

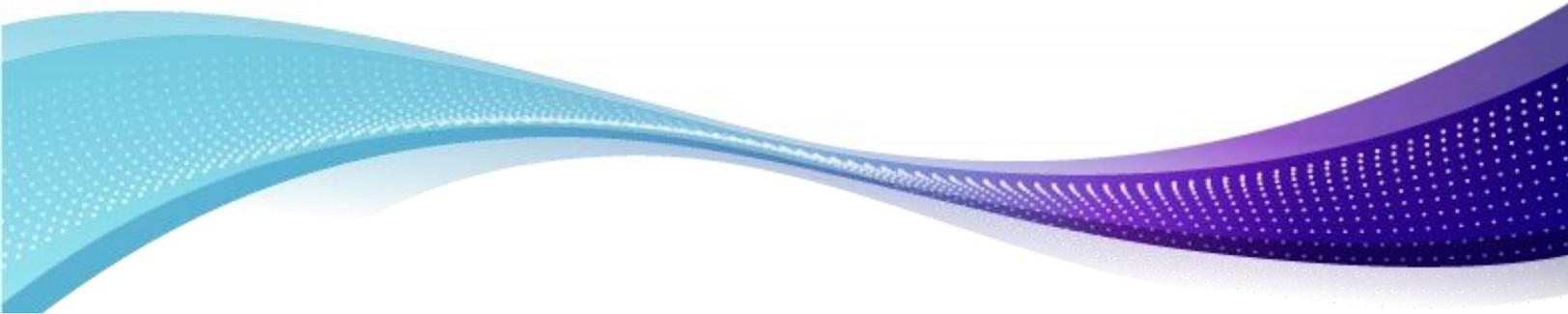
**Microsoft**



# **Microsoft<sup>®</sup> Visual Studio<sup>®</sup> 2010 and MSDN<sup>®</sup> Licensing**

White Paper

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## INTRODUCTION

Microsoft® Visual Studio® 2010 provides a comprehensive, highly flexible set of application lifecycle management (ALM) tools. With the introduction of Visual Studio 2010, Microsoft made significant changes to simplify decision making for customers and make products more accessible, including:

- Simplified product naming and development tool options.
- Changes to MSDN® subscriptions to align with the new development tools.
- Introduction of a new product for software testers.
- Introduction of functionality for lab management.
- Improvements to licensing terms for Team Foundation Server and load testing.

The remainder of this paper provides an overview of the Visual Studio 2010 product line and the licensing requirements for those products in common deployment scenarios. If you're a volume licensing customer for a definitive guide to licensing terms and conditions, see the [Microsoft Licensing Product Use Rights \(PUR\)](#) and [Product List](#), and the licensing program agreement. For retail customers the license terms are specified in the [Retail Software License Terms](#) included with your product.

## **VISUAL STUDIO 2010 PRODUCT LINE**

The Visual Studio 2010 product line includes a set of individual development tools used to perform various software development and testing tasks; products for asset management and team collaboration, load testing, and Web-based access; and licenses for deploying, using, and accessing the software in various ways.

### **Individual Development Tools, licensed per user**

Individual development tools are all licensed per user. The individual development tools in the Visual Studio 2010 product line are:

- Microsoft Visual Studio 2010 Ultimate with MSDN
- Microsoft Visual Studio 2010 Ultimate
- Microsoft Visual Studio 2010 Premium with MSDN
- Microsoft Visual Studio 2010 Premium
- Microsoft Visual Studio 2010 Professional with MSDN
- Microsoft Visual Studio 2010 Professional
- Microsoft Visual Studio Test Professional 2010 with MSDN
- Microsoft Visual Studio Test Professional 2010
- MSDN Embedded
- MSDN Operating Systems
- Microsoft Visual Studio Team Explorer Everywhere 2010
- Microsoft Visual Studio LightSwitch 2011

Individual development tools “with MSDN” are commonly referred to as MSDN subscriptions, which are comprehensive offerings that include both the named Visual Studio product as well as an array of other benefits such as the ability to develop and test using other Microsoft products and platforms, technical support, Microsoft E-Learning, and the rights to use any new versions of the software that are released during the active term of the subscription. The specific level of MSDN subscription benefits corresponds to the “Ultimate,” “Premium,” “Test Professional,” or “Professional,” designation in the Visual Studio 2010 product name. MSDN Embedded (which includes Visual Studio 2010 Professional) and MSDN Operating Systems (which does not include a Visual Studio product) are specialty MSDN subscriptions that are also offered.

Individual development tools are licensed according to the Microsoft Developer Tools licensing model for purchases made through Microsoft Volume Licensing programs, or according to the Retail Software License Terms for retail purchases.

### **Team Foundation Server 2010, licensed per server and per client**

The Visual Studio 2010 product line includes one server product:

- Microsoft Visual Studio Team Foundation Server 2010

Team Foundation Server is licensed according to the Microsoft Server/CAL (Client Access License) licensing model for Volume Licensing and according to the Retail Software License Terms for retail purchases.

Client licenses for Team Foundation Server 2010 can be purchased in two forms:

- Microsoft Visual Studio Team Foundation Server 2010 CAL
- Microsoft Visual Studio Team Foundation Server 2010 External Connector

### **Load Testing, licensed per unit**

Microsoft Visual Studio Load Test Virtual User Pack 2010 is licensed per pack of 1,000 virtual users in order to simulate load on an application. Starting March 2011, it is no longer necessary to purchase these packs for Visual Studio Ultimate with MSDN subscribers because they are entitled to unlimited load testing.

### **Additional Products, licensed under separate terms**

Visual Studio Agents 2010 is software that is available for public download (it is not sold) and can be used on any number of machines by licensed users of certain Visual Studio products.

## HOW TO BUY

Visual Studio 2010 products can be licensed through retail channels or Microsoft Volume Licensing programs; the channel determines the specific terms of your license. If you are unsure of which applies to you, contact the reseller or the purchasing department within your organization.

### Availability of Visual Studio 2010 Products by Channel

Product	Retail	Microsoft Volume Licensing				
		Open	Open Value	Select	Enterprise	Campus Agreement/EES
<b>Individual Development Tools</b>						
Visual Studio 2010 Ultimate with MSDN	Yes	Yes	Yes	Yes	Yes	Yes
Visual Studio 2010 Ultimate <sup>1</sup>		Yes		Yes		
Visual Studio 2010 Premium with MSDN	Yes	Yes	Yes	Yes	Yes	Yes
Visual Studio 2010 Premium <sup>1</sup>		Yes		Yes		
Visual Studio Professional with MSDN	Yes	Yes	Yes	Yes	Yes	Yes
Visual Studio 2010 Professional <sup>1</sup>	Yes <sup>2</sup>	Yes		Yes		
Visual Studio Test Professional 2010 with MSDN	Yes	Yes	Yes	Yes	Yes	Yes
Visual Studio Test Professional 2010 <sup>1</sup>		Yes		Yes		
MSDN Embedded	Yes	Yes	Yes	Yes	Yes	Yes
MSDN Operating Systems	Yes	Yes	Yes	Yes		Yes
Visual Studio Team Explorer Everywhere 2010	Yes	Yes	Yes	Yes	Yes	Yes
Visual Studio LightSwitch 2011	Yes	Yes	Yes	Yes	Yes	Yes
<b>Team Foundation Server</b>						
Visual Studio Team Foundation Server 2010	Yes	Yes	Yes	Yes	Yes	Yes
Visual Studio Team Foundation Server 2010 CAL	Yes	Yes	Yes	Yes	Yes	Yes

<sup>1</sup> Not available for purchase with Software Assurance (SA). To acquire Software Assurance (which includes new version rights), the "with MSDN" version must be purchased. MSDN provides significant additional benefits to the subscriber, in addition to corporate benefits available through the SA program.

<sup>2</sup> Includes a 12-month trial subscription to MSDN Essentials, except in Latin America and the Caribbean.

Product	Retail	Microsoft Volume Licensing				
		Open	Open Value	Select	Enterprise	Campus Agreement/EES
Visual Studio Team Foundation Server 2010 External Connector		Yes	Yes	Yes	Yes	Yes
<b>Load Testing</b>						
Visual Studio Load Test Virtual User Pack 2010		Yes	Yes	Yes	Yes	Yes

Customers purchasing fewer licenses often do this through the retail channel, either from a retail reseller or [direct from Microsoft](#). The licensing terms for retail purchases are described in the [Microsoft Retail Software License Terms](#).

For larger numbers of licenses (5 or more), organizations typically purchase through one of several Microsoft Volume Licensing programs. The licensing terms for these purchases are described in the Volume Licensing Program Agreement under which the licenses are acquired together with the [Product Use Rights \(PUR\)](#) document.

