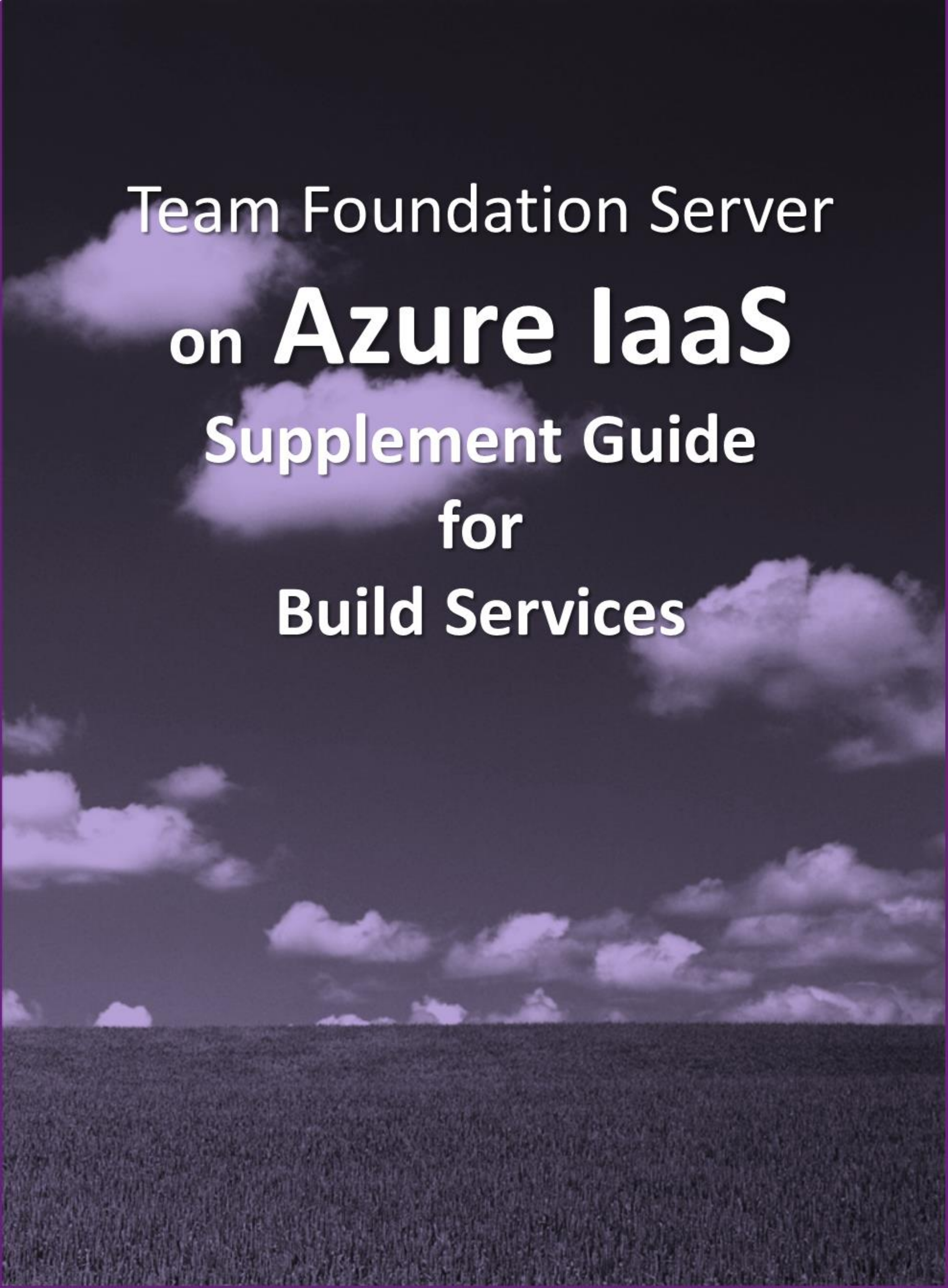
V1.4



Team Foundation Server on Azure IaaS Supplement Guide for Build Services

Visual Studio ALM Rangers

Microsoft Visual Studio

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Extending Build services for the TFS on Azure IaaS environments

Introduction

This addendum is a supplement for the main TFS on Azure IaaS guide, which delivers practical and scenario based guidance for the implementation of Team Foundation Server (TFS) on Azure IaaS.

Context

In this supplement, we touch on build service automation and extending the build services ❶ in the on-premises domain, ❷ the Azure hosted domain and from ❸ outside both domains as shown below.

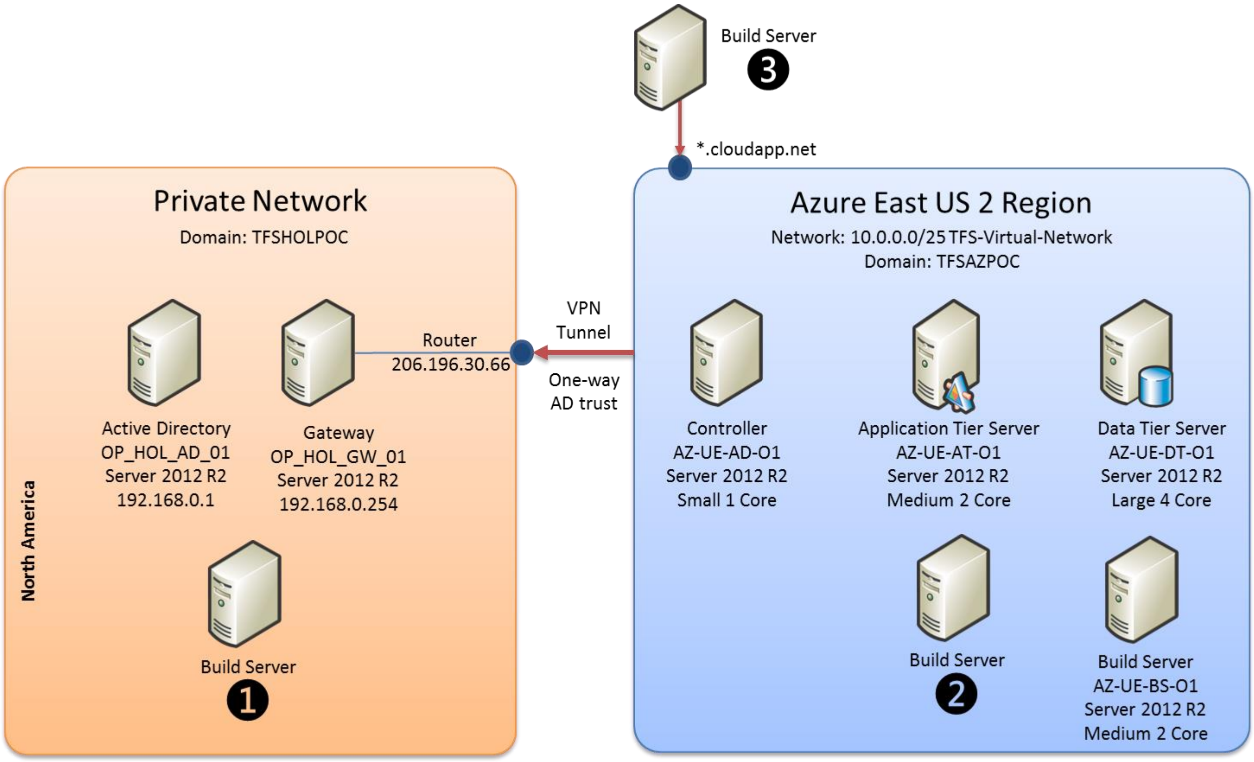


Figure 1 - Extending Build services for the TFS on Azure IaaS environments

NOTE

Use this supplement in conjunction with its companion guides “TFS Planning Guide” and TFS on Azure IaaS”.

