

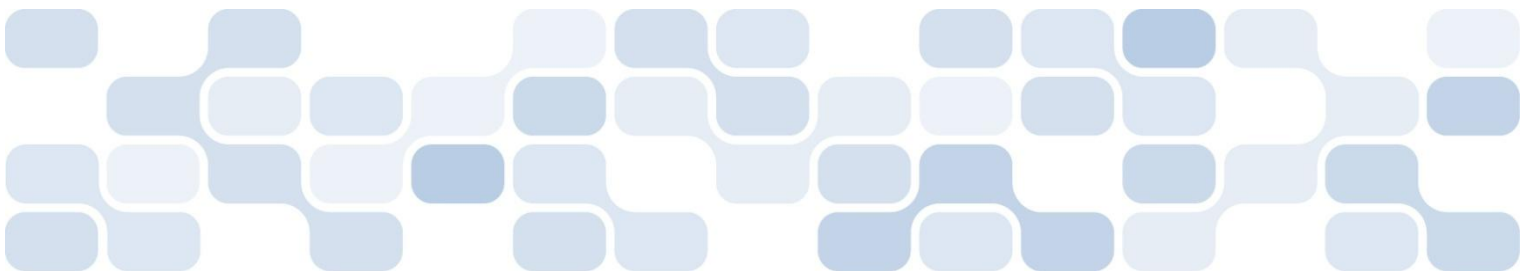
**Microsoft<sup>®</sup> Visual Studio<sup>®</sup>**  
**Team System 2008 Licensing**  
White Paper

Revised: April 2008

Consult the April 2008 Microsoft Product Use Rights document for the updated use rights associated with Visual Studio Team System 2008

<http://www.microsoftvolumelicensing.com/userights>

For more information, see <http://www.microsoft.com/teamsystem>



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## Introduction

Microsoft® Visual Studio® Team System expands the Visual Studio product line to include a set of application life-cycle management (ALM) tools. Team System consists of a set of client products, a server product for asset management and team collaboration, and load generation tools (see Table 1). This white paper provides an overview of the licensing models governing Team System products in common deployment scenarios.

| Product  | Purpose  | Licensing Model                |
|--|--|--------------------------------|
| Visual Studio Team System<br>2008 Team Suite                                   | A suite of life-cycle tools that expands the Visual Studio product line to enable greater communication and collaboration among software development teams.  | Microsoft Developer Tools      |
| Visual Studio Team System<br>2008 Database Edition                             | Provides tools to enable change management, testing and deployment for SQL Server databases.   | Microsoft Developer Tools      |
| Visual Studio Team System<br>2008 Architecture Edition                         | Provides tools for visually designing service-oriented solutions and validating them against operational environments prior to deployment.   | Microsoft Developer Tools      |
| Visual Studio Team System<br>2008 Development Edition                          | Provides advanced development tools that enable teams to incorporate quality, early and often throughout the life cycle.   | Microsoft Developer Tools      |
| Visual Studio Team System<br>2008 Test Edition                                 | Provides a set of test tools that are integrated into the Visual Studio environment that help you build high quality applications.   | Microsoft Developer Tools      |
| Visual Studio Team System<br>2008 Team Foundation<br>Server                    | Provides an integrated server that combines version control, work item tracking, and reporting into a single, secure collaboration platform.   | Microsoft Servers – Server/CAL |
| Visual Studio Team System<br>2008 Team Foundation<br>Server CAL                | Permits access to Team Foundation Server on a per-user, or per-device basis.   | Microsoft Servers – Server/CAL |
| Visual Studio Team System<br>2008 Team Foundation<br>Server External Connector | Permits any number of external users (not your or your affiliates' employees, or your or your affiliates' onsite contractors or agents) to access Team Foundation Server without needing CALs for those users. | Microsoft Servers – Server/CAL |

| Product  | Purpose  | Licensing Model                   |
|--|--|-----------------------------------|
| Visual Studio Team System 2008 Test Load Agent | Generates supplemental test load that enables organizations to simulate more users and more accurately test the performance of Web applications and servers. | Microsoft Servers – Per Processor |

**Table 1. Visual Studio Team System Products**

Team System provides a highly-integrated approach to solving software development challenges. Through deep integration of Team System features, organizations are able to communicate and collaborate more effectively throughout the process of designing, building, testing, and deploying software. Software teams that deploy Team System products as an integrated system typically see the most significant benefits in terms of increased communication between team members, manageability of products, and increased efficiency. For more information, see the Visual Studio Team System Home Page (<http://www.microsoft.com/teamsystem>).

