

Azure DevOps

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What is DevOps?

DevOps is the union of people, processes, and technology that enables continuous delivery of value to end users. It bridges development and operations by promoting collaboration, automation, and continuous improvement. The DevOps lifecycle typically includes planning, development, building, testing, deployment, operations, and continuous monitoring.

High-performing DevOps organizations achieve measurable results such as: faster time to market, increased revenue, reduced change failure rates, faster recovery times, and more frequent deployments.

Why Azure for DevOps?

Microsoft Azure provides a powerful, flexible, and open foundation for modern application development. It supports applications across any platform, language, and cloud environment.

- Flexible – Choice of IaaS, PaaS, cloud, or hybrid. Easily modernize or mirror existing infrastructures.
- Powerful – Instantly improve performance, scalability, and resiliency by moving workloads to the cloud.
- Open – Bring your tools, frameworks, and code. Azure runs any app, on any platform, and supports any stack.

Azure helps teams automate software delivery and continuously deliver innovation.

Core Azure DevOps Services

1. Azure Pipelines

- Provides Continuous Integration (CI) and Continuous Delivery (CD).
- Supports any language, platform, or cloud including .NET, Java, Python, Node.js, PHP, Ruby, Android, and iOS.
- Cloud-hosted for Windows, Linux, and macOS with parallel job support.
- Integrated with GitHub, Bitbucket, and marketplace extensions.
- Containers and Kubernetes support for modern cloud-native applications.
- Unlimited build minutes for open-source projects.

Example: Every code commit triggers automated builds and tests; successful builds are deployed to staging or production environments automatically.

2. Azure Repos

- Unlimited cloud-hosted private Git repositories.
- Collaboration features: pull requests, branch policies, and code reviews.
- Semantic code search to quickly locate classes, methods, and variables.
- API and webhook support for automation.
- TFVC (Team Foundation Version Control) support for teams using centralized version control.

Example: A distributed development team collaborates using Git repos with pull requests to ensure high code quality.

3. Azure Boards

- Agile project management with Kanban boards, backlogs, and dashboards.
- Tracks work items including user stories, tasks, epics, and bugs.
- Provides project insights through analytics and reporting.
- End-to-end traceability by linking work items with code, builds, and deployments.

Example: Product managers create user stories, and developers link their commits and deployments to those stories for full visibility.

4. Azure Test Plans

- Manual and exploratory testing tools.
- Browser-based defect logging and test execution.
- Integration with CI/CD pipelines for automated testing.
- Rich scenario data capture with screenshots, logs, and steps.
- End-to-end traceability across the testing lifecycle.

Example: QA teams run exploratory sessions, capture screenshots and logs, and report bugs directly tied to development tasks.

5. Azure Artifacts

- Package management for Maven, npm, NuGet, and Python.
- Public and private feeds for secure package sharing.
- Integrated into CI/CD pipelines with versioning and testing.
- Enables enterprise-scale sharing of code libraries.

Example: A reusable company-wide authentication package is hosted on Azure Artifacts and consumed by multiple projects.

Extending Azure DevOps

Azure DevOps integrates seamlessly with GitHub, open-source tools, and third-party extensions. It supports containers, Kubernetes, infrastructure as code (IaC), and automated security practices. Teams can mix and match Azure DevOps services with their favorite tools like Jenkins, Terraform, or SonarQube.

Migration from TFS to Azure DevOps

Organizations using Team Foundation Server (TFS) can migrate to Azure DevOps with the TFS Import Service. Cloud-hosted DevOps services offer:

- Global availability with 99.9% SLA.
 - Immediate access to the latest features.
 - Simplified deployments and integration with Azure.
 - Fully supported, high-fidelity migration paths.
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Pricing

- Free Tier: Includes 5 free users, 1,800 build minutes/month, unlimited private Git repos, Azure Boards, and package management.
 - Basic Plan: Starts at \$6 per user/month. Includes more capacity for pipelines, artifacts, and test management.
 - Open Source: Unlimited build minutes and free parallel jobs across Windows, Linux, and macOS.
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DevOps at Microsoft (Case Study)

Microsoft itself uses Azure DevOps with over 90,000 internal users. The system processes:

- 372k pull requests per month
- 2m commits per month
- 78,000 deployments per day
- 500m test executions per day

These practices reduced build times by 400%, improved branch sync speeds by 500%, and enabled one-click deployments.

Conclusion

Azure DevOps is a comprehensive, enterprise-grade solution for modern software delivery. It unifies planning, development, testing, and deployment with full traceability and flexibility. It scales from small teams to global enterprises, supports any language and platform, and integrates seamlessly with third-party tools.

With Azure DevOps, organizations can plan smarter, collaborate better, and deliver software faster — all while continuously learning and improving.