More information on Volume Licensing and the above programs can be found at: [www.microsoft.com/licensing](http://www.microsoft.com/licensing).

### **MSDN Subscription Renewals and Upgrades**

MSDN subscriptions that are due to expire can be renewed cost effectively. Renewal pricing is considerably lower than purchasing a new MSDN subscription because the customer only pays for the ongoing right to receive new versions of the software, access to new product keys plus other expiring MSDN services, but not for a new license of the Visual Studio development tool, which the customer already has.

#### **Retail Renewals**

Retail MSDN subscriptions must be renewed annually. The renewal grace period—that is, the period from when the MSDN subscription expires to the point where the customer loses the option to renew at the renewal price—is 30 days for Retail Licenses.

#### **Volume Licensing Renewals**

MSDN subscriptions purchased under most Volume Licensing programs are valid until the Volume License Agreement or Enrollment terminates. However, the Select Plus Agreement (which does not expire) is an exception. Purchases under Select Plus last for 3 years from the date of purchase and there are also options for aligning the subscription term end date with an Agreement anniversary date.

For all Volume Licensing Programs, MSDN subscriptions must be renewed by renewing Software Assurance by the deadline specified under the Volume Licensing agreement. These deadlines vary by program, and may also vary depending on the terms in place when the agreement was signed.

### **Step-up Licenses/Upgrades**

Step-up Licenses enable organizations to upgrade to a higher level Visual Studio 2010 with MSDN subscription, either at the time of renewing the license (in which case you must purchase both the subscription renewal and the Step-up) or at another point during the term of the subscription.

Step-up options available:

	Retail Channel	Microsoft Volume Licensing				
		Open	Open Value	Select	Enterprise	Campus Agreement /EES
Visual Studio 2010 Professional with MSDN to Visual Studio 2010 Premium with MSDN			Yes	Yes	Yes	
MSDN Embedded to Visual Studio 2010 Premium with MSDN			Yes	Yes	Yes	
Visual Studio 2010 Test Professional with MSDN to Visual Studio 2010 Ultimate with MSDN			Yes	Yes	Yes	
Visual Studio 2010 Premium with MSDN to Visual Studio 2010 Ultimate with MSDN			Yes	Yes	Yes	

The cost of a Step-up License depends on when it is acquired. For example, a Step-up License that is acquired during the second year of a three-year agreement will cost more than a Step-up License that is acquired during the third year of the agreement.

A Step-up License can be acquired at any time; however, the price is the same for any point in time within a given year of an agreement. For example, a Step-up License that is acquired four months into the second year of a three-year agreement will cost the same as a Step-up License that is acquired at the beginning of the agreement's second year. This is a function of how Microsoft Volume Licensing works rather than anything specific to MSDN subscriptions.

Note: Retail and Open License customers (where Step-up Licenses are not available) can still take advantage of Step-up Licenses by renewing into the Open Value program and immediately buying a Step-up.

## Other Channels

Certain Visual Studio products are available for purchase through other Microsoft programs, including:

- [Service Provider Licensing Agreement \(SPLA\)](#): Team Foundation Server 2010, Visual Studio 2010 Ultimate, Visual Studio 2010 Premium, Visual Studio 2010 Professional, Visual Studio Test Professional 2010, and Visual Studio Team Explorer Everywhere 2010 are available on a subscription basis. These are not MSDN subscription offerings. Use terms for the SPLA are covered in the [Services Provider Use Rights \(SPUR\) document](#).
- [Microsoft ISV Royalty Licensing Program](#) for ISVs wishing to include Visual Studio or other Microsoft products within their finished software applications and distribute them to customers.

Additionally, MSDN subscriptions are provided as program benefits under certain Microsoft programs:

- [Microsoft Partner Network](#): Partner MSDN subscribers may use the software in accordance with the MSDN subscriptions not for resale (NFR) [retail license terms](#). MSDN subscriptions offered as benefits of the Microsoft Partner Network, including those provided through Microsoft Action Pack Development and Design, cannot be used for direct revenue-generating activities, such as providing consulting services, customizing a packaged application for a specific customer, or building a custom application for a customer, for a fee. Partners can use MSDN subscriptions for indirect revenue-generating activities, such as building a packaged application on the Microsoft platform, which they can then market and sell to customers. Partners can also purchase MSDN subscriptions separately for use in direct revenue-generating activities.
- [Microsoft BizSpark™](#): BizSpark Visual Studio Ultimate with MSDN subscribers may use the software in accordance with the MSDN subscriptions not for resale (NFR) [retail license terms](#).
- [Microsoft WebsiteSpark™](#)

Please consult the terms for each program for specific MSDN subscription use right additions or exclusions.

## **INDIVIDUAL DEVELOPMENT TOOL LICENSING**

All Visual Studio 2010 individual development tools are licensed on a per-user basis. Each licensed user may install and use the software on as many devices as they wish to design, develop, test, and demonstrate their programs. Certain products requiring activation may have a limited number of installations. Each additional person who uses the software in this way on those devices must also have a Visual Studio 2010 individual development tool license.

Customers are required to license every copy of every Microsoft product they install, configure, and use, including all physical and virtual instances. As such, licensing a development and test environment can be expensive and challenging to manage as new servers are set up and others are torn down. MSDN subscriptions provide a convenient and cost-effective blanket licensing mechanism for development and test environments, with limited overhead and a convenient “per head” acquisition model.

Licensed per person, MSDN subscriptions are assets that are acquired by an organization, assigned to team members, and enable those team members to install, configure, and use specified Microsoft software on any number of devices and/or virtual machines to design, develop, test, and demonstrate their programs. The specific Microsoft software and other benefits included under an MSDN subscription vary by subscription level, so organizations can choose the right fit for each team member.

As long as every person installing, configuring, or using that software has an appropriate MSDN subscription, no additional licensing or reporting is required. When a team member leaves the team, the MSDN subscription is reclaimed and can be assigned to someone else (with the caveat that MSDN subscription licenses can only be reassigned at most once every 90 days in Microsoft Volume Licensing programs).

There are also many other benefits to MSDN subscriptions, including:

- the ability to readily download any software covered by the subscription, including past, present, and pre-release products
- access to certain Microsoft Office applications for both solution development and day-to-day production use
- use of the Windows Azure™ platform
- priority support through MSDN Forums
- technical support to help resolve difficult technical challenges

More information on MSDN subscription options and benefits can be found at:

<http://msdn.microsoft.com/subscriptions/subscriptionschart.aspx>

## **General Licensing Terms for Individual Development Tools**

For Visual Studio 2010 individual development tools (including those that are MSDN subscriptions), all of the following requirements apply to both the Visual Studio software and other software provided via MSDN—collectively called the “MSDN software” in this document.

### **Per-User License**

Each member of the development team that will use (install, configure, or access) the MSDN software must have his or her own MSDN subscription. Two or more individuals may use the same software if each has an MSDN subscription.

**Example 1:** A development team consists of 6 software developers, 1 architect/developer, and 3 testers. The team is building an in-house Web-based accounting system, and wants to use the MSDN software to set up a test environment running Windows Server 2008 and Microsoft SQL Server® 2008. If all 10 team members will be “touching” the development or test environment then each will require an MSDN subscription. The minimum subscription levels including both of these products are Visual Studio Professional with MSDN and Visual Studio Test Professional with MSDN.

**Example 2:** An organization has two development teams—one based in Seattle and the other in Singapore. Because of the time difference, the two teams are never working at the same time. However, because MSDN subscription licenses cannot be shared, each team member in each location must have his or her own MSDN subscription.

**Example 3:** A systems engineer from the organization’s IT department is installing the software needed for a development team—each member of which is licensed with an MSDN subscription—on centrally-managed hardware. This systems engineer is not doing any software development or testing. Because a license is required for any use of Microsoft software (installing is a use of the software), the customer must either acquire production licenses for all software being used in this environment or they must acquire an MSDN subscription for the systems engineer that includes the software he or she is using.

### **Multiple Devices—At Home, At Work, and Elsewhere**

Any team member can install and use MSDN software on as many devices as they like. The license does not restrict where the device is located (at work, at home, at school, at a customer’s office, etc.). However, each user of that MSDN software must have an appropriate MSDN subscription.

**Example:** A developer with an MSDN subscription uses MSDN software at work during the day, but occasionally needs to develop at home as well, using a different computer. Under the MSDN license, there is no difference between a PC at work and a home PC; the home PC is just another device on which the developer is entitled use the MSDN software.

However, the restrictions for the MSDN software running on the developer's home PC remain the same as in the work environment: the MSDN software installed on the home PC must only be used for design, development and testing purposes; and only other users with an appropriate MSDN subscription can use the software.

