that users churn the most from the site.*

3. *Are there places in the application where the users repeat the same action over and over again.*

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