Essentials of Administering Team Foundation Server 2015

Using TFS 2015 to accelerate your software development

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About the Author

Gary Gauvin is currently the Director of Application Lifecycle Management at CD-adapco, the leading provider of CFD (computational fluid dynamics) software. Gauvin has held senior positions in many of nation's top companies, as well as the consulting firm he founded.

Gauvin has worked in software development for over 20 years, spanning many industries and disciplines. He has been a Microsoft MVP in the ALM specialty, working closely with Microsoft on various releases of Team Foundation Server. He has consulted and worked for the nation's top technology companies. Gary lives and works in northern New Hampshire. You can follow his blog at www.theCTO.org. Feel free to connect with him on LinkedIn at www.linkedin.com/in/garypgauvin.

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I would like to thank my family for again putting up with the long hours and short deadlines a book like this requires. I'd also like to thank my co-workers for putting up with my ranting and raving about this book and occasionally pitching in with some editing. Finally, I'd like to thank the Apress team (especially Jim, Melissa, Douglas, and Fabio) for their help with the editing, formatting, and keeping things on track. Without them, this book would have never been completed.

Introduction

Who This Book Is For

The book is written for anyone who wants to get started quickly with Team Foundation Server. While not intended to be an exhaustive deep dive, it will provide the system administrator or development manager with enough detail to begin using TFS in their environment or provide a good jumping-off point for further study, if needed.

What You Will Learn

This book covers the critical as well as the less obvious aspects of managing Microsoft Team Foundation Server 2015 in a variety of development and test environments. Coverage includes basic installation, initial configuration, maintenance, valuable tips, sizing, and performance considerations.

Essentials of Administering Team Foundation Server 2015 explains how TFS can help you incorporate project management, source control, build automation, and testing in your development environment. You'll also learn how to set up TFS to match how you develop software.

The book covers TFS through the whole development process, along with practical advice on how to use its features effectively to get up to speed quickly.

In addition, the author dives into using TFS in your team, covering subjects like setting up accounts for different roles, users, and groups, plus what you need to know about TFS security and running a secure team.

No discussion of a centralized system like TFS would be complete without learning how to back up and restore it. The author covers what you need to know to maintain TFS, including the backup and restore details required to properly plan for disaster recovery.

The book details what you need to know about TFS functionality in creating and setting up collections and projects, how to manage the build process with team build (including setting it up and deploying build server and agents), using templates to speed up the creation of builds, building multiplatform solutions, and testing. It finishes up with a discussion on reporting and hints on additional areas to explore.

CHAPTER 1

Planning for Team Foundation Server

This chapter explores what you need to consider for establishing a solid Team Foundation Server (TFS) environment, including the following:

- General installation requirements
- Accounts and permissions needed
- Correctly sizing the environment
- Supported operating system requirements
- Specific SharePoint requirements
- SQL Server requirements
- Ports required
- Language considerations

Before You Begin

By using Team Foundation Server 2013, teams can enable themselves to get more productive faster and scale beyond a small team into a larger one, without outgrowing the toolset they are on. I am assuming that you have a functioning network and Windows Server installations to cover the infrastructure portions required for the installation. Also, it's probably worth pointing out that this book is based on Team Foundation Server 2013 Update 3, which was released on August 4, 2014. So if you are using a different edition, please make sure that you double-check the requirements for that release before you begin.

Team Foundation Server 2013 Editions

Team Foundation Server 2013 (TFS 2013) is available from a multitude of sources and at many price points, and as soon as I write this, Microsoft will probably add another one. Some popular ways to acquire it are free (Team Foundation Server 2013 Express is free for up to five users), a Microsoft Developer Network (MSDN) subscription, and various Microsoft Volume Licensing programs. If you don't want to host the server-side components within your organization, another alternative is to use Visual Studio Online. Not sure which is right for you? Your best bet is to first download and read the *Visual Studio 2015 and MSDN Licensing White Paper* available at `www.microsoft.com/en-us/download/details.aspx?id=13350`.

TFS Architecture Overview

Since TFS has a lot of moving parts, I thought I'd give you a picture of how it all fits together. Now before I get a lot of hate mail on this, it is a simplified chart and I'm likely going to leave off someone's favorite feature. All the big pieces are here though. The purpose is to the give the reader a better idea of how what's being discussed fits in the big TFS picture.

There are also a number of deployment options that will have an effect on the final look of your architecture, such as scaled-out servers and high availability (HA) database options (see Figure 1-1). This should serve as a good general reference, though, as you move through the book.