### **Downgrade Rights**

Downgrade rights, the ability to use an earlier version of the product that you've licensed in place of the licensed version, are generally irrelevant with MSDN subscriptions. MSDN subscribers already have access to prior software versions—many dating back more than a decade—which they are licensed to use simultaneously with the current version, and both the current and past versions of the software can be used on as many devices as needed. However, for Visual Studio individual development tools without MSDN—where the software included is limited to a specific version of Visual Studio—downgrade rights can provide the ability to use a prior version of that Visual Studio product.

Downgrade rights can be useful for MSDN subscribers when a version of a product is available through MSDN, but where a prior version is not. This may be the case for very old products like Windows 2.0 (where later versions such as Windows 7 are available through MSDN), or for products that Microsoft is no longer able to distribute due to the terms of a settlement, such as with Visual Basic 5 or Windows 2000 Server. To use these products, you would need to already be in possession of the installation media and, if needed, the product key, or acquire the installation software through another means.

Microsoft provides downgrade rights for Visual Studio 2010 individual development tools (including those offered with MSDN subscriptions) licensed through Volume Licensing, but not for retail purchases. See the [Downgrade Products](#) section of the Appendix for details.

### **Distribution of Microsoft Software Components within an Application**

Some software included with Visual Studio 2010 individual development tools, such as the Microsoft .NET Framework, can be distributed.

Components of software products covered by MSDN subscriptions that can be distributed (either within an application or as separate files) without royalty are identified in the REDIST.TXT file associated with the product. Components that can be distributed to non-Microsoft platforms are identified in the OTHER-DIST.TXT file associated with the product. Code identified as distributable that has the extension .lib cannot be directly distributed; it must be linked into the application. However, the resulting output can be distributed.

You may also:

- Modify and distribute source code and objects for code marked as “sample” or “Code Snippet”.
- Distribute the unmodified output of Microsoft Merge Modules for use with an application’s .msi file.
- Distribute the MDAC\_TYP.EXE file containing core data access components (such as the Microsoft SQL Server OLE DB provider and ODBC driver).
- Distribute the object version of C++ libraries (Microsoft Foundation Classes, Active Template Libraries, and C runtimes).

For a complete list of components that can be distributed and the restrictions that apply, see Distributable Code in the Universal License Terms section of the [Microsoft Licensing Product Use Rights \(PUR\)](#) or the Distributable Code section of the [Microsoft End User License Agreement \(EULA\)](#) for MSDN subscriptions.

### **IntelliTrace™**

IntelliTrace™, a new capability in Visual Studio 2010, enables the recording and playback of application execution to help facilitate debugging. This is accomplished by deploying the IntelliTrace diagnostic data adapter (DDA) to the target system as part of the Visual Studio Test Agent, by deploying the IntelliTrace.exe command-line utility, or by running a test using Visual Studio Test Professional. IntelliTrace files created using either means can be opened and debugged using Visual Studio Ultimate.

- To deploy and capture data for debugging purposes using the IntelliTrace DDA, the user must be licensed for Visual Studio Ultimate or Visual Studio Test Professional.
- To deploy and capture data for debugging purposes using IntelliTrace.exe, the user must be licensed for Visual Studio Ultimate.
- To debug data captured by either tool, the user must be licensed for Visual Studio Ultimate.

IntelliTrace files *may* be shared among two or more companies as long as all users capturing and debugging IntelliTrace files are licensed with either Visual Studio 2010 Ultimate or Visual Studio Test Professional 2010, depending on the activities they are performing. For example, a company can share IntelliTrace files with an external development consultant. Similarly, a company can use an external company for testing purposes and debug IntelliTrace files provided by that vendor.

The IntelliTrace diagnostic data adapter (DDA) and/or IntelliTrace.exe can be used for test and debugging purposes:

- As part of an interactive test or debugging session.
- As part of an automated test or debugging-data collection session that is authored by a licensed user and triggered by the same or another licensed user.

The IntelliTrace DDA and/or IntelliTrace.exe cannot be used:

- On a device or server in a production environment.
- For purposes of system or application monitoring.
- In non-interactive scenarios other than as part of an automated test or debugging-data collection session.

#### **Example 1: Finding a defect in a test environment**

Company A is building a Web application. All the developers are licensed for Visual Studio 2010 Ultimate with MSDN, and the testers are licensed with Visual Studio Test Professional 2010 with MSDN. During a test run a defect is discovered in the test environment that is difficult to reproduce in a development environment. The test machines have previously been configured with the Visual Studio Test Agent 2010, which includes the IntelliTrace DDA. The tester uses Microsoft Test Manager 2010 to execute the test case with the IntelliTrace diagnostic data adapter (DDA) enabled. When the defect is encountered, the tester files a new bug, with the IntelliTrace files from each of the test machines is automatically attached to the bug. When a developer opens the bug using Visual Studio Ultimate, he or she can open the IntelliTrace files and step through the execution.

#### **Example 2: Working with an external consultant**

In Example 1, Company A uses an external consultant to help with development. If the external consultant is licensed for Visual Studio Ultimate, he or she can open and debug the IntelliTrace files provided by Company A.

**Example 3: Working with an external test vendor**

In Example 1, Company A uses Company B as an outsourced test vendor. The two companies can work together using IntelliTrace as long as the developers at Company A and the testers at company B are licensed appropriately.

## Licensing Terms Applicable to Individual Development Tools with MSDN

### Using MSDN Software

Software obtained through an MSDN subscription may be used *only* for the purposes of design, development, test, and demonstration of your programs, except in the case of [Office Application Use for MSDN Subscribers](#), [Team Foundation Server for MSDN Subscribers](#), and use of Microsoft System Center Virtual Machine Manager with [Lab Management](#). MSDN software may not be used in production environments, which require regular, non-MSDN licenses for the software being used—for example, a software license and client access licenses (CALs) for Windows Server 2008.

A production environment is defined as an environment that is accessed by end-users of an application (such as an Internet Web site) and that is used for purposes other than [Acceptance Testing](#) of that application. Some other scenarios that constitute production environments include:

- Environments that connect to a production database.
- Environments that support disaster-recovery or backup for a production environment.
- Environments that are used for production at least some of the time, such a server that is rotated into production during peak periods of activity.

Each team member must have an MSDN subscription that covers all the software that they will use, or be licensed to access that software in some other way. Specifics of which Microsoft software is covered under different MSDN subscriptions are provided at <http://msdn.microsoft.com/subscriptions/subscriptionschart.aspx>.

**Example:** A development team is working on a Web-based accounting system that uses Windows Server, SQL Server, Exchange Server, and Office SharePoint Server. These developers must have Visual Studio 2010 Premium (or Ultimate) with MSDN to cover all the software being used. (Visual Studio 2010 Professional with MSDN does not include Exchange Server or SharePoint Server.)

### **Windows on the “Developer Desktop”**

In most situations, Windows used for the main PC (or set of PCs) must be licensed separately from MSDN due to mixed use—both design, development, testing, and demonstration of your programs (the use allowed under the MSDN subscription license) and some other use. Using the software in any other way, such as for doing email, playing games, or editing a document is another use and is not allowed under the MSDN subscription license. When there is mixed use the underlying operating system must be licensed normally by purchasing a regular copy of Windows such as the one that came with a new OEM PC.

**Example:** A developer with a Visual Studio Premium with MSDN subscription builds a PC using spare hardware and intends to use this for development and testing of applications. The developer installs a copy of Project Professional 2010 on the machine to use for managing project timelines, which is its normal production use. Because Project is being used for production, the PC is under mixed use and the Windows operating system on which Project runs must also have a normal production license. The developer is not licensed through the MSDN subscription to use Windows for this PC, even though the Visual Studio Premium with MSDN subscription includes the right to use Project Professional 2010 on one device for production use.

### **Virtual Environments**

If a physical machine running one or more virtual machines is used entirely for development and test, then the operating system used on the physical host system can be MSDN software. However, if the physical machine or any of the VMs hosted on that physical system are used for other purposes, then both the operating system within the VM and the operating system for the physical host must be licensed separately. The same holds true for other software used on the system—for example, Microsoft SQL Server obtained as MSDN software can only be used to design, develop, test, and demonstrate your programs.

### **Previous, Prerelease and Trial Versions of Software**

MSDN subscriptions include access to previous, current, prerelease and trial versions of Microsoft software products. If the software is made available as

part of the user's MSDN subscription, then it can be installed and used on any number of devices.

However, prerelease and trial versions of software provided via MSDN are subject to their in-product licensing terms.