What you’ll need

- Windows Azure proof of concept instance as introduced in the main guide

Visual Studio ALM Rangers

The Visual Studio ALM Rangers provide professional guidance, practical experience, and gap-filling solutions to the ALM community. They are a special group with members from the Visual Studio Product group, Microsoft Services, Microsoft Most Valuable Professionals (MVP), and Visual Studio Community Leads. Membership information is available online[1].

Additional ALM Rangers Resources

Understanding the ALM Rangers – http://aka.ms/vsarunderstand

Visual Studio ALM Ranger Solutions – http://aka.ms/vsarsolutions

Scenarios for expanding Build capacity

The Team Foundation Server Build architecture exists of two important components:

- Build Controllers
- Build Agents

A Build Controller is dedicated to a Team Project Collection in Team Foundation Server. Build Controllers orchestrate the builds and dispatch build requests to the Build Agents associated with the controller. The Build Controller is responsible for reporting the status of your build and doing lightweight tasks like determining the builds' name, creating labels in version control, and logging notes.

A Build Controller can only be dedicated to a **single Team Project Collection**, meaning that if you start adding Team Project Collections to your TFS environment, you also need to add additional Build Controllers. Build Controllers are memory intensive but do not require much CPU or hard disk resources. If you have many builds to manage for a single Team Project Collection, you can start adding additional controllers to even the load.

Since the Build Controller distributes resource-intensive work to the Build Agents, this is the place to look if you want to perform more parallel builds or increase overall build performance.

By default, the Team Foundation Server installation wizard configures two build agents on a single machine. This means that those two agents need to share the CPU and memory, both of which process intensive when executing builds.

You can speed up your builds by **scaling-up** or **scaling-out**.

When scaling up, you increase the number of agents running on a single machine. This also means that you need to monitor the CPU and memory load carefully and add additional resources when the Agents do not have enough resources to run builds.

Scaling out involves adding additional machines that each runs its own set of Build Agents. This gives you a more flexible Build environment but also requires extra maintenance since you have more machines.

Off course, you are not limited to one of these scenarios. You can even create a build farm that has sets of controllers and agents all with their own resources and specific goals. Maybe you have a group of agents that run continuous integrations builds that should finish as fast possible. Another group of agents runs scheduled builds that run on a daily or weekly basis to run all possible test scenarios. As long as these builds finish in a couple of hours, they do not need extra resources.

There is one other way that you can use to distribute the load across your agents. By using tags, you can assign keywords to specific agents and then match your builds against those tags. Maybe you have a machine that's specifically configured for building Windows Store apps or some other specific application type like an x86 or x64 machine. The tags you use will of course depend on your specific requirements but it is good to keep them in mind while planning your build farm.

Environment Automation

Running Azure VMs 24x7x365 is feasible, but not cost effective. At the time of writing this guidance, we are investigating the ALM Community solution "idea" TfsPennyPincher and the Microsoft Azure Automation [2] made available on the Microsoft Azure [3] cloud platform. The latter an orchestration feature set similar to what the Service Management Automation (SMA) [4]engine provides for on-premises private cloud resources via the Windows Azure Pack [5] and System Center 2012 R2 Orchestrator [6].

WARNING

This section is "WORK IN PROGRESS" and we will update as we gather feedback from our real-world proof-of-concept (POC) environments.

Useful information to peruse:

- Step-by-Step: Getting Started with NEW Microsoft Azure Automation preview feature [7]
- Azure Automation – Reducing Cost [8]
- Start Windows Azure Virtual Machines on a Schedule [9]

[2] http://azure.microsoft.com/en-us/documentation/services/automation/

[3] http://aka.ms/MicrosoftAzureFreeTrial

[4] http://technet.microsoft.com/en-us/library/dn469258.aspx

[5] http://www.microsoft.com/en-us/server-cloud/products/windows-azure-pack/default.aspx

[6] http://aka.ms/dlscsuite2012

[7] http://blogs.technet.com/b/keithmayer/archive/2014/04/04/step-by-step-getting-started-with-windows-azure-automation.aspx

[8] http://weblogs.asp.net/sfeldman/azure-automation-reducing-cost

[9] http://gallery.technet.microsoft.com/scriptcenter/Start-Windows-Azure-b6c179b6

Extending on-premises build services

Scenarios

You would extend the build servers in your on-premises domain if you need:

- To perform builds for on-premises teams, who may not use or have access to the Azure resources.

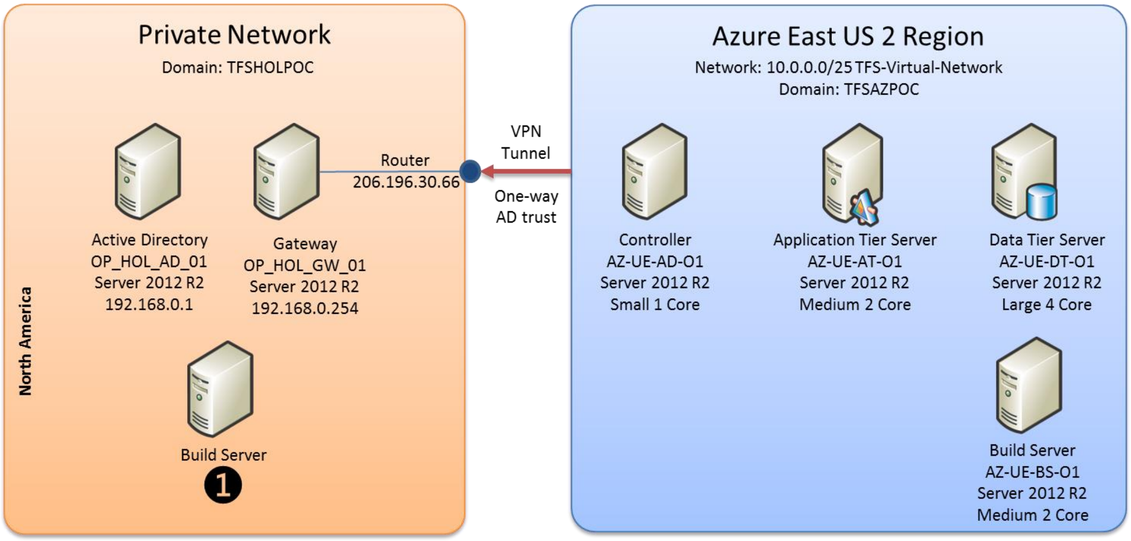


Figure 2 - Extending on-premises build services for the TFS on Azure IaaS environment

Context

To be able to install and execute a Build against Team Foundation Server (TFS) on Azure IaaS, you will need the Build Server installation from TFS, the URL to your TFS team project collection, and the credentials for a user with "Edit collection-level information" permissions. The Project Collection Build Administrators group permissions enable this permission. In addition, TFS must be able to make a TCP connection to port 9191 on the build server, so make sure your firewall configured to accept this connection.