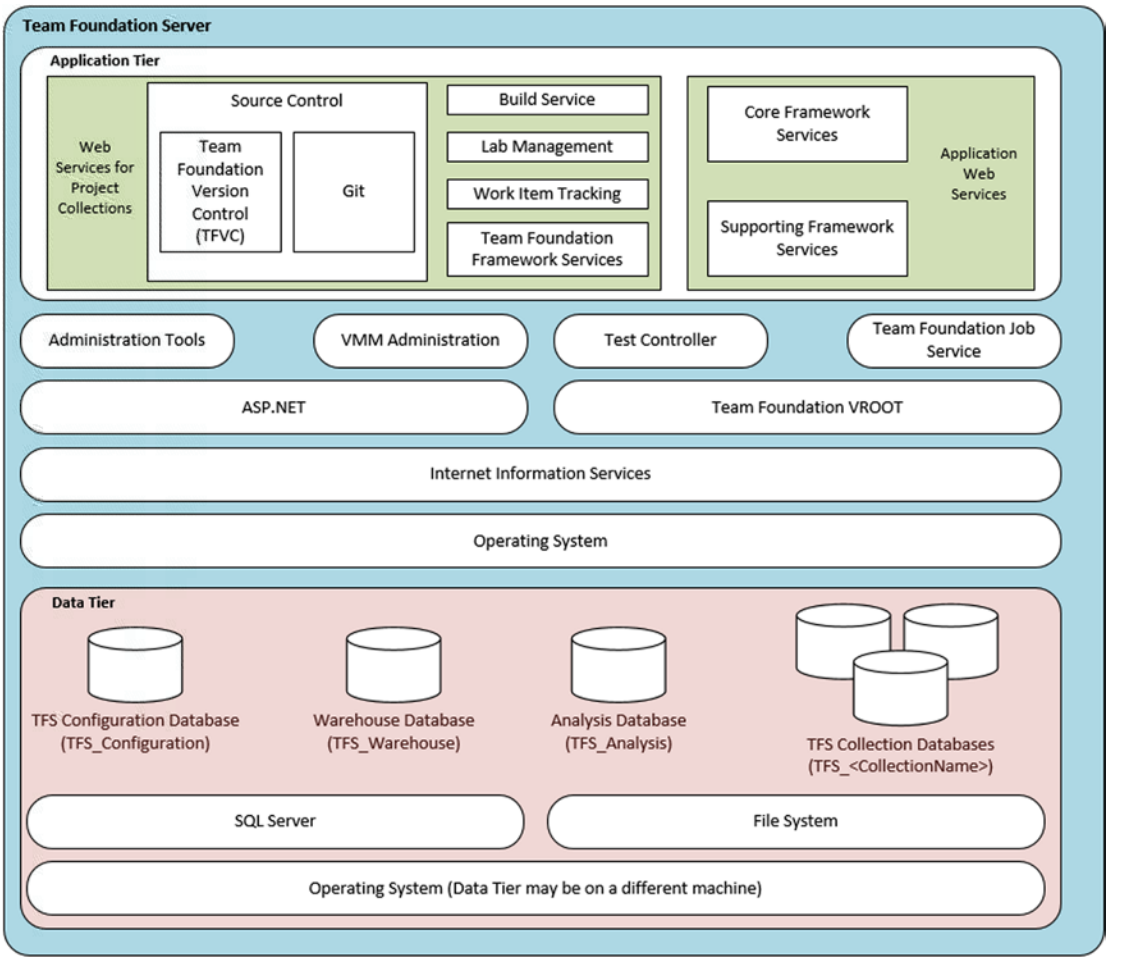

Figure 1-1. *TFS architecture reference*

Installation Considerations

There are a few pieces of information that you need to collect, and a few configuration tasks that you'll need to make sure have been completed properly. Here I'll cover the system requirements and provide a handy checklist that you can use so you aren't hunting around for critical information when you are anxious to begin.

Basic Requirements

One "new" requirement for this release is a 64-bit server operating system (OS). I know this is really not "new" news for everyone, but if you haven't had to install or upgrade an operating system in a while, this may come as a surprise. Also, you may require different hardware to support a 64-bit operating system (check with your hardware manufacturer on this). If this applies to you, now you may have that justification you were looking for on ordering that new server.

You may have had no reason to upgrade your operating system before now, but to run TFS you need to have a 64-bit server. Running TFS brings the perfect justification for upgrading your OS!)

Another question I'm getting these days on just about everything is if this (Team Foundation Server 2015 in this case) will support a Server Core installation. It will not. (More information on the Core Installation Option is at http://technet.microsoft.com/en-us/library/cc771345(v=ws.10).aspx.) Just not enough of what TFS needs with these options.

Installation Checklist

Here is a checklist to make sure that you have the basic information to begin. Please refer back to Table 1-1 in future chapters, because you'll be reusing the information here in most chapters.

Table 1-1. *Team Foundation Server 2015 Installation and Configuration Checklist*

Details	Parameters for Installation
Server names for each server involved: • Team Foundation 2015 (or the old Team Foundation Server if you are upgrading, and the new server) • Active Directory Domain / Domain Controller • SQL Server (if yours is separate) • SQL Reporting Services Server (if yours is separate) • SharePoint Server (if yours is separate) See the "Active Directory" and "Supported Operating System Requirements" sections in this chapter for additional requirements for this environment. If your planned systems don't meet the specifications, go no further until you correct it.	☑ TFS Server ☑ Active Directory Domain ☑ Domain Controller ☑ SQL Server ☑ SQL Reporting Services Server ☑ SharePoint Server

(*continued*)

Table 1-1. (*continued*)

Details	Parameters for Installation
Service account names and login information. You'll want this information handy throughout the tasks in this book. If you are creating these, see the "Accounts and Permissions" section in this chapter as well to make sure that you have the permissions set correctly. In a simple single server environment you may choose to use a single account for this, TFSSERVICE for instance. You will need these basic accounts for installation and operation (see the "Accounts and Permissions" section). A common question I get is, "Do I need to actually name my accounts this?" You don't. But if you do, it will make your life easier since this is how they are referred to in most Microsoft documentation and this book. But if you don't, here is a handy place to list the equivalents: TFSREPORTS – reporting reader account TFSSEVICE – the server service TFSBUILD – for the build service TFSPROXY – for the proxy service And you'll need these for the other supporting software (see the "Accounts and Permissions" section, but these are generally user accounts): WSSSERVICE – for SharePoint SQLSERVICE – for SQL Server	☑ TFSREPORTS ☑ TFSSEVICE ☑ TFSBUILD ☑ TFSPROXY ☑ WSSSERVICE ☑ SQLSERVICE
Visual Studio Team Foundation Server 2015. You'll need this later on during the installation. For now, just locate the Team Foundation Server 2015 DVD or ISO file from MSDN.	☑ Installation Media / ISO

Accounts and Permissions

You will need a number of accounts for installing and running Team Foundation Server. Since the largest number of issues I get questions on end up being permissions related as a root cause, I'm going to suggest that you read this section carefully, without opting for shortcuts. Also, unless you are working on an upgrade where the accounts have been established and working for a while, I'm going to recommend that you establish new accounts and not reuse old ones, especially if this is an enterprise install.

Why you ask? Well, for one thing, people tend to adjust the security settings and permissions of accounts over time either by accident (i.e., having trouble with getting a service to run and giving it Domain Administrator privileges, and then forgetting to set it back), or if you have an IT security group that scans for privileged accounts and scales them back based on the last login date (I worked for a large defense contractor where that was the norm; caused me days of aggravation). You'll avoid that by starting with new accounts.

Also, no section like this would be complete without a disclaimer: these recommendations should fit *most* situations. If you are building a large scaled-out environment in a really security-strict environment, you will likely need to make some additional adjustments to comply with these rules. Also, the user accounts could be domain (recommended) or local accounts. If you are installing a component in a workgroup, you must use local accounts for user accounts, however. The following names are only suggested. There is no real requirement to use a specific name, but if you do not, be sure to list the one you use since I'll be referring to the suggested name from here on out.

Table 1-2 provides the lists of user and service accounts, including descriptions of what they are.

Table 1-2. *TFS Account Permissions*

Where Used	Recommended Name (you will find Microsoft referring to that name)	Permission Requirements	Notes
Installation/ maintenance user account	TFSADMIN	Full System Administrator permissions on the server(s) for the install.	You will likely get some grief if you are in a big IT shop and request this. However, it is definitely recommended to make the install go smoothly.
Reporting	TFSREPORTS	A user account that has the Allow logon locally permission. You will also see this referred to as the Report Reader account since that is what it does. This should *not* be an administrator account.	You will be prompted for this account during the install. You will not be able to specify a built-in account for the report reader account.
Team Foundation Server	TFSSERVICE	Can use a built-in account or a user account. If you use a user account, it must have the logon as a service permission. If a SharePoint site wasn't installed with Team Foundation Server, you need to add TFSSERVICE to the Farm Administrators group for the SharePoint Central Administration site.	*Do not* use the account that you used to install Team Foundation Server as the account for TFSSERVICE. If this installation will use reports, you need to add TFSSERVICE to the Content Manager role on the server that is running SQL Server Reporting Services. This will default in the installation to the Network Service account. This usually works fine.
Team Foundation Build	TFSBUILD	This can be a built-in or a user account. If it's a user account, make sure it has the logon as a service permission.	
Team Foundation Server Proxy	TFSPROXY	This can be a built-in or a user account. If it's a user account, make sure it has the logon as a service permission.	Only used in a Proxy install, but better to have it ready if you decide to deploy this component.
SharePoint products	WSSSERVICE	Needs to be a user account.	If you install Team Foundation Server with the default options, this will be the same as the report reader account. Note: It is also the identity of the application pool for the SharePoint Central Administration site.
SQL Server	SQLSERVICE	This can be a built-in or a user account. If it's a user account, make sure it has the logon as a service permission.	No particular TFS requirements for this account; just make sure SQL Server is functioning normally for the install.