### **SDKs, DDKs, Feature Packs, and patterns & practices Releases**

MSDN subscriptions include access to Software Development Kits (SDKs), Driver Development Kits (DDKs), Visual Studio Feature Packs, and patterns & practices releases. If the software is made available as part of the user's MSDN subscription, then it can be installed and used on any number of devices.

However, SDKs, DDKs, Visual Studio Feature Packs, and patterns & practices releases provided via MSDN are subject to their in-product licensing terms.

### **Office Application Use for MSDN Subscribers**

Visual Studio Ultimate with MSDN and Visual Studio Premium with MSDN subscriptions include Microsoft Office applications for development and testing. Additionally, the following applications can be used by licensed users of Visual Studio Ultimate with MSDN and Visual Studio Premium with MSDN on one device for production use:

- Office Professional Plus 2010
- Visio<sup>®</sup> Premium 2010
- Project Professional 2010 (includes one device CAL for Project Server)

### **Team Foundation Server for MSDN Subscribers**

Certain MSDN subscriptions (specifically Visual Studio Ultimate with MSDN, Visual Studio Premium with MSDN, Visual Studio Professional with MSDN, and Visual Studio Test Professional with MSDN) include a server license and one Client Access License for Visual Studio Team Foundation Server 2010. More information is provided later in this paper under the section on [Visual Studio Team Foundation Server 2010](#).

### **Perpetual Use Rights**

Some MSDN subscriptions provide perpetual use rights that allow subscribers to continue using certain software products obtained through an active subscription after the subscription has expired. However, subscribers are *not* entitled to updates for that software after the subscription has expired, nor do they continue to have access to software or product keys through MSDN Subscriber Downloads or to other subscription services that are a benefit of having an active subscription. Product keys that were acquired while the subscription was active can continue being used until all activations for those

keys have been exhausted. If an MSDN subscription is transferred or sold, any perpetual use rights are transferred to the new party and the seller can no longer use the software.

Generally, MSDN subscriptions that do **not** provide perpetual use rights include:

- MSDN subscriptions purchased through Enterprise Agreement Subscription, Open Value Subscription, Campus Agreement, or other “subscription” Volume Licensing programs
- MSDN subscriptions offered through the Microsoft Partner Network including the Empower for ISVs program and Microsoft Action Pack Development and Design subscription.
- MSDN Essentials (a trial subscription provided with retail purchases of Visual Studio 2010 Professional)

In the above cases, subscribers can no longer use *any* software provided through the MSDN subscription after it expires.

#### **Demonstration Using Terminal Services**

MSDN subscriptions permit the use of the Windows Server 2003 or 2008 Terminal Services or Windows Server 2008 R2 Remote Desktop Services for up to 200 simultaneous, anonymous users to access an Internet demonstration of your programs. These anonymous users do not need an MSDN subscription.

#### **Acceptance Testing**

At the end of a software development project, **end users** (or team members such as a business sponsor or product manager acting as proxies for end users, particularly in cases where it’s infeasible or impossible for the actual end users of the program to participate) typically review an application and determine whether it meets the necessary criteria for release—a process often called user acceptance testing or UAT. MSDN software may be accessed by end users who do not have an MSDN subscription for purposes of acceptance testing, provided that the use of the software otherwise complies with all MSDN licensing terms. It is rare that someone whose primary role is designing, developing, or testing the software would also qualify as an “end user.”

Under MSDN licensing, acceptance testing must not use live production data. If a *copy* of any live production data is used, then that copy of the data must be discarded after the testing is complete and cannot be incorporated back into the live production data.

### **Distribution of MSDN Software as Part of an Installation Image**

Physical or virtual machine images provide a quick and convenient way to set up client or server machines. However, when MSDN software is used to create images and the MSDN subscription through which that software is licensed was purchased through a retail channel, then those installation images cannot be distributed to others. This restriction holds true even if the target users that will install and/or use the image also have appropriate MSDN subscriptions for the MSDN software contained within the installation image. These users can, of course, download the software from MSDN directly and create their own installation image.

If the MSDN subscription was obtained by an organization through a Volume Licensing program, then the installation image may be distributed among users licensed for the appropriate MSDN subscription level within the same organization only, including to external contractors working for the organization who have been temporarily assigned an MSDN subscription from the organization's available licenses. Redistribution of MSDN software to 3<sup>rd</sup> parties is not allowed in any form, including physical and virtual machine images, DVDs and ISO files.

**Example:** Company A subcontracts with Company B. Part of the work involves creating an image for installing machines in a test server environment. Because individuals from Company B cannot distribute Microsoft software to individuals in Company A the only options for Company B to "distribute" the resulting image back to Company A are:

- Company A assigns spare (unallocated) MSDN subscriptions to the individuals in Company B that will be creating the image. This enables the software to be transferred within the same organization (and thus is not a distribution of Microsoft software to a 3<sup>rd</sup> party), OR
- Company B provides instructions for building the image to Company A, which then builds the image internally.

Microsoft currently offers a Virtual Hard Disk (VHD) Test Drive program. ISVs wishing to distribute Windows Server-based virtual machines along with evaluation versions of their software can find out more at <http://www.microsoft.com/vhd/>.

### **Assigning MSDN Subscriptions to External Contractors**

If an organization hires external contractors to work within their development team, then the contractors must have appropriate MSDN subscriptions for any MSDN software that they will be using.

**Example:** An external contractor is to work temporarily within a client organization's development team. Each development team member at the client has a Visual Studio Premium with MSDN subscription. If the contractor has a Premium level subscription too, then, like the existing team members, the contractor can use the software in the development environment. If the contractor does not have an MSDN subscription, or has an MSDN subscription at a lower level that does not include all of the software they will be using, then either:

- The contractor must obtain an appropriate (higher-level) MSDN subscription.
- The organization must assign one of their spare (unallocated) MSDN subscriptions—again, of a sufficient level to include the software they need to use—to the contractor for the duration of the contract.

Additionally, if the contractor is using the client's Team Foundation Server then the client must supply a Team Foundation Server CAL for the contractor's use. This could be a CAL purchased separately or a CAL that is included with the MSDN subscription that the client assigns to the contractor temporarily. Team Foundation Server CALs are only valid for accessing a Team Foundation Server acquired by the same organization.

### **Product Keys and Installation Software**

MSDN subscribers can use any installation software as long as that software is from an authorized source (such as MSDN Subscriber Downloads, Volume License Service Center, or official Microsoft DVDs) and the software product is covered under the user's MSDN subscription. For example, an MSDN subscriber could choose to use his organization's Volume Licensing media for installing Windows in a test lab, which may be more convenient due to the Volume Licensing product key having higher activation limits than the key made available through MSDN Subscriber Downloads.

### **Using Software from MSDN for Production**

Often, it is more expedient to deploy a server running a fully-tested application directly into production. Normal licenses must be acquired for this use (such as a Windows Server license and Client Access Licenses) because the MSDN license is per user and is generally limited to development and testing. However, the *installed software* and the *product key* used to activate that software, where applicable, can be from MSDN, even though the *licenses* to use that software in production must be acquired separately from MSDN.

### **Software Activation**

Many software products offered via MSDN require activation, a process which validates that the software being installed is genuine Microsoft software (and not a corrupted copy) by connecting to Microsoft servers online. Activation happens after the product key has been entered and has been validated for the product being installed. Be careful to not confuse activation with licensing; activation has no way of determining whether you are licensed to use the product (such as Windows 7, offered through an MSDN subscription) or whether you're using the software in a way that is allowed under your license (such as using Windows 7 for developing an application). For more information, see [Product Keys and Activation](#) resources on MSDN.

### **Renewing Down**

Customers may “renew down” from a higher-level Visual Studio with MSDN to a lower-level Visual Studio with MSDN subscription—effectively trading one license for another. In doing so, the customer forfeits all rights associated with the old Visual Studio with MSDN subscription and must immediately discontinue using any products that were available as part of that subscription but that are not available under the new subscription.

**Example:** An organization has been using Visual Studio 2010 Premium with MSDN subscriptions across their development team. The organization decides to renew all their subscriptions down to Visual Studio 2010 Professional with MSDN due to budget constraints. When the organization renews down, subscribers must immediately discontinue using and uninstall Visual Studio 2010 Premium—and thus can no longer use features such as code coverage, code metrics, profiling, and database unit testing. Subscribers also lose rights to use Microsoft Office, Microsoft Dynamics®, SharePoint Server, and many other products included at the Premium level but not at the Professional level subscription.

### **Visual Studio Team Explorer Everywhere 2010**

Visual Studio Team Explorer Everywhere 2010 is used to access Visual Studio Team Foundation Server 2010 for non-Microsoft-based clients such as Eclipse. A Client Access License for Team Foundation Server 2010 is not included, and must be acquired separately.

Visual Studio Ultimate with MSDN subscriptions include both Team Explorer Everywhere 2010 and a CAL for Team Foundation Server 2010.

## **VISUAL STUDIO TEAM FOUNDATION SERVER 2010 LICENSING**

Microsoft Visual Studio Team Foundation Server 2010 is the backbone of Microsoft's Application Lifecycle Management (ALM) solution, providing core services such as version control, work item tracking, reporting, and automated builds. Through its deep integration with Visual Studio 2010 individual development tools, Team Foundation Server helps organizations communicate and collaborate more effectively throughout the process of designing, building, testing, and deploying software—ultimately leading to increased productivity and team output, improved quality, and greater visibility into the application lifecycle.

Microsoft licenses Team Foundation Server under the Server/Client Access License (CAL) licensing model—that is, organizations must have a license for each running instance of Team Foundation Server and, with certain exceptions, a Team Foundation Server 2010 CAL for each user or device that accesses Team Foundation Server.

### **Obtaining Visual Studio Team Foundation Server 2010**

Visual Studio Team Foundation Server 2010 can be obtained in three ways:

- **MSDN.** Users with an MSDN subscription (specifically, Visual Studio Ultimate with MSDN, Visual Studio Premium with MSDN, Visual Studio Professional with MSDN, and Visual Studio Test Professional with MSDN) can download and deploy one instance of Team Foundation Server 2010 on one device—with similar rights to prior versions of Team Foundation Server and new versions of Team Foundation Server that are released during the duration of the MSDN subscription. With limited exceptions, each user or device that accesses an instance of the server software must have a CAL. (See [Client Licensing Requirements for Team Foundation Server](#) for more information, including exceptions when a CAL is not required.)
- **Volume Licensing.** Team Foundation Server is offered through all Microsoft Volume Licensing programs, with or without Software Assurance. With limited exceptions, each user or device that accesses an instance of the server software must have a CAL (See [Client Licensing Requirements for Team Foundation Server](#) for more information, including exceptions when a CAL is not required).
- **Retail.** In retail channels, a version of Team Foundation Server 2010 is offered that includes a license to deploy a single instance of Team Foundation Server on one server, and allows up to five users to connect to that same instance of the software without requiring a Team Foundation Server 2010 CAL.

- Team Foundation Server 2010—regardless of the acquisition channel—includes a restricted-use license to deploy SQL Server 2008 Standard Edition or SQL Server 2008 R2 Standard Edition with Team Foundation Server.

### **General Licensing Guidance for Team Foundation Server 2010**

- **For each physical server on which you run Team Foundation Server 2010, you must acquire a server license.** The build server and database can be run on separate physical servers under the same Team Foundation Server 2010 server license. The Team Foundation Server 2010 server license can be obtained three different ways (see [Obtaining Visual Studio Team Foundation Server 2010](#)).
- **The operating system(s) running Team Foundation Server 2010 and its build server must be licensed separately.** Team Foundation Server 2010 can run on Windows 7, Windows Vista, Windows Server 2008, Windows Server 2008 R2, or Windows Server 2003. The operating system(s) must be licensed separately, even when use of Team Foundation Server is licensed as part of an MSDN subscription. For Windows Server-based deployments where Windows Server is licensed on a Server/CAL basis, each user or device that accesses Team Foundation Server data (on a read or write basis) must also have a Windows Server CAL.
- **One instance of Microsoft SQL Server 2008 Standard Edition or SQL Server 2008 R2 Standard Edition can be used as the Team Foundation Server 2010 database.** Team Foundation Server 2010 uses Microsoft SQL Server 2008 or SQL Server 2008 R2 as its data repository and provides the right to deploy one instance of either SQL Server 2008 Standard Edition or SQL Server 2008 R2 Standard Edition per Team Foundation Server 2010 server license. This instance of SQL Server can only be used by Team Foundation Server—not for any other purposes. The operating system running the Team Foundation Server database must be licensed separately.
- **Other databases can be used for Team Foundation Server 2010, but must be licensed separately.** If you wish to use a different edition of SQL Server (such as Enterprise or Datacenter) as the Team Foundation Server 2010 database, then you must acquire that license separately.
- **SQL Server 2008 or SQL Server 2008 R2 Reporting Services can be accessed without a SQL Server CAL when used solely for Team Foundation Server 2010.** Normally, SQL Server Reporting Services require a separate SQL Server CAL for access, but access to Team

Foundation Server 2010 reports are allowed without a SQL Server CAL, though a Team Foundation Server CAL is still required. If a different SQL Server database is used, such as SQL Server 2008 R2 Enterprise, then SQL Server CALs are required.

### **Server Licensing Requirements for Team Foundation Server**

For each Team Foundation Server license you acquire, you can run one instance of the server software in one physical or virtual operating system environment. Before you run the software, you must assign the Team Foundation Server license to one of your servers.

#### **Reassignment of the Server License**

The Team Foundation Server 2010 license can be reassigned to another server, but not within 90 days of the last assignment. However, in the event of a permanent hardware failure, it can be reassigned sooner.

#### **Downgrade rights**

Microsoft provides downgrade rights for Visual Studio Team Foundation Server 2010 licensed through Volume Licensing, but not for retail purchases.

### **Accessing Team Foundation Server**

The Team Foundation Server 2010 data can be accessed in several ways, including:

- **Visual Studio Team Explorer 2010**, which is included with Visual Studio 2010 Ultimate, Visual Studio 2010 Premium, Visual Studio 2010 Professional, and Visual Studio Test Professional 2010, and available for download to the general public. Team Explorer also can be installed as a standalone client, and on as many physical devices as you like.
- **Visual Studio Team Web Access 2010**, which is a browser-based version of the Team Explorer client.
- **Microsoft Office Excel<sup>®</sup> or Microsoft Office Project**, which can access Team Foundation Server using add-ins for those programs that are provided with Team Explorer.
- **Microsoft Expression Blend<sup>™</sup> 3**, which can access Team Foundation Server without requiring Team Explorer.
- **Microsoft Expression Studio 4 (all editions)**, which can access Team Foundation Server without requiring Team Explorer.
- **Programmatically**, as enabled through the Team Foundation Server 2010 application programming interfaces (APIs) or by other means.

No matter which method you use to access Team Foundation Server, you must always have a license for the client (see [Client Licensing Requirements for Team Foundation Server](#)).

## Client Licensing Requirements for Team Foundation Server

With certain exceptions (see [Client Access License Exception for Certain Work Items](#)), a client license is required to access Team Foundation Server and Team Foundation Server data. These licenses can be in the form of:

- A **Client Access License (CAL)**, which enables a single user (in the case of the User CAL) or device (for a Device CAL) within an organization to access all instances of Team Foundation Server running within that same organization.
- An **External Connector License**, which permits any number of *external* users to access one specified instance of Team Foundation Server running within an organization.

Licensing requirements for the CAL and External Connector are described in greater detail in the remainder of this section.

### Client Access Licenses

A CAL entitles one user or device to access any number of licensed instances of Team Foundation Server running within an organization.

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

- Directly write data to Team Foundation Server.
- Indirectly write data to Team Foundation Server through another software application or device (see [Multiplexing and Pooling Do Not Reduce the Need for CALs](#)).

A CAL is not required for users who:

- Access Team Foundation Server only for purposes of entering defects or enhancement requests (see [Client Access License Exception for Certain Work Items](#)).
- Receive Team Foundation Server reports through non-automated processes, such as from another team member who pulls the report and then sends it via e-mail, and do not directly or indirectly access the server to refresh, create, or update data.
- View static data that has been manually distributed outside of Team Foundation Server.

In addition, a Team Foundation Server CAL is not required for:

- Any device running a licensed copy of Team Foundation Server or an agent included with Team Foundation Server.
- Up to two devices or users that only access Team Foundation Server for purposes of system administration, such as creating Team Projects or Project Collections.
- Up to five users when Team Foundation Server is purchased through the retail channel (as described above under *Obtaining Visual Studio Team Foundation Server 2010*). However, a CAL is required for the 6<sup>th</sup> user and any subsequent user.
- Interacting with a server running Team Foundation Server, but not interacting with Team Foundation Server itself or its data.

#### Obtaining a CAL

Only Visual Studio 2010 Ultimate with MSDN, Visual Studio 2010 Premium with MSDN, Visual Studio 2010 Professional with MSDN, and Visual Studio Test Professional 2010 with MSDN subscriptions include a Visual Studio Team Foundation Server 2010 User CAL. CALs must be acquired separately for all others using Team Foundation Server, including those with a Visual Studio 2010 individual development tool without MSDN.