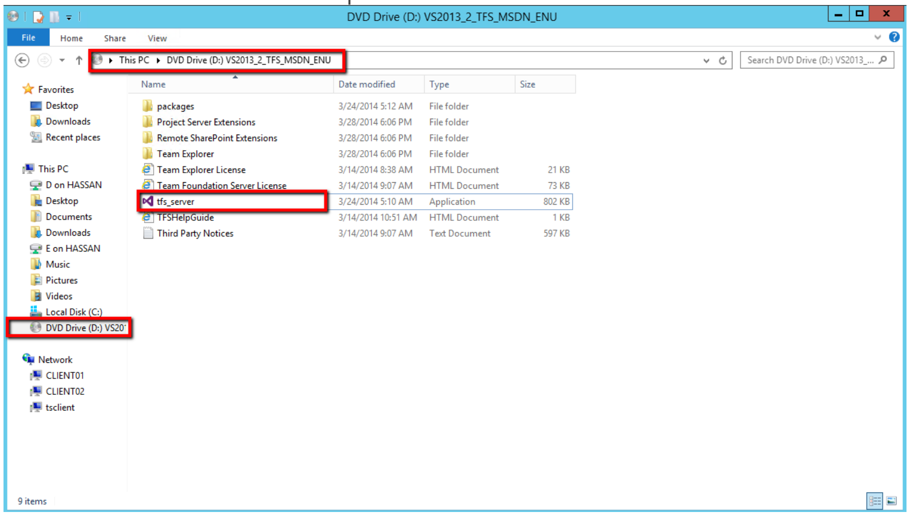
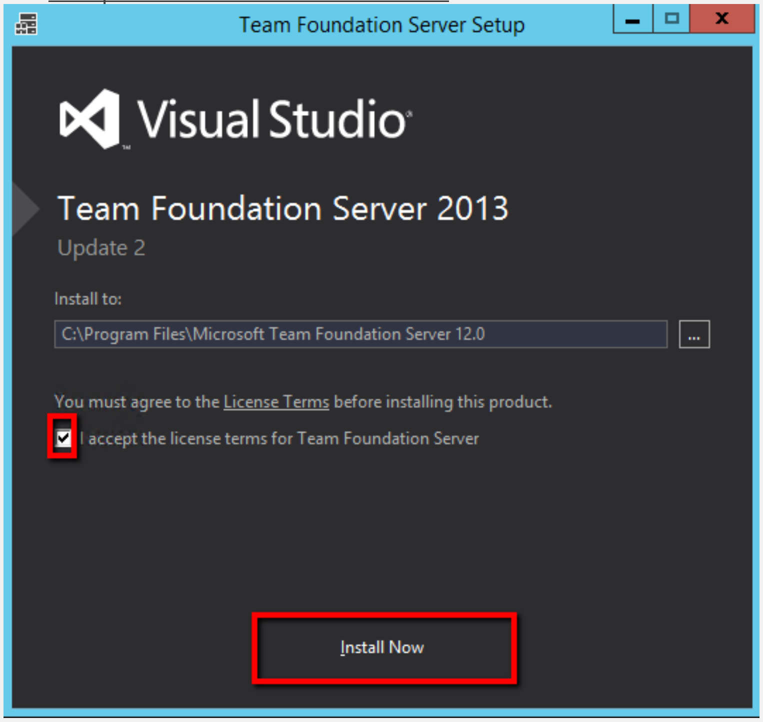
Summary of steps

Perform the following steps to get a Build Server (on-premises) up and running against Team Foundation Service in Azure IaaS Environment.

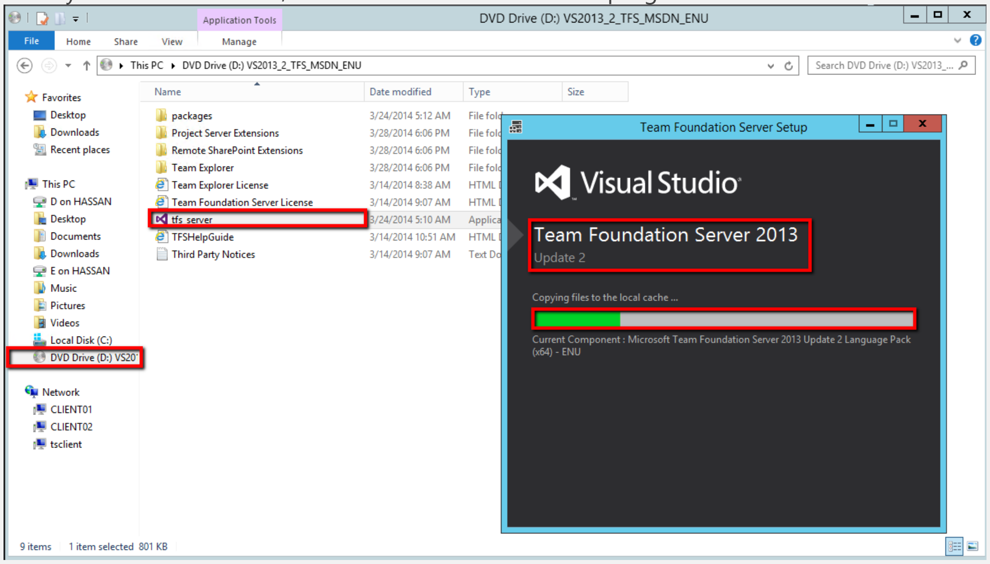
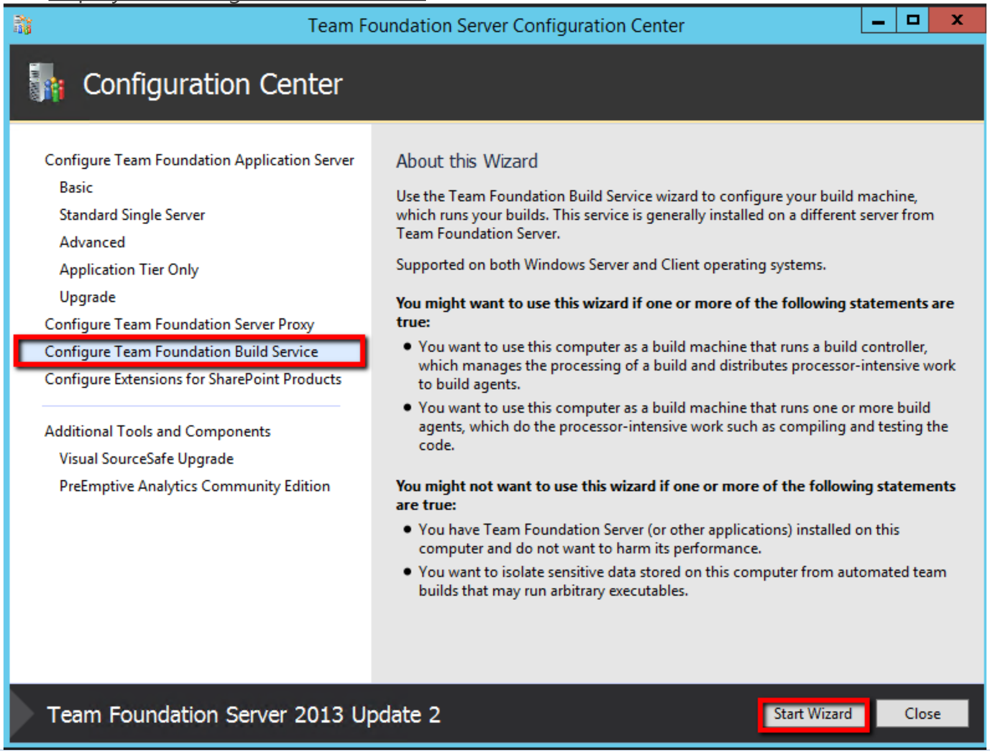
- Open port 9191.
- Install the Build Server installation from the TFS media or mount the ISO to local DVD device.
- Register Build Controller with TFS.
- Configure a build template.
- Create a "secure share" to use when accessing build.

  Validate the build environment.