### Visual Studio Team System Client Editions and Visual Studio Professional

Each of the Visual Studio Team System Editions (Team Suite, Development Edition, Test Edition, Database Edition, and Architecture Edition) includes the tools found in Visual Studio 2008 Professional Edition.

### Licensing Model

team editions are licensed according to the Microsoft Developer Tools licensing model, which licenses products on a per user basis and each licensed user may install and use the software as many times as they wish on their devices. However, a license for each product is required for each user who uses it on those devices. Through Microsoft Volume Licensing, you can license each of the team editions as a standalone product, or with an MSDN Premium Subscription. In retail, team editions are only available with MSDN Premium Subscriptions.

### Software Assurance and MSDN Subscriptions

Software Assurance (SA) is an expanded maintenance program that provides a broad range of benefits that help organizations maximize the value of Microsoft technology. They help minimize your licensing costs and increase business productivity. MSDN Subscriptions are the SA offering for team editions. When purchased with MSDN Premium subscriptions, you also receive the rights to the next released version of your team editions if the new version was released during the term of your SA coverage. For more information, see the Volume Licensing Home Page (<http://www.microsoft.com/licensing>).

MSDN Premium subscriptions include developer tools, as well as server and operating system products. Use of these server and operating system products is limited to designing, developing, testing, and demonstrating your applications; production use of these products is not permitted.

As an MSDN subscriber, you have access to a comprehensive set of Microsoft products for design, development, test, and demonstration purposes, as well as the same rights to new versions of those products during the term of your subscription. MSDN subscriptions provide access to a broad segment of the Microsoft platform for design, development, and test purposes. You can also access any prior version of Visual Studio.

In addition, each MSDN Premium subscription purchased with a team edition includes a license for Visual Studio Team System 2008 Team Foundation Server Workgroup Edition. Unlike the other server products included with MSDN Premium subscriptions, production use rights are granted with this

product. For more information, see the Team Foundation Server Workgroup Edition section of this white paper.

### **Evaluating Client Products**

If you are a Microsoft Volume License customer and you do not currently have an MSDN subscription, you may evaluate team editions in two ways:

- Install the 90-day trial of Visual Studio 2008 Team Suite and/or Visual Studio Team System 2008 Team Foundation Server, and
- As a Microsoft Volume Licensing customer, you can install and evaluate any of the team editions for 60-days before requiring a license.

### **Team Foundation Server CAL**

Each of the team editions integrates seamlessly with Team Foundation Server. You can access Team Foundation Server using Team Explorer, which integrates into the team editions, or runs separately as a standalone client in their absence. When you purchase a team edition, you also receive a CAL (Client Access License) for Team Foundation Server. You may purchase additional CALs for users who are not licensed users of these client products. More information on Team Foundation Server and CALs can be found in the Team Foundation Server section of this white paper.

If you own a Team Foundation Server 2005 CAL with Software Assurance that was active as of November 19, 2007, then you are entitled to a Visual Studio Team System 2008 Team Foundation Server CAL; otherwise, you are required to purchase a Visual Studio Team System 2008 Team Foundation Server CAL to access Visual Studio Team System 2008 Team Foundation Server. A Visual Studio Team System 2008 Team Foundation Server CAL entitles you to access both Visual Studio 2005 Team Foundation Server and Visual Studio Team System 2008 Team Foundation Server.

### **Visual Studio Team System 2008 Team Foundation Server Licensing**

Microsoft® Visual Studio® Team System 2008 Team Foundation Server is the backbone of Team System. Team Foundation Server provides a number of core services, including version control, work item tracking, reporting, and automated builds. Team Foundation Server also provides a number of key innovations to solve core problems in team development scenarios, such as complete integration between the client products and the server to facilitate collaboration, flexible process configuration to help deliver predictability, and detailed, metric-based reporting for insight into the development process. Team Foundation Server uses Microsoft® SQL Server™ as its data repository. A restricted-use version of SQL Server Standard Edition is included with Team Foundation Server, which is installed separately.

### **Licensing Model**

Microsoft licenses Team Foundation Server under the Server/CAL licensing model. You must purchase a server license for each running instance of the server software, and a Team Foundation Server Client Access Licenses for each user or device that accesses Team Foundation Server. Organizations may choose to purchase user CALs, device CALs, or a combination of both. User CALs are typically used when one user may be accessing the server from multiple devices or locations; device CALs are typically used when multiple individuals share a device to access the server.

You do not need a Team Foundation Server CAL for:

1. Any device running a licensed copy of the server software.
2. Up to two devices or users that only access the server software to administer it.

As noted earlier, each licensed user of a team edition receives a Team Foundation Server CAL with their client product license. You may purchase additional Team Foundation Server CALs for users who are not licensed for the client products.

Note that Team Foundation Server Workgroup Edition does not follow the Server/CAL licensing model described above. Team Foundation Server Workgroup Edition licensing is covered later in this white paper.

### **Software Assurance**

With Software Assurance (SA), customers will also receive the rights to the next released version of Team Foundation Server if the new version is released during the term of their SA coverage. For more information, see the Volume Licensing Home Page (<http://www.microsoft.com/licensing>).

In addition to the usual benefits associated with SA, purchasing SA for Team Foundation Server includes “Cold” Disaster Recovery Rights, which permits you (with some limitations) to temporarily run a backup instance in a physical or virtual operating system environment on a server dedicated to disaster recovery.

### **Accessing Team Foundation Server**

You can access Team Foundation Server using Team Explorer, which is available as a standalone client, and integrates with Visual Studio. In addition, you can also use Team Explorer integration with Microsoft® Office Excel® or Microsoft® Office Project to access Team Foundation Server. You may install Team Explorer on as many physical devices as you like; however, you can only use it with Team Foundation Server.

Additional aspects of Team Foundation Server licensing:

- You can buy an External Connector License to allow any number of external users to access and use one of your licensed copies of the server software. External users are users that are neither your or your affiliates’ employees, nor your or your affiliates’ on-site contractors or agents.
- Your Team Foundation Server CALs provide you access to earlier versions of the software but not later versions; to access later versions of Team Foundation Server you must buy new licenses, or be covered under Software Assurance at the time the new version of Team Foundation Server is released.
- Hardware or software that reduces the number of devices or users that directly access the server software (sometimes referred to as “multiplexing” or “pooling”) does not reduce the number of Team Foundation Server CALs you need.

### **Team Foundation Server CAL Requirements**

A Team Foundation Server CAL is required for users (or devices) who:

- Directly access Team Foundation Server.
- Indirectly query or write data to Team Foundation Server through another software application or device.

A Team Foundation Server CAL is not required for users who:

- View static data that has been manually distributed outside of Team Foundation Server.
- Receive Team Foundation Server reports through e-mail and do not directly/indirectly access the server to refresh, create, or update data.
- Receive printed Team Foundation Server reports.

## **Licensing Changes for Visual Studio Team System 2008 Team Foundation Server**

Microsoft has made one licensing change in the Team Foundation Server CAL requirement with the release of Visual Studio Team System 2008 Team Foundation Server. The change is as follows:

**“A user does not need a CAL to create new work items or to view and update work items that user has created. This waiver applies only to work items related to defect filing or enhancement requests. All other access to work item tracking functionality requires CALs.”**

With Visual Studio Team System 2008 Team Foundation Server a user may now do the following:

- Open a new work item of any type within the system.
- Access to work items opened only by that user. A user cannot view or access a work item opened by anyone else unless that user has a Team Foundation Server CAL.
- Edit any work item you opened to clarify the original entry, change work item fields, or make annotations to the discussion of the opened work item

This CAL licensing exception is limited to defect filing and enhancement request scenarios only. Our goal is to allow organizations to permit their users to enter bug / issue/ defect / enhancement request submissions into Team Foundation Server.

The licensing change only applies to Visual Studio 2005 Team Foundation Server when customers are exercising downgrade rights from Visual Studio Team System 2008 Team Foundation Server.

## **Microsoft Visual Studio Team System 2008 Team Foundation Server Multiplexing Licensing Requirements**

Multiplexing does not reduce the number of Microsoft licenses required. End users are required to have the appropriate licenses, regardless of their direct or indirect connection to the product. Any user or device that accesses the server, files, or data or content provided by the server that is made available through an automated process requires a CAL. However, certain circumstances do not require CALs, and they are detailed below:

Any user or device that accesses the server, files, data, content or deploys files, content, or data provided by the server in automated process (e.g. directly from a server or automatically posted to a server) requires a CAL. Any device or user that accesses data from Team Foundation Server through a multiplexed device or server also requires a CAL. Accessing data from Team Foundation Server is defined as creating, reading or editing data that was made available on the multiplexed device in an automated way.

There are 2 circumstances under which CALs are not required:

1. **Manual intervention** – a CAL is not required for users and/or devices accessing files, data or content as a result of manual activity (e.g., a person uploading a file onto a server or e-mailing the file from the server to others).
2. **Multiplexed users/devices not accessing Team Foundation Server information** – a CAL is not required for users and/or devices on multiplexed devices that do not access data, files or content from Team Foundation Server in an automated way. In other words, a user does not need a CAL simply for being a user on the multiplexed device, but that user does need a CAL if they are access Team Foundation Server data directly or indirectly via the multiplexed device.

These situations are further explained in the examples below:

#### Example 1

**Scenario:** An automated process is set up that uploads status reports and files from Team Foundation Server to another server for viewing by the CIO and other stakeholders.

**License requirement:** A Team Foundation Server CAL is required for each person accessing the reports and/or information retrieved from the Team Foundation Server in an automated fashion.

#### Example 2

**Scenario:** An automated process is set up to synchronize Team Foundation Server version control data with another source code management system. A developer on the other source code management system utilizes this synchronized data in one of his/her active projects.

**License requirement:** A CAL is required for each user or device accessing Team Foundation Server data which is synchronized to a multiplexed system. Even though the user/device is not accessing Team Foundation Server directly, a CAL is required since the user/device is utilizing Team Foundation Server functionality or data through the multiplexed system.

#### Example 3

**Scenario:** An automated process is set up to synchronize Team Foundation Server version control data with another source code management system. A developer works with several projects on the other source code management system but does not utilize data which is synchronized to or from Team Foundation Server.

**License requirement:** A CAL is not required for users/devices on the multiplexed system that do not access or utilize Team Foundation Server data in any fashion.

Note: The term “source code management system” is used in the scenarios above but the same scenarios also apply to bug tracking systems, requirements management systems, or any other system which synchronizes data with Team Foundation Server.

### **Windows Server and Team Foundation Server**

To install and use Team Foundation Server, you must have a license for Windows Server for each physical and virtual operating system environment on which the software will run. You may not use the development and test editions of Windows Server provided in MSDN subscriptions. If you license Windows Server on a Server/CAL basis, each licensed Team Foundation Server user also requires a Windows Server CAL. If you license Windows Server 2003 or Windows Server 2008 on a Server/CAL basis with an option to license an external connector, each licensed Team Foundation Server user also requires a Windows Server CAL with an option to license an external connector, as appropriate.

### **Scaling-Out with Team Foundation Server**

You can use Team Foundation Server across your development organization by leveraging the inherent scalability of the system. Microsoft designed Team Foundation Server to support thousands of users and still maintain high performance.

### **Team Foundation Server Proxy**

Team Foundation Server Proxy reduces network activity and demands on Team Foundation Server by caching copies of source control files in a remote location, local to the developer needing the files but away from the main source control location. By storing copies in the remote location the proxy helps each user avoid a potentially costly download of the files to their workspace across the remote connection link. Instead, Team Foundation Server Proxy generally serves client requests by returning the files from the local cache over the quicker local connection. When a file is not in the local cache, the file is downloaded by the proxy to the local cache from Team Foundation Server before returning the files to the client.

Team Foundation Server Proxy is licensed on a per-device basis. A full Team Foundation Server license is required for installation; however, additional Team Foundation Server CALs are not required. You may not use a license of Team Foundation Server Workgroup Edition to satisfy this requirement.

### **SQL Server Clustering**

You can increase the availability of Team Foundation Server by using SQL Server clustering on the data tier, which is supported in SQL Server 2005 Standard Edition and higher. Clustering provides high availability by combining several physical SQL Server instances into one virtual one. When used with Team Foundation Server, this requires physically separate application and data tiers, with the data tier hosted on two or more physical servers. Clustering in SQL Server 2005 or higher makes these separate servers appear as one virtual instance.

An additional SQL license is required for each clustered instance; however, additional Team Foundation Server CALs are not required.

### **Using SQL Server 2005 Standard Edition**

As mentioned earlier, SQL Server provides the sole data repository for Team Foundation Server. A restricted-use license of SQL Server 2005 Standard Edition is provided with Team Foundation Server under the following terms:

- You may only use the included SQL Server software with Visual Studio Team Foundation Server; you may not use it for any other purpose.

- You may only install the included SQL Server software on one physical device per Visual Studio Team Foundation Server license.

### **Team Foundation Server Workgroup Edition**

Team Foundation Server Workgroup Edition contains all of the same features as Team Foundation Server 2008 but its use is limited to five (5) user accounts. Team Foundation Server Workgroup Edition is provided with team editions that are licensed with MSDN Premium subscriptions. Team Foundation Server Workgroup Edition is not licensed on a Server/CAL basis, so Team Foundation Server CALs are not required for accessing it.

### **Team Foundation Server Dual-Server Deployment**

You can deploy Team Foundation Server using a dual-server configuration, whereby one server is the application tier that hosts the Team Foundation Server Web Services, and another server is the data tier that hosts the SQL Server back-end. In a dual-server deployment a Team Foundation Server license is required for the application tier and a SQL Server Standard Edition (or higher) license is required for the data tier. Customers may choose to purchase a second Team Foundation Server license and utilize the embedded SQL Server license for the data tier, or purchase a separate SQL Server license for this purpose.

### **Team Foundation Server Application Tier**

The Team Foundation Server application tier requires a Team Foundation Server license and a SQL Server license since SQL Reporting Services is also deployed on the application tier. However, since Team Foundation Server includes a dedicated use license for SQL Server 2005 Standard Edition you do not need to purchase additional SQL Server licenses for the application tier.

When deployed in a dual-server deployment, you can increase the reliability of the system by maintaining a standby application-tier server in warm or cold standby.

- **Warm Standby** - In a warm failover setup, the failover machine is turned on, but an administrator still manually activates the failover functionality. Warm standby requires a separate Team Foundation Server license.
- **Cold Standby** – In a cold failover setup, the failover machine is turned off. When it is needed, an administrator manually turns on the machine and activates its failover functionality. Cold standby also requires a separate Team Foundation Server license. However, if you purchased Team Foundation Server with Software Assurance, you do not need a separate license since SA provides for “Cold” Disaster Recovery Rights.

### **SQL Server Reporting Services**

In a dual-server deployment, you must install SQL Server Reporting Services on a server separate from the data tier; in most situations, you must install SQL Server Reporting Services on the application tier. When installed on a machine other than the Team Foundation Server application tier an additional SQL Server license is required.

### **Team Foundation Build**

The build automation functionality in Team Foundation Server enables automating builds from the physical device hosting Team Foundation Server onto one or more other separate physical devices. A build typically assembles the component pieces of software together along with any prerequisites and compiles them into an application. The automated build functionality in Team Foundation also provides the ability to run quality or performance tests as part of the build process.

Those users who are authoring tests and including them as part of a Team Build type must be appropriately licensed with the relevant team edition. For organizations using the Visual Studio 2005

line of products and writing unit tests, Team Edition for Database Professionals, Team Edition for Developers, , Team Edition for Testers, or Team Suite would be required by the test author. For organizations using the Visual Studio 2008 line of products and writing unit tests, Visual Studio 2008 Professional Edition or any of the team editions would be required by the test author. For load and other test types, Test Edition or Team Suite would be required. Similarly, a user who includes code analysis in a Team Build Type must also be appropriately licensed for Development Edition or Team Suite. Users who merely execute and review Team Builds are only required to have a Team Foundation Server CAL.

As the build commences, the physical device will gather the relevant source code as well as required redistributables or compilers, and place them on another physical device. It is important to note here that while there will be server-to-server communication between Team Foundation Server and the device hosting Team Foundation Build, no Team Foundation Server CAL is required for that device as part of the build process as long as the users managing the build process have Team Foundation Server CALs. In addition, Team Foundation Build is considered “additional software” and may be freely redistributed onto build servers without requiring any additional Team Foundation Server licenses for that build server.

As part of the build process, Team Foundation Server may run quality tests and/or analysis on the precompiled or compiled code. These tests rely on functionality found within team editions, typically within the Team Development Edition or Team Test Edition products. These products may be installed on the build machine by licensed users of those products, as long as they are not directly used by any individuals who are not licensed for those products. Team Foundation Server will gather results of the build as well as any quality tests or analysis and deposit them in the Team Foundation Server data repository.

| Team Member Actions  | Licensing Implications                         |
|--|--|
| Developer checks-in source code.   | Team Foundation Sever CAL required.            |
| Developer defines a team build type to include any of: <ul style="list-style-type: none"> <li>• Unit Testing</li> <li>• Code Coverage</li> <li>• Code Analysis</li> </ul>                        | Development Edition or Team Suite is required. |
| Tester defines a team build type to include any of: <ul style="list-style-type: none"> <li>• Generic Testing</li> <li>• Web Testing</li> <li>• Load Testing</li> <li>• Manual Testing</li> </ul> | Test Edition or Team Suite is required.        |
| Team member initiates a build.   | Team Foundation Sever CAL required.            |

**Table 2. Scenario – Team Foundation Build Licensing Implications**

**Classroom**

A training facility that is teaching Team Foundation Server to a group of classes needs to license Team Foundation Server. The teaching facility should purchase a device CAL for each computer in their classroom. In this case, any number of students can access these machines, as each device CAL allows any number of users to access the server software.

## Call Center

Consider a scenario where call center technicians field calls from customers. Issues that arise from these calls occasionally need to be investigated by the development team. To facilitate seamless collaboration between the call center technicians and software developers, the technicians submit a work item into Team Foundation Server to track the issue they have received from their customer call.

In this scenario, all of the technicians in the call center could potentially submit work items into Team Foundation Server and would each require a CAL. Call centers typically have large staffs that work on multiple shifts, so the cost of purchasing a CAL for each technician may be prohibitive.

To alleviate CAL requirements and still enable this scenario, there are a few options. For example:

- You can purchase a set number of device CALs and have all users access Team Foundation Server via those same licensed devices. In many call centers, device CALs are purchased for technicians on shifts sharing devices. This is a viable solution for Team Foundation Server, as well.
- Identify a select group who enter work items into Team Foundation Server on everyone's behalf and purchase an equivalent number of user CALs for that select group.

A user or device CAL entitles the user or device access to any number of Team Foundation Server servers within an organization so long as those instances of the software are properly licensed. However, it does not entitle that user or device to access any Team Foundation Servers outside of the organization for which Team Foundation Server is licensed. You can purchase CALs for external users or you can purchase an external connector license for users who are not part of the organization.

## Visual Studio Team System 2008 Team Test Load Agent

Microsoft® Visual Studio® Team System 2008 Test Load Agent, which includes both agent and controller software, is for creating additional, synchronized load. Test Load Agent enables users to scale out test load by adding more physical devices, each with the agent software installed, and synchronized by the controller software. Test Load Agent is licensed per processor; users must acquire a license for each processor on which Test Load Agent runs, regardless of the number of cores those processors have. In addition, Test Load Agent requires Team Edition for Software Testers to generate synchronized load and report test results.

Using the recommended hardware configuration for Test Load Agent, example load generation scenarios are shown in the following table (note that load is typically measured in concurrent virtual users). Note that the actual number of virtual users which can be achieved per-processor is variable based on the complexity of the test being executed and the capabilities of the hardware executing the test, but *on average* each load agent can generate enough load to simulate 1,000 virtual users.

| Test Load                | Test Edition | Test Load Agent |
|--------------------------|--------------|-----------------|
| 1,000 Virtual Users (VU) | 1            | -               |
| 5,000 VU                 | 1            | 5               |
| 10,000 VU                | 1            | 10              |
| 25,000 VU                | 1            | 25              |

**Table 3. Typical Load Generation Scenarios**

## Additional Software Licensing Requirements

As noted throughout this white paper, you will need additional software licenses to support a Team System deployment. For more information on Team System software requirements, see the Team Foundation Installation Guide for Visual Studio Team System 2008

<http://www.microsoft.com/downloads/details.aspx?FamilyID=ff12844f-398c-4fe9-8b0d-9e84181d9923&displaylang=en>).

## Summary

Organizations will implement Team System in different ways. The licensing terms and provisions outlined in this paper ensure flexibility in deployment for all sizes of teams. Prior to making to make decisions regarding Team System licensing, you should first identify the needs of your team.

For example:

- Will team members perform specific, delineated tasks, or do some perform multiple tasks from design through development and test? For team members who perform tasks related to multiple roles, Team Suite is recommended.
- Will all team members require a team edition? If not, you should acquire separate Team Foundation Server CALs for each user who will access Team Foundation Server, but will not be licensed for a team edition.
- Is your team geographically distributed? Or, will do you plan to outsource some development work to an off-site team? If so, you should consider purchasing additional Team Foundation Server licenses for using Team Foundation Server Proxy at remote locations.
- How much load will you need to generate in your testing? If you require more than approximately 1,000 virtual users, you should consider using Team Test Load Agent to increase load testing capacity.

For more information, see the following:

- Visual Studio Team System (<http://www.microsoft.com/teamsystem>)
- MSDN Subscriptions (<http://msdn.microsoft.com/subscriptions>)
- Product Use Rights (<http://www.microsoftvolumelicensing.com/userights>)