*(In the Visual Studio 2008 product line, a Team Foundation Server 2008 User CAL was provided with the Visual Studio Team System individual development tools—Architecture Edition, Database Edition, Development Edition, Test Edition, and Team Suite—whether or not these were licensed with MSDN Premium. This CAL does not entitle the user to access Team Foundation Server 2010.)*

#### Choosing between User CALs and Device CALs

Organizations may choose to purchase *User CALs* or *Device CALs*, or a combination of both. User CALs may be appropriate when one user accesses Team Foundation Server from multiple devices or locations; device CALs are typically used when multiple individuals share a single device to access Team Foundation Server. Although a Device CAL permits multiple users on a single device, it may only be used by a single user at a time.

**Example:** 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 use these machines, as each Device CAL allows any number of users to access the server software from a single device.

### External Users

A CAL is tied to a user or device *and* an organization—that is, one CAL entitles a single user or device within an organization to access one or more instances of Team Foundation Server within that same organization. This defines a typical *internal* user or device. However, the same CAL does not entitle that user or device to access instances of Team Foundation Server outside of the organization that acquired the CAL.

If an organization wants to provide external users with access to a specific Team Foundation Server, then this organization must purchase CALs for each of those users or an External Connector License to cover those users. External users are defined as users that are not employees of the organization or its affiliates, and are not employees of the organization's or its affiliates' *onsite* contractors or agents. A CAL is not required for external users to enter defects or enhancement requests (see [Client Access License Exception for Certain Work Items](#))

**Example:** Company A hires an external consultant, who works offsite and already has a Team Foundation Server CAL to access Team Foundation Server running within his own organization (Company B). For the project the consultant is working on at Company A, all the project assets are maintained using Team Foundation Server running at Company A. Because the consultant's CAL to access Team Foundation Server is tied to Company B, it cannot be used to access Team Foundation Server running within Company A. Instead, Company A must purchase an additional CAL to cover access to its Team Foundation Server implementation for the consultant who works for Company B.

### Team Foundation Server 2010 CALs under Software Assurance

As is standard with Software Assurance, if you had a Visual Studio Team System 2008 Team Foundation Server CAL that was under Software Assurance as of the availability of Visual Studio Team Foundation Server 2010 in Volume Licensing, then your CAL becomes a Visual Studio Team Foundation Server 2010 CAL; otherwise, you are required to purchase a Visual Studio Team Foundation Server 2010 CAL to access Visual Studio Team Foundation Server 2010.

### Downgrade Rights for Team Foundation Server CALs

Team Foundation Server CALs provide the right to access the named version and earlier versions of Team Foundation Server. For rights to access later versions of Team Foundation Server, you must obtain new CALs or be covered

under Software Assurance for your CALs at the time the new version of Team Foundation Server is released, as discussed above.

**Example:** A Visual Studio Team Foundation Server 2010 CAL entitles a user or device to access data in Visual Studio 2005 Team Foundation Server, Visual Studio Team System 2008 Team Foundation Server, and Visual Studio Team Foundation Server 2010. A Visual Studio Team System 2008 Team Foundation Server CAL enables the user or device to access data in Visual Studio 2005 Team Foundation Server and Visual Studio Team System 2008 Team Foundation Server, but does not cover access to data in Visual Studio Team Foundation Server 2010.

### **External Connector License**

An **External Connector License** allows any number of *external users* to access and use one licensed instance of Team Foundation Server running within an organization. External users are defined as users that are not employees of the organization or its affiliates, nor are they employees of the organization's or its affiliates' onsite contractors or agents. An External Connector License is not required for external users to enter defects and enhancement requests (see [Client Access License Exception for Certain Work Items](#))

**Example:** Company A hires an off-shore agency (Company B) to assist with software development, and Company B has 200 developers working on the project. All of the project assets are maintained using Team Foundation Server within Company A. Rather than Company A obtaining 200 CALs to cover Company B's 200 developers, Company A buys an External Connector License, which enables an unlimited number of external users to access a single instance of Team Foundation Server.

### **Client Access License Exception for Certain Work Items**

A user does not need a CAL or External Connector License to create new work items or to update work items that that same user has created. This exception applies only to work items related to defect filing or enhancement requests. However, a CAL is required when a user views or modifies a work item created by another user or interacts with Team Foundation Server in any other way.

(Note: For customers who licensed Team Foundation Server 2005 without Software Assurance, a CAL or External Connector License is required for all users creating or updating work items. It is allowed to purchase 2010 CALs or External Connector Licenses for this purpose, as 2005 versions may not be available.)

### **Multiplexing and Pooling Do Not Reduce the Need for CALs**

Hardware and software that reduce the number of users or devices that directly access Team Foundation Server (sometimes referred to as “multiplexing” or “pooling”) do not reduce the number of Team Foundation Server CALs that are required. End users or devices that access Team Foundation Server in any way—other than the [Client Access License Exception for Certain Work Items](#) exception noted above—are required to have the appropriate licenses, regardless of whether they are using a direct or indirect connection to the software.

**Example 1:** An organization implements an intranet Web site that connects to Team Foundation Server in a way that enables users to add work items, resolve bugs, or trigger builds through the Web site. Even though only one device (the Web server) is directly connecting to Team Foundation Server, each person *who uses the Web site to access Team Foundation Server* for purposes other than entering defects and enhancement requests must have a CAL or be covered under an External Connector License. (A device CAL may not be used for the Web server because the Device CAL only supports one user logged-into the specified device at any given time.) A CAL is not required for accessing a second Web site that runs on the same physical Web server but does not access Team Foundation Server.

**Example 2:** Multiple people simultaneously remote into a server running Terminal Services to access a development environment. Even though those multiple users are “sharing” one device, each user must have a CAL or be covered under an External Connector License. (A device CAL may not be used because the Device CAL only supports one user logged-into the specified device at any given time.)

### **Visual Studio Team Foundation Server 2010 and Project Server Integration Feature Pack**

Visual Studio Ultimate with MSDN subscribers are licensed for one instance of the Visual Studio Team Foundation Server 2010 and Project Server Integration Feature Pack for production use. The software can be installed by another person, and any licensed user of Team Foundation Server and Project Server can benefit from the Feature Pack functionality.

## Deployment Options

Companies can take advantage of the inherent flexibility and scalability of Team Foundation Server to support development teams of all sizes. For example, Team Foundation Server can be deployed on a desktop system, on a single server, or in a two-tier configuration. Regardless of which approach is used, Team Foundation Server requires an operating system and a database, each of which have their own licensing implications.

### **Multi-Server (Two-Tier) Deployment**

You can deploy Team Foundation Server 2010 in a two-tier configuration, where one tier hosts Team Foundation Server and the other tier hosts the SQL Server back-end. As outlined above, the operating system for each tier must be licensed separately, and one instance of SQL Server 2008 Standard Edition or SQL Server 2008 R2 Standard Edition can be deployed for each license of Team Foundation Server that you acquire.

**Example:** An organization deploys Team Foundation Server 2010 to one server running Windows Server 2008 R2 Enterprise, and the corresponding SQL Server 2008 Standard Edition database on a separate instance of Windows Server 2008 R2 Enterprise. In this case, only one Team Foundation Server 2010 server license is in use (comprising the Team Foundation Server and the SQL Server data tier collectively), but two server licenses of Windows Server 2008 R2 Enterprise are required. Team Foundation Server Client Access Licenses may be needed.

When deployed in a two-tier environment, you can increase reliability by maintaining a second application-tier server in a warm or cold standby mode. In warm standby mode, the failover machine is running but a system administrator manually activates the failover functionality. In a cold standby setup, the failover system is usually off until an administrator turns it on and activates its failover functionality. Organizations considering warm or cold standby scenarios may want to consider a load-balanced application tier instead, with both servers in an active role by default.

You can increase the availability of Team Foundation Server in a two-tier configuration by using SQL Server clustering on the data tier—in this case comprised of two servers. Supported in SQL Server 2008 Standard Edition and higher, clustering provides high availability by combining several physical SQL Server instances into one virtual instance. In a clustered, two-server data tier configuration, Windows Server and SQL Server 2008 licenses are required for each server but no *additional* Team Foundation Server CALs are required. Each server in the cluster running SQL Server 2008 Standard Edition counts as a separate instance of SQL Server, so you need to have enough Team

Foundation Server 2010 licenses to cover the number of instances, or acquire licenses for SQL Server separately.

### **Visual Studio Team Project Portal**

Visual Studio team project portal (a SharePoint site that is created along with each new Team Project) uses either SharePoint Foundation 2010 or Windows SharePoint Services, the use of which is covered under a Windows Server license. Since the Windows Server used to run Team Foundation Server must be acquired separately (this use is not included with MSDN subscriptions), this use is already covered.

As an alternative, organizations may choose to host team project portals on Microsoft Office SharePoint Server 2007 or SharePoint Server 2010, which must be licensed separately. This use of SharePoint Server is not licensed under MSDN subscriptions. If an organization chooses to implement this scenario *and* take advantage of Excel Services, an Office SharePoint Server 2007 or SharePoint Server 2010 eCAL is also required.

### **Build Server**

Build automation functionality in Team Foundation Server enables the software to run automated builds on the same server or a separate system, along with the ability to run quality or performance tests as part of the build process. Implementing a “build server” is accomplished using the build agent which is included with Team Foundation Server 2010. If the build server is separate from the server running Team Foundation Server, no Team Foundation Server CAL is required for the build server.

### **CAL Requirements for Builds**

Users who merely execute and review builds are only required to have a Team Foundation Server CAL; however, users who author tests or other types of validation and include them as part of a build must be licensed for the appropriate Visual Studio 2010 individual development tool. Table 1 describes licensing implications for some common tasks related to defining and running builds.

Team Member Action	License Required for Team Member
Developer checks-in source code, initiates a build, and/or reviews results of a build.	Team Foundation Sever CAL required.
Developer defines a build to include unit tests.	Visual Studio 2010 Professional, Premium, or Ultimate is required.
Developer defines a build to include any of: <ul style="list-style-type: none"> <li>• Code coverage</li> <li>• Code analysis</li> <li>• Coded UI, generic, and database unit tests</li> </ul>	Visual Studio 2010 Premium or Ultimate is required.
Developer defines a build to include any of: <ul style="list-style-type: none"> <li>• Architectural tests (e.g. Layer diagram validation)</li> <li>• Web testing</li> <li>• Load testing</li> </ul>	Visual Studio 2010 Ultimate is required.

**Table 1. Example Build Licensing Implications**

## LAB MANAGEMENT

Microsoft's Visual Studio Lab Management solution extends the existing Visual Studio Application Lifecycle Management platform with integrated Hyper-V based virtual machine management. Lab Management automates complex build-deploy-test workflows to optimize the build process, decrease risk and accelerate time to market. It helps reduce development and testing costs associated with setup, tear down and restoration of virtual environments to a known state. Lab Management streamlines the collaboration between development, QA and operations to help achieve a higher ROI and realize the benefits of Microsoft's entire ALM solution.

Learn more about Visual Studio 2010 Lab Management functionality: <http://go.microsoft.com/fwlink/?LinkId=198956>

### Lab Management Components

Different pieces of software work in harmony across multiple machines to enable the Lab Management functionality. A typical configuration includes:

1. **Virtual Machine Host:**
  - a. Operating system: Windows Server 2008 R2
  - b. Other software: System Center Virtual Machine Manager 2008 R2
  - c. On the virtual machines: Visual Studio Lab Agent 2010 (part of [Visual Studio Agents 2010](#))
2. **Team Foundation Server:**
  - a. Operating system: Windows Server 2008 R2
  - b. Other software: Visual Studio Team Foundation Server 2010, plus a [patch to enable Lab Management integration](#); SQL Server 2008 Standard Edition or SQL Server 2008 R2 Standard Edition
3. **Client:**
  - a. Operating system: Windows 7 or other Microsoft operating system capable of running the Visual Studio software
  - b. Other software: Visual Studio 2010 Ultimate or Visual Studio Test Professional 2010, plus a patch to enable Lab Management integration

While it is possible to consolidate the Virtual Machine Host and the Team Foundation Server, this may not be ideal in terms of performance. It may also be preferable to deploy Team Foundation Server in multiple tiers (see [Multi-Server \(Two-Tier\) Deployment](#)).

## Lab Management Licensing

To utilize the Lab Management functionality in Visual Studio 2010, you must acquire licenses for the following:

1. Each person using Microsoft Test Manager 2010 to configure and manage the lab environment must be licensed for either **Visual Studio 2010 Ultimate with MSDN** or **Visual Studio Test Professional 2010 with MSDN**, depending on the product they're using. Microsoft Test Manager is installed with Visual Studio Test Professional 2010 and with Visual Studio 2010 Ultimate. Interacting with the Visual Studio Lab Agent 2010 software running on the virtual machines (which is done through Microsoft Test Manager 2010 and uses Microsoft System Center Virtual Machine Manager 2008 R2) is also licensed under Visual Studio 2010 Ultimate with MSDN or Visual Studio Test Professional with MSDN.
2. **The operating system(s) running Team Foundation Server.** Use of Team Foundation Server 2010 (which includes use of SQL Server 2008 Standard or SQL Server 2008 R2 Standard) is provided to certain MSDN subscribers, including those at the Test Professional and Ultimate levels. (See [Visual Studio Team Foundation Server 2010 Licensing](#) for more details, including details on [Client Licensing Requirements for Team Foundation Server](#).) However, the operating system(s) used to run Team Foundation Server, including the server, the build server, and the database—which can each be run on a separate operating system—must always be acquired separately.
3. Each person accessing the Virtual Machine Host (or accessing a virtual machine on that host) must have an **MSDN subscription** that contains the software they are using to develop or test the application. When these people do not need to create the lab environments or interact with the Visual Studio Lab Agent 2010 software running on the virtual machines (both of which can only be done using Visual Studio 2010 Ultimate or Visual Studio Test Professional 2010), then a lower-level MSDN subscription may be sufficient. The host operating system for the Virtual Machine Host, Windows Server 2008 R2, does not need to be licensed separately as long as the software running on this host is only used by MSDN subscribers for development and testing.

## LOAD TESTING

### Unlimited Load Testing for Visual Studio Ultimate with MSDN Subscribers

Visual Studio Ultimate with MSDN subscribers are able to perform unlimited load testing using a key provided via MSDN Subscriber Downloads. It is not necessary for Visual Studio Ultimate with MSDN subscribers to acquire the Visual Studio Load Test Virtual User Pack 2010.

### Load Testing for Other Visual Studio Ultimate Customers

With Visual Studio 2010 Ultimate (without MSDN, or where the MSDN subscription term has expired), the licensed user can perform load test runs that simulate up to 250 users on the same system where Visual Studio 2010 Ultimate is installed, without the need to install Visual Studio Agents 2010.

To simulate loads greater than 250 users, the licensed user of Visual Studio 2010 Ultimate must use Visual Studio Load Test Virtual User Pack 2010 (sold separately). Each Virtual User Pack 2010 permits the simulation of up to 1,000 users, and multiple packs can be used together to create higher amount of load. The 250-user load limit provided locally with Visual Studio 2010 Ultimate is not added to these packs, so using one pack provides a load of 1,000 users, not 1,250.

Note: When using Visual Studio Load Test Virtual User Pack 2010, the most common scenario is to deploy the test controller on one system and one or more test agents on additional systems. The test controller and test agent are both included in Visual Studio Agents 2010 and may be deployed to as many machines as necessary.

**Example:** An organization wants to perform a load test that simulates 5,000 simultaneous users. To do this, the organization deploys a test controller and as many test agents as desired. The organization must have five Visual Studio Load Test Virtual User Pack 2010 licenses, each of which enables 1,000 virtual users. The organization also will need Visual Studio 2010 Ultimate to create, edit, and manage the Web tests and load scenarios.

### Downgrade Rights for Visual Studio 2010 Load Test Virtual User Pack

For every 5 licenses of Visual Studio Load Test Virtual User Pack 2010 acquired through Microsoft Volume Licensing, the customer may instead use one processor license for Visual Studio Team System 2008 Test Load Agent. Retail purchases do not have this downgrade right. The customer's right to use

Visual Studio Team System 2008 Test Load Agent software under this grant is also subject to the terms and conditions of its Volume Licensing Agreement and the product use rights for Visual Studio Team System 2008 Test Load Agent.

**Example 1:** If the customer wants to use 3 copies of Visual Studio Team System 2008 Test Load Agent, they will need to own at least 15 licenses of Visual Studio Load Test Virtual User Pack 2010.

**Example 2:** If the customer owns 13 licenses of Visual Studio Load Test Virtual User Pack 2010, they have rights to use up to 2 copies of Visual Studio Team System 2008 Test Load Agent.

#### **Reassignment of Visual Studio Load Test Virtual User Packs**

The server on which the Visual Studio Test Controller 2010 software is installed is the licensed server. Visual Studio Load Test Virtual User Pack 2010 licenses can be reassigned to another server, but not within 90 days of the last assignment. However, in the event of a permanent hardware failure, the licenses can be reassigned sooner.

## **ADDITIONAL PRODUCTS**

### **Visual Studio Agents 2010**

Visual Studio Agents 2010 is available for [public download](#) and includes Test Controller 2010, Test Agent 2010 and Lab Agent 2010.

**Test Controller 2010** and **Test Agent 2010** collectively enable scale-out load generation (load testing is only available with Visual Studio 2010 Ultimate), distributed data collection, and distributed test execution. Each can be used on any number of machines by licensed users of:

- Visual Studio 2010 Ultimate
- Visual Studio 2010 Premium
- Visual Studio Test Professional 2010

**Lab Agent 2010** manages testing, workflow and network isolation for virtual machines managed using the [Lab Management](#) solution in Visual Studio 2010. This can be used on any number of machines by licensed users of:

- Visual Studio 2010 Ultimate
- Visual Studio Test Professional 2010

## **CONCLUSION**

Microsoft Visual Studio 2010 provides a comprehensive, highly flexible set of application lifecycle management (ALM) tools. The licensing terms for Visual Studio 2010 are designed to help with flexibility in deployment for organizations and development teams of all shapes and sizes.

This document attempts to provide an overview of the Visual Studio 2010 product line and the licensing requirements for those products in common deployment scenarios. For a definitive guide to licensing terms and conditions, see the [Microsoft Licensing Product Use Rights \(PUR\)](#) and applicable licensing agreements.

### **For More Information**

For more information on Visual Studio 2010, go to:

[www.microsoft.com/visualstudio](http://www.microsoft.com/visualstudio)

For more information MSDN subscriptions, go to:

[msdn.microsoft.com/subscriptions](http://msdn.microsoft.com/subscriptions)

Compare MSDN subscription options and benefits:

[msdn.microsoft.com/subscriptions/subscriptionschart.aspx](http://msdn.microsoft.com/subscriptions/subscriptionschart.aspx)

For more information on Product Use Rights, go to:

[www.microsoftvolumelicensing.com/userights](http://www.microsoftvolumelicensing.com/userights)

### **Evaluating Visual Studio 2010 Products**

90-day trial versions of Visual Studio 2010 products can be downloaded at [www.microsoft.com/visualstudio](http://www.microsoft.com/visualstudio). Microsoft Volume Licensing customers under a Select or Enterprise Agreement can download, install, and evaluate any of the Visual Studio 2010 products for 60 days before requiring a purchase.

## APPENDIX

### Historical MSDN Subscription Transitions

At certain releases of Visual Studio, the MSDN subscription offerings have changed and existing subscribers at that point have been converted to the new subscription level, often providing significantly improved capabilities and benefits.

#### Visual Studio 2010

Customers who had active Visual Studio with MSDN Premium subscriptions (Software Assurance coverage for customers with Volume Licensing agreements) when Visual Studio 2010 with MSDN launched in April 2010 were transitioned automatically to the Visual Studio 2010 offerings following the logic below.

2008 Subscription Levels:	Converted to these 2010 Subscription Levels in April 2010:
Visual Studio Team System 2008 Team Suite with MSDN Premium	Visual Studio 2010 Ultimate with MSDN
Visual Studio Team System 2008 Architecture Edition with MSDN Premium	Visual Studio 2010 Ultimate with MSDN
Visual Studio Team System 2008 Development Edition with MSDN Premium	Visual Studio 2010 Ultimate with MSDN
Visual Studio Team System 2008 Test Edition with MSDN Premium	Visual Studio 2010 Ultimate with MSDN
Visual Studio Team System 2008 Database Edition with MSDN Premium	Visual Studio 2010 Ultimate with MSDN
Visual Studio 2008 Professional Edition with MSDN Premium	Visual Studio 2010 Premium with MSDN
Visual Studio 2008 Professional Edition with MSDN Professional	Visual Studio 2010 Professional with MSDN
MSDN Operating Systems	MSDN Operating Systems

This transition was referred to as “The Ultimate Offer.” Additional details can be found here: <http://msdn.microsoft.com/subscriptions/ff625864.aspx>

#### Visual Studio 2008

The Visual Studio 2008 product line did not have any special transitions, so the 2005 subscriptions mapped directly to their 2008 successors.

Visual Studio 2005	Visual Studio 2008
Visual Studio 2005 Team System Team Suite with MSDN Premium	Visual Studio Team System 2008 Team Suite with MSDN Premium
Visual Studio 2005 Team Edition for Software Architects with MSDN Premium	Visual Studio Team System 2008 Architecture Edition with MSDN Premium
Visual Studio 2005 Team Edition for Software Developers with MSDN Premium	Visual Studio Team System 2008 Development Edition with MSDN Premium
Visual Studio 2005 Team Edition for Testers with MSDN Premium	Visual Studio Team System 2008 Test Edition with MSDN Premium
Visual Studio 2005 Team Edition for Database Professionals with MSDN Premium	Visual Studio Team System 2008 Database Edition with MSDN Premium
Visual Studio 2005 Professional Edition with MSDN Premium	Visual Studio 2008 Professional Edition with MSDN Premium
Visual Studio 2005 Professional Edition with MSDN Professional	Visual Studio 2008 Professional Edition with MSDN Professional
MSDN Operating Systems	MSDN Operating Systems

#### Visual Studio 2005

Visual Studio 2005 was a significant transition, including the launch of Microsoft’s ALM offerings, branded Visual Studio Team System.

Pre-Visual Studio 2005	Transition Path

MSDN Subscription Level	
MSDN Universal	Customers had the choice of Visual Studio 2005 Team Edition role: <ul style="list-style-type: none"> <li>• Visual Studio 2005 Team Edition for Software Architects with MSDN Premium</li> <li>• Visual Studio 2005 Team Edition for Software Developers with MSDN Premium</li> <li>• Visual Studio 2005 Team Edition for Testers with MSDN Premium</li> <li>• Visual Studio 2005 Team Edition for Database Professionals with MSDN Premium</li> </ul>
MSDN Enterprise	All active MSDN Enterprise subscribers were automatically transitioned to Visual Studio 2005 Team Edition for Software Developers with MSDN Premium.
MSDN Professional	All active MSDN Professional subscribers were automatically transitioned to Visual Studio 2005 Professional Edition with MSDN Professional.

## Downgrade Products

### Visual Studio 2010 Professional

Volume license customers who acquire a license for Visual Studio 2010 Professional may use any version of Visual Studio Professional, Visual Studio Tools for Office, Visual J++ Professional, Visual Basic Professional, Visual C++ Professional or Visual Interdev.

### Visual Studio 2010 Premium

Volume license customers who acquire a license for Visual Studio 2010 Premium may use any version of Visual Studio Team System Development Edition, Visual Studio Team System Database Edition, Visual Studio Professional, Visual Studio Tools for Office, Visual J++ Professional, Visual Basic Professional, Visual C++ Professional or Visual Interdev.

### Visual Studio 2010 Ultimate

Volume license customers who acquire a license for Visual Studio 2010 Ultimate may use any version of Visual Studio Team System Team Suite, Visual Studio Team System Architecture Edition, Visual Studio Team System Development Edition, Visual Studio Team System Test Edition, Visual Studio Team System Database Edition, Visual Studio Enterprise, Visual Studio Professional, Visual J++, Visual Basic, Visual C++, or Visual Interdev.

## Licensing White Paper Change Log

Release Date	Scope of Changes
August 2011	<ul style="list-style-type: none"> <li>• Addition of option to use SQL Server 2008 R2 Standard Edition with Visual Studio Team Foundation Server 2010.</li> <li>• Launch of Visual Studio LightSwitch 2011</li> </ul>
March 2011	<ul style="list-style-type: none"> <li>• Introduction of unlimited load testing for Visual Studio Ultimate for MSDN</li> </ul>

	<p>subscribers.</p> <ul style="list-style-type: none"><li>• Introduction of Visual Studio Team Foundation Server 2010 and Project Server Integration Feature Pack.</li><li>• Introduction of full Visual Studio product line via the Enrollment for Education Solutions in the Campus Agreement program in Microsoft Volume Licensing.</li><li>• Addition of Windows on the Developer Desktop section.</li><li>• Addition of Software Activation section.</li><li>• Clarifications in General Licensing Guidance for Team Foundation Server 2010 section.</li><li>• Clarifications on Team Foundation Server CALs requirements, including the CAL Exception for Certain Work Items.</li><li>• Clarification that a Project Server CAL is included with production use of Project Professional 2010.</li><li>• Clarification on software use rights for MSDN subscriptions provided via the Microsoft Partner Network.</li><li>• Minor clarification in Distribution of MSDN Software as Part of an Installation Image.</li><li>• Minor clarification in Assigning MSDN Subscriptions to External Contractors example.</li></ul>
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