Walk-through

Step	Instructions
1 Download software ☐ - Done	• Download the TFS software and place on a local server as shown below.  DVD Drive (D:) VS2013_2_TFS_MSDN_ENU This PC ▸ DVD Drive (D:) VS2013_2_TFS_MSDN_ENU Name / Date modified / Type / Size packages / 3/24/2014 5:12 AM / File folder Project Server Extensions / 3/28/2014 6:06 PM / File folder Remote SharePoint Extensions / 3/28/2014 6:06 PM / File folder Team Explorer / 3/28/2014 6:06 PM / File folder Team Explorer License / 3/14/2014 8:38 AM / HTML Document / 21 KB Team Foundation Server License / 3/14/2014 9:07 AM / HTML Document / 73 KB tfs_server / 3/24/2014 5:10 AM / Application / 802 KB TFSHelpGuide / 3/14/2014 10:51 AM / HTML Document / 1 KB Third Party Notices / 3/14/2014 9:07 AM / Text Document / 597 KB 9 items
2 Install build software ☐ - Done	• Install Team Foundation Server. • Use the **Build** wizard. See Set up Team Foundation Build Service [10] for details  Team Foundation Server Setup Visual Studio Team Foundation Server 2013 Update 2 Install to: C:\Program Files\Microsoft Team Foundation Server 12.0 You must agree to the License Terms before installing this product. ☑ I accept the license terms for Team Foundation Server Install Now

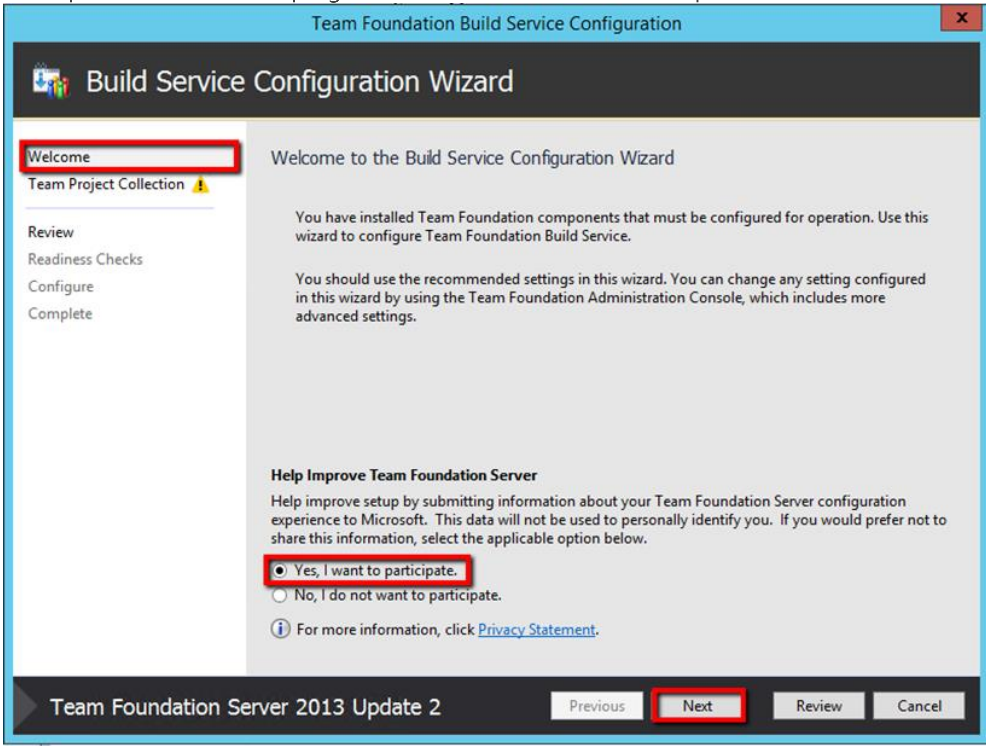
[10] http://msdn.microsoft.com/en-us/library/ms181712.aspx

Step	Instructions
	- Once you click Install Now, the installation starts and the progress is as shown  DVD Drive (D:) VS2013_2_TFS_MSDN_ENU This PC ▸ DVD Drive (D:) VS2013_2_TFS_MSDN_ENU packages 3/24/2014 5:12 AM File fold Project Server Extensions 3/28/2014 6:06 PM File fold Remote SharePoint Extensions 3/28/2014 6:06 PM File fold Team Explorer 3/28/2014 6:06 PM File fold Team Explorer License 3/14/2014 8:38 AM HTML Team Foundation Server License 3/14/2014 9:07 AM HTML tfs_server 3/24/2014 5:10 AM Applica TFSHelpGuide 3/14/2014 10:51 AM HTML Third Party Notices 3/14/2014 9:07 AM Text Do 9 items 1 item selected 801 KB Team Foundation Server Setup Visual Studio Team Foundation Server 2013 Update 2 Copying files to the local cache ... Current Component : Microsoft Team Foundation Server 2013 Update 2 Language Pack (x64) - ENU NOTE Be sure to copy the installation media on the local disc or mount the ISO to a DVD Drive on the local machine to speed up the installation process.
3 Configure build software ⬚ - Done	- Configure Team Foundation Server. - Use the **Build** wizard. See Deploy and configure a build server[11] for details.  Team Foundation Server Configuration Center Configuration Center Configure Team Foundation Application Server Basic Standard Single Server Advanced Application Tier Only Upgrade Configure Team Foundation Server Proxy Configure Team Foundation Build Service Configure Extensions for SharePoint Products Additional Tools and Components Visual SourceSafe Upgrade PreEmptive Analytics Community Edition About this Wizard Use the Team Foundation Build Service wizard to configure your build machine, which runs your builds. This service is generally installed on a different server from Team Foundation Server. Supported on both Windows Server and Client operating systems. **You might want to use this wizard if one or more of the following statements are true:** • You want to use this computer as a build machine that runs a build controller, which manages the processing of a build and distributes processor-intensive work to build agents. • You want to use this computer as a build machine that runs one or more build agents, which do the processor-intensive work such as compiling and testing the code. **You might not want to use this wizard if one or more of the following statements are true:** • You have Team Foundation Server (or other applications) installed on this computer and do not want to harm its performance. • You want to isolate sensitive data stored on this computer from automated team builds that may run arbitrary executables. Team Foundation Server 2013 Update 2 Start Wizard Close

[11] http://msdn.microsoft.com/en-us/library/dd631902.aspx

Step	Instructions

- Participate in the feedback program so that we can reflect and improve:



Team Foundation Build Service Configuration

Build Service Configuration Wizard

Welcome
Team Project Collection
Review
Readiness Checks
Configure
Complete

Welcome to the Build Service Configuration Wizard

You have installed Team Foundation components that must be configured for operation. Use this wizard to configure Team Foundation Build Service.

You should use the recommended settings in this wizard. You can change any setting configured in this wizard by using the Team Foundation Administration Console, which includes more advanced settings.

Help Improve Team Foundation Server

Help improve setup by submitting information about your Team Foundation Server configuration experience to Microsoft. This data will not be used to personally identify you. If you would prefer not to share this information, select the applicable option below.

● Yes, I want to participate.
○ No, I do not want to participate.

For more information, click Privacy Statement.

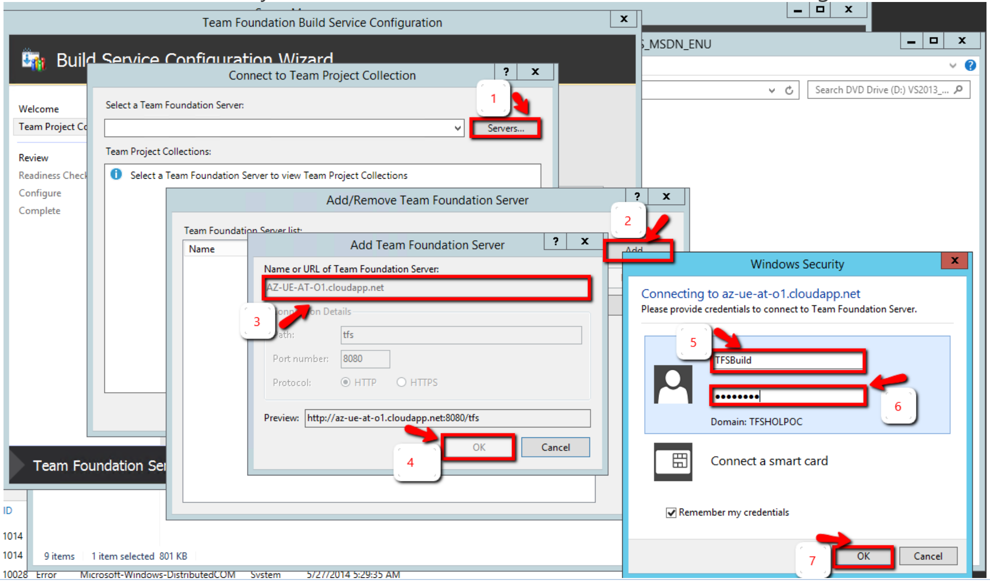
Team Foundation Server 2013 Update 2

- Select **Servers** to configure the TFS on Azure IaaS TFS server **AZ-UE-AT-O1.coudapp.net.**

NOTE

We have a one-way trust in our proof-of-concept (POC) environment as outlined in the main guide. Accessing services therefore requires the complete URL, including the cloudapp.net qualifier.