(*continued*)

Table 1-2. (*continued*)

Where Used	Recommended Name (you will find Microsoft referring to that name)	Permission Requirements	Notes
Release Management Server	RMSERVER	Identity used in Internet Information Service (IIS) for the application pool and the Release Management Monitor Windows service.	This will default in the installation to the Network Service account. This usually works fine.
Release Management Server	DEPLOY	This account is used to configure machines in your environment, so it will need whatever permissions are required to do this. Most of the time it will need to be in the Administrators group.	If this account needs to access builds on the network, make sure it has access to the network drop location that you specified in the build.
Release Management Server (connected to TFS)	RMTFS	This is a TFS user that is a member of the Project Collection Administrators group. Set "Make Requests on Behalf of Others" to Allow.	Not sure what this piece is all about yet? Don't worry, we'll hit it again later, and you might not even need it.

Supported Operating System Requirements

If anything, the supported operating systems got tighter this release with the elimination of some platforms. You can use:

Server operating systems (Server Core installations not supported):

- 64-bit versions of Windows Server 2012 R2 (Essentials, Standard, Datacenter)
- 64-bit versions of Windows Server 2012
- 64-bit versions of Windows Server 2008 R2 (Standard, Enterprise, Datacenter)
- Windows Small Business Server 2011 (Standard, Essentials, Premium Add-On)

For the love of sanity, if you choose to go the SBS route, make sure that you calculate your fully configured SBS server with all its components (Exchange, etc.), and then *add* the Team Foundation Server requirements to those. Better yet, use it in your deployment, but not as a single-server TFS solution.

For installations of TFS or SQL Server with Windows Server 2008 R2, you need .NET Framework 3.5 installed. On Windows Server 2008 R2, you can install .NET Framework 3.5 by using the Add Features Wizard from Server Manager.

Supported client operating system requirements:

- Windows 8.1 (Basic, Professional, Enterprise)
- Windows 8
- Windows 7 (Home Premium, Professional, Enterprise, Ultimate, SP1 minimum)

It's best to use a client OS only as a test install for a proof of concept. You will not be able to install SharePoint, Reporting, or TFSProxy. What does this mean for you? No web site to collaborate, no HTML project reports, and you won't be able to proxy source files. Move to a server OS above for any production use. I always find it amazing when I see questions on "performance issues," and then find someone using a client operating system. Also, the "Standard" install isn't supported on a client OS since it installs SharePoint. Have I talked you out of trying to do this on the cheap with a client OS yet? Very good.

Performance and Planning

Nothing gets more hotly contested in systems engineering circles than performance recommendations. The recommendations in Table 1-3 come directly from Microsoft. They are the *minimum*. Take special note of the new hard disk requirements. Also, the numbers do not include recommendations for SharePoint installed on the same server; those recommendations are in the next section. My notes from my personal experience are in a following note.

Table 1-3. *Scaling and Performance Recommendations*

Number of Users	Role	Configuration	CPU	Memory	Hard Disk
Less than 250 users	TFS Server	Single-server (Team Foundation Server and the Database Engine on the same server).	1 single-core processor at 2.13 GHz	2 GB	1 disk at 7.2k rpm (125 GB)
250 to 500 users	TFS Server	Single-server (Team Foundation Server and the Database Engine on the same server).	1 dual-core processor at 2.13 GHz	4 GB	1 disk at 10k rpm (300 GB)
500 to 2,200 users	TFS Server	Dual-server (Team Foundation Server and the Database Engine on **different** servers).	1 dual-core Intel Xeon processor at 2.13 GHz	4 GB	1 disk at 7.2k rpm (500 GB)
	Database Server	This is for the Database Engine portion with 500 to 2,200 users (for preceding configuration).	1 quad-core Intel Xeon processor at 2.33 GHz	8 GB	SAS disk array at 10k rpm (2 TB)
2,200 to 3,600 users	TFS Server	Dual-server (Team Foundation Server and the Database Engine on **different** servers).	1 quad-core Intel Xeon processor at 2.13 GHz	8 GB	1 disk at 7.2k rpm (500 GB)
	Database Server	This row is for the Database Engine with 2,200 to 3,600 users (for preceding configuration). Performance	2 quad-core Intel Xeon processors at 2.33 GHz	16 GB	SAS disk array at 10k rpm (3 TB)