- Specify the *TFSBuild* credentials for the **NEW USER NAME** for the build server.
Remember to reference your credential cheat sheets, as outlined in the main guide, for the information.



Team Foundation Build Service Configuration

Build Service Configuration Wizard

Connect to Team Project Collection

Select a Team Foundation Server:

Team Project Collections:

Select a Team Foundation Server to view Team Project Collections

Add/Remove Team Foundation Server

Team Foundation Server list:

Add Team Foundation Server

Name or URL of Team Foundation Server: AZ-UE-AT-O1.cloudapp.net

Path: tfs

Port number: 8080

Protocol: ● HTTP ○ HTTPS

Preview: http://az-ue-at-o1.cloudapp.net:8080/tfs

Windows Security

Connecting to az-ue-at-o1.cloudapp.net

Please provide credentials to connect to Team Foundation Server.

TFSBuild

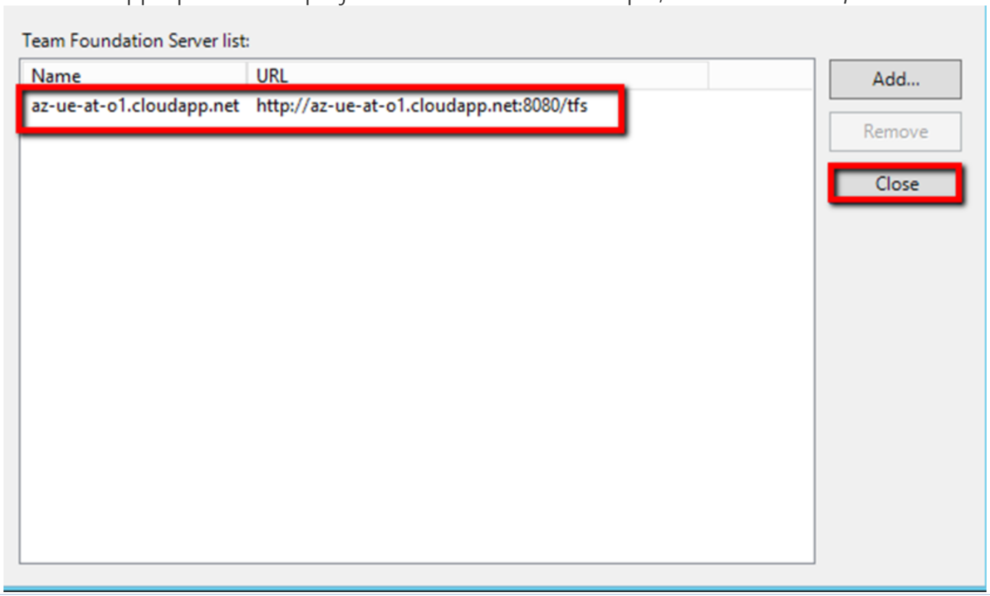
••••••••

Domain: TFSHOLPOC

Connect a smart card

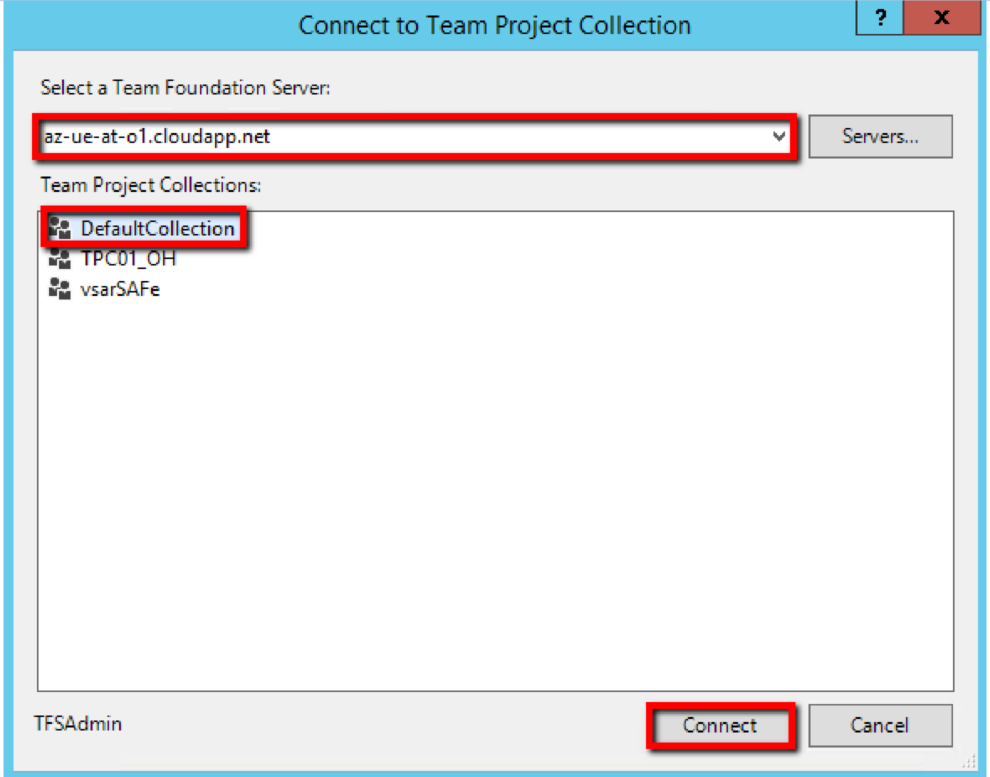
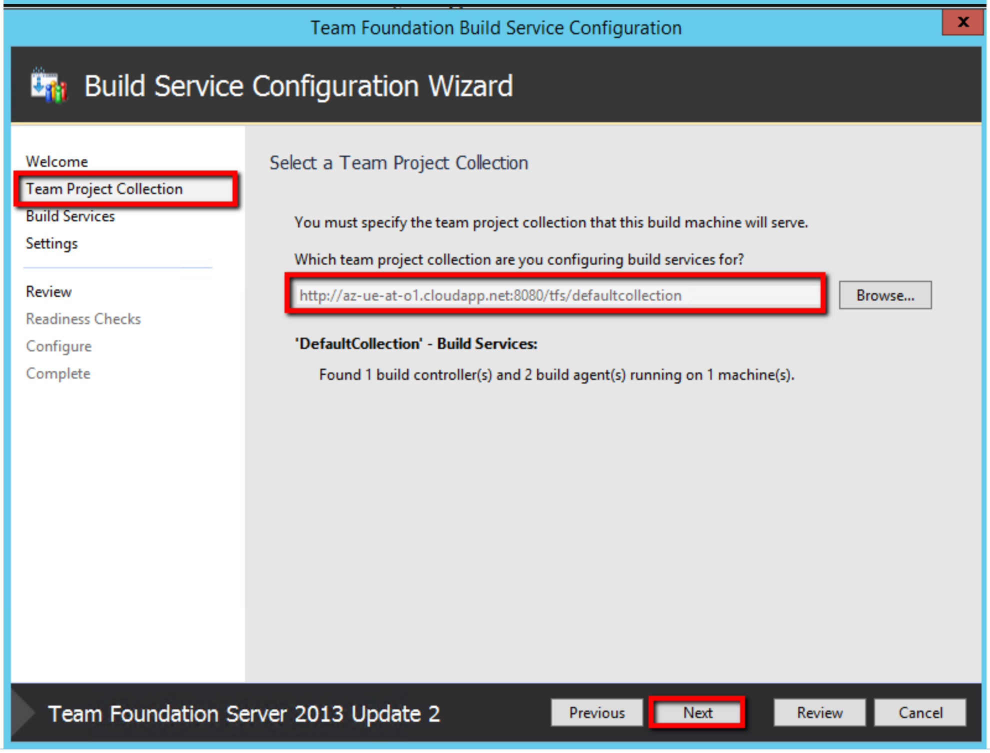
☑ Remember my credentials

- Select the appropriate team project collection. In this example, we select the *DefaultCollection*.



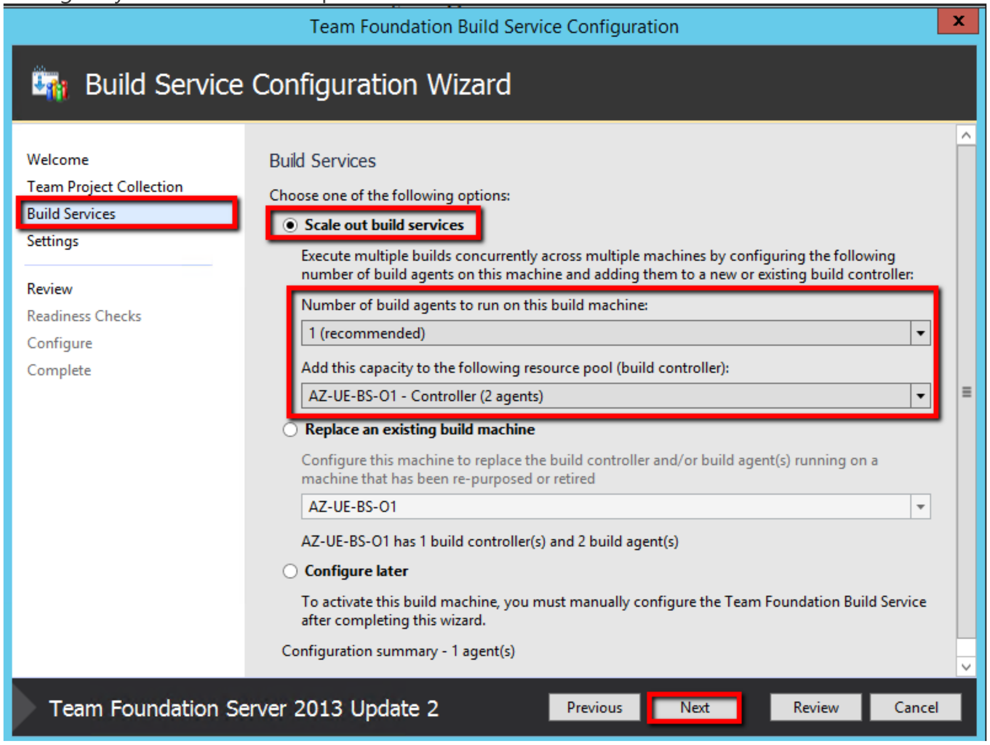
Team Foundation Server list:

Name	URL
az-ue-at-o1.cloudapp.net	http://az-ue-at-o1.cloudapp.net:8080/tfs

Step	Instructions
	 Connect to Team Project Collection Select a Team Foundation Server: az-ue-at-o1.cloudapp.net Team Project Collections: DefaultCollection TPC01_OH vsarSAFe TFSAdmin  Team Foundation Build Service Configuration Build Service Configuration Wizard Welcome Team Project Collection Build Services Settings Review Readiness Checks Configure Complete Select a Team Project Collection You must specify the team project collection that this build machine will serve. Which team project collection are you configuring build services for? http://az-ue-at-o1.cloudapp.net:8080/tfs/defaultcollection **'DefaultCollection' - Build Services:** Found 1 build controller(s) and 2 build agent(s) running on 1 machine(s). Team Foundation Server 2013 Update 2

Step	Instructions

- Configure your build service options:



Team Foundation Build Service Configuration

Build Service Configuration Wizard

Build Services

Choose one of the following options:

● Scale out build services

Execute multiple builds concurrently across multiple machines by configuring the following number of build agents on this machine and adding them to a new or existing build controller:

Number of build agents to run on this build machine: 1 (recommended)

Add this capacity to the following resource pool (build controller): AZ-UE-BS-01 - Controller (2 agents)

○ Replace an existing build machine

Configure this machine to replace the build controller and/or build agent(s) running on a machine that has been re-purposed or retired

AZ-UE-BS-01

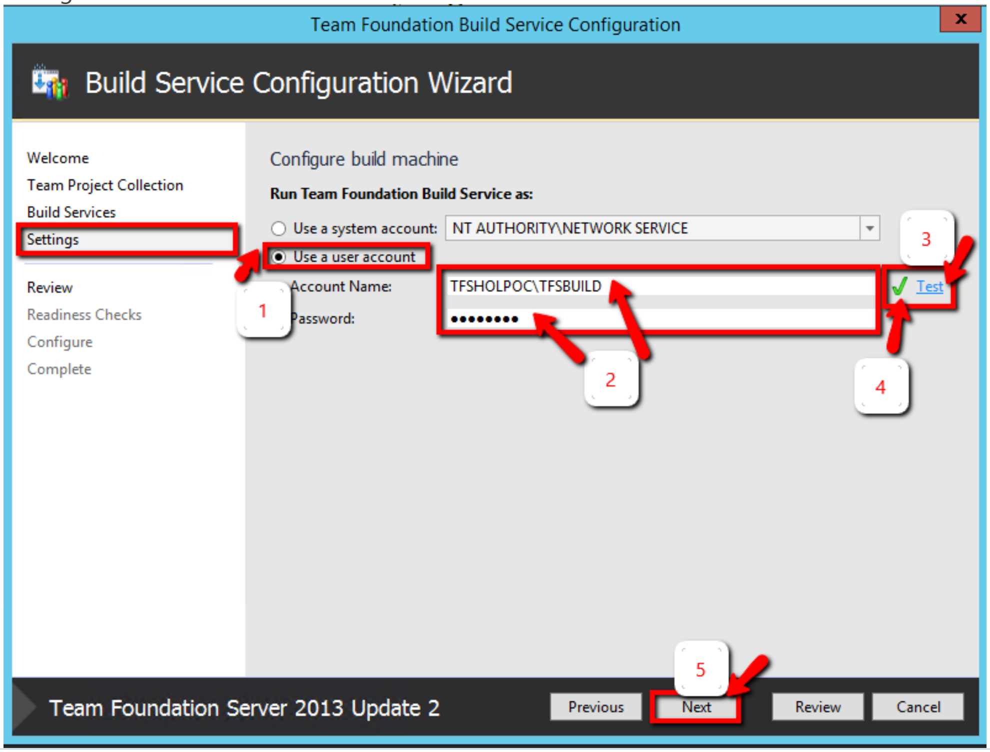
AZ-UE-BS-01 has 1 build controller(s) and 2 build agent(s)

○ Configure later

To activate this build machine, you must manually configure the Team Foundation Build Service after completing this wizard.

Configuration summary - 1 agent(s)

- Configure and validate the build machine:



Team Foundation Build Service Configuration

Build Service Configuration Wizard

Configure build machine

Run Team Foundation Build Service as:

○ Use a system account: NT AUTHORITY\NETWORK SERVICE

● Use a user account

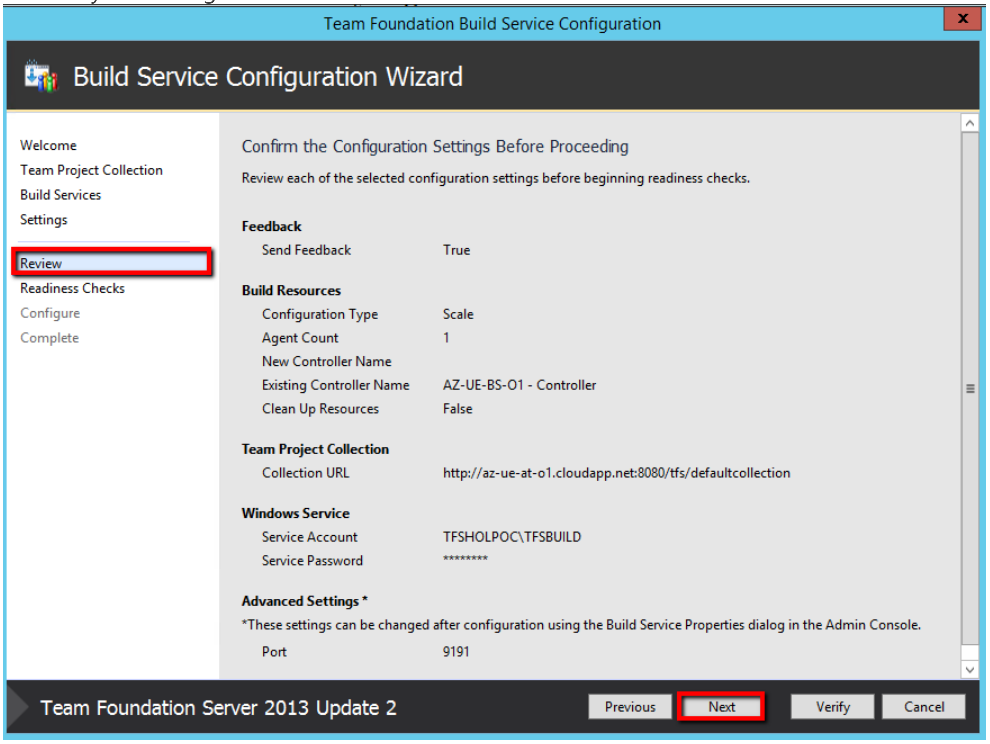
Account Name: TFSHOLPOC\TFSBUILD

Password: ••••••••

✓ Test

Step	Instructions

- **Review** your settings:



Team Foundation Build Service Configuration

Build Service Configuration Wizard

Confirm the Configuration Settings Before Proceeding

Review each of the selected configuration settings before beginning readiness checks.

Feedback

Send Feedback	True

Build Resources

Configuration Type	Scale
Agent Count	1
New Controller Name	
Existing Controller Name	AZ-UE-BS-01 - Controller
Clean Up Resources	False

Team Project Collection

Collection URL	http://az-ue-at-o1.cloudapp.net:8080/tfs/defaultcollection

Windows Service

Service Account	TFSHOLPOC\TFSBUILD
Service Password	********

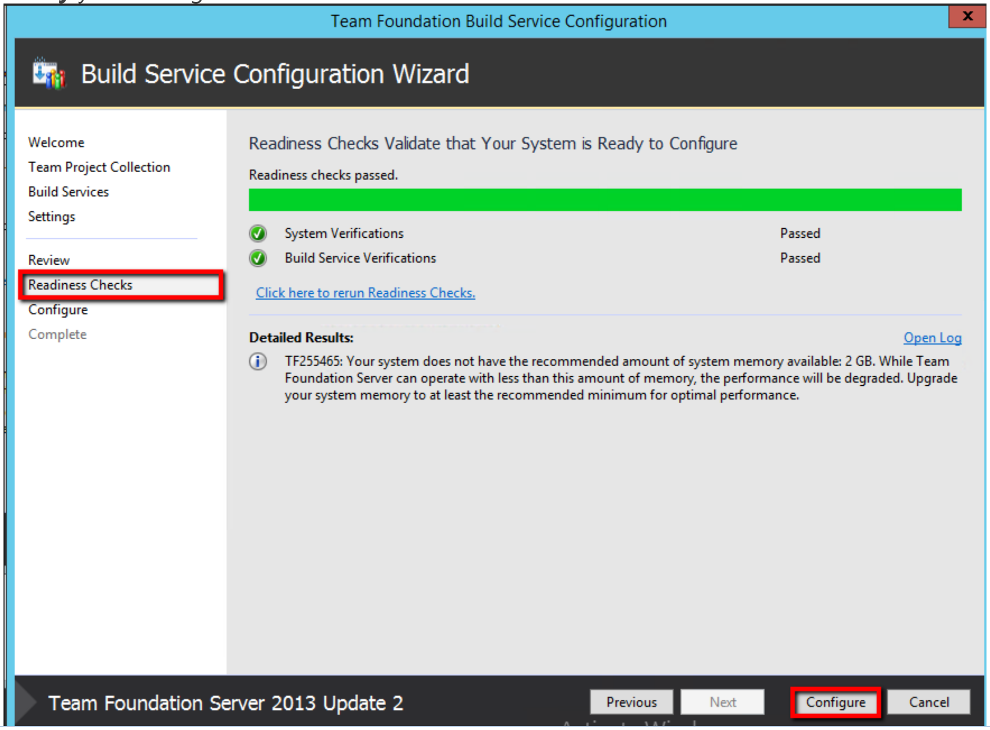
Advanced Settings *

*These settings can be changed after configuration using the Build Service Properties dialog in the Admin Console.

Port	9191

Team Foundation Server 2013 Update 2

- **Verify** your settings:



Team Foundation Build Service Configuration

Build Service Configuration Wizard

Readiness Checks Validate that Your System is Ready to Configure

Readiness checks passed.

✓ System Verifications	Passed
✓ Build Service Verifications	Passed

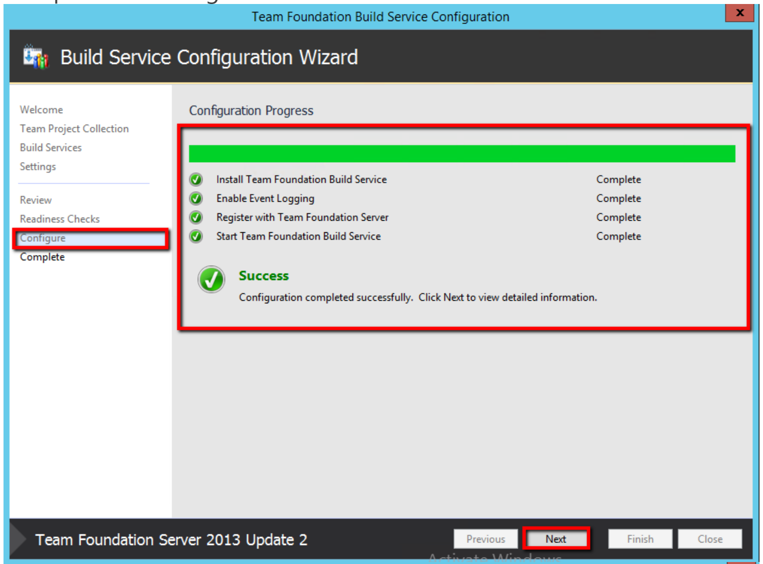
Click here to rerun Readiness Checks.

Detailed Results: Open Log

ⓘ TF255465: Your system does not have the recommended amount of system memory available: 2 GB. While Team Foundation Server can operate with less than this amount of memory, the performance will be degraded. Upgrade your system memory to at least the recommended minimum for optimal performance.

Team Foundation Server 2013 Update 2

- Complete the configuration wizard:



Team Foundation Build Service Configuration

Build Service Configuration Wizard

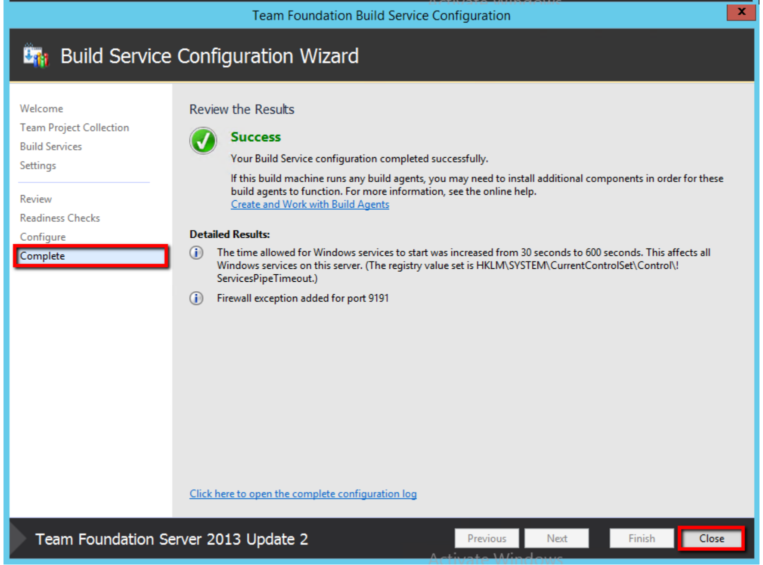
Configuration Progress

```
Install Team Foundation Build Service          Complete
Enable Event Logging                           Complete
Register with Team Foundation Server           Complete
Start Team Foundation Build Service            Complete
```

Success

Configuration completed successfully. Click Next to view detailed information.

Team Foundation Server 2013 Update 2



Team Foundation Build Service Configuration

Build Service Configuration Wizard

Review the Results

Success

Your Build Service configuration completed successfully.

If this build machine runs any build agents, you may need to install additional components in order for these build agents to function. For more information, see the online help.
Create and Work with Build Agents

Detailed Results:

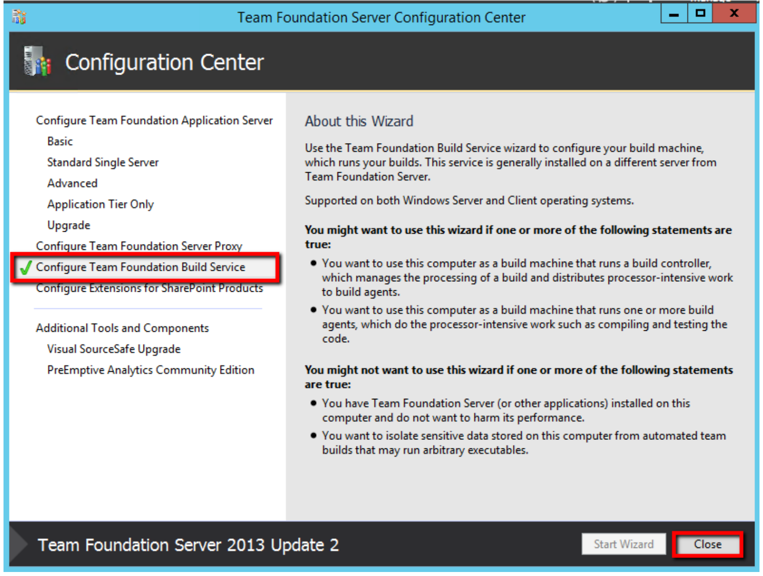
The time allowed for Windows services to start was increased from 30 seconds to 600 seconds. This affects all Windows services on this server. (The registry value set is HKLM\SYSTEM\CurrentControlSet\Control\! ServicesPipeTimeout.)

Firewall exception added for port 9191

Click here to open the complete configuration log

Team Foundation Server 2013 Update 2

Previous
Next
Finish
Close



Team Foundation Server Configuration Center

Configuration Center

Configure Team Foundation Application Server
Basic
Standard Single Server
Advanced
Application Tier Only
Upgrade
Configure Team Foundation Server Proxy
Configure Team Foundation Build Service
Configure Extensions for SharePoint Products
Additional Tools and Components
Visual SourceSafe Upgrade
PreEmptive Analytics Community Edition

About this Wizard

Use the Team Foundation Build Service wizard to configure your build machine, which runs your builds. This service is generally installed on a different server from Team Foundation Server.

Supported on both Windows Server and Client operating systems.

You might want to use this wizard if one or more of the following statements are true:

- You want to use this computer as a build machine that runs a build controller, which manages the processing of a build and distributes processor-intensive work to build agents.
- You want to use this computer as a build machine that runs one or more build agents, which do the processor-intensive work such as compiling and testing the code.

You might not want to use this wizard if one or more of the following statements are true:

- You have Team Foundation Server (or other applications) installed on this computer and do not want to harm its performance.
- You want to isolate sensitive data stored on this computer from automated team builds that may run arbitrary executables.

Team Foundation Server 2013 Update 2

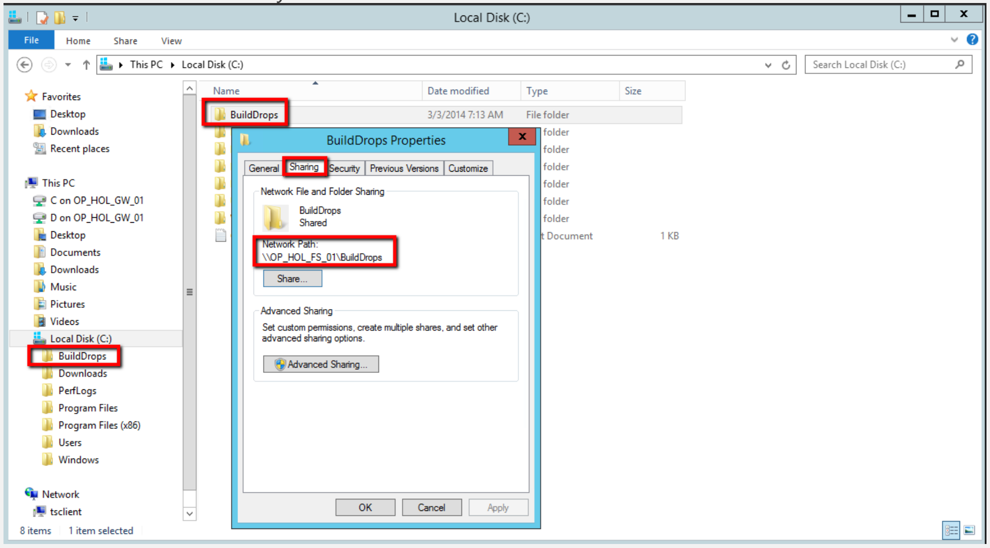
Step	Instructions
4 Create Drop Share ☐ - Done	- Create a file share for the build drops. - Path must be accessible by the Build Service account.  BuildDrops Properties Network Path: \\OP_HOL_FS_01\BuildDrops Local Disk (C:) File Home Share View This PC Local Disk (C:) Search Local Disk (C:) Favorites Desktop Downloads Recent places This PC C on OP_HOL_GW_01 D on OP_HOL_GW_01 Desktop Documents Downloads Music Pictures Videos Local Disk (C:) BuildDrops Downloads PerfLogs Program Files Program Files (x86) Users Windows Network tsclient 8 items 1 item selected Name Date modified Type Size BuildDrops 3/3/2014 7:13 AM File folder folder folder folder folder folder folder t Document 1 KB General Sharing Security Previous Versions Customize Network File and Folder Sharing BuildDrops Shared Share... Advanced Sharing Set custom permissions, create multiple shares, and set other advanced sharing options. Advanced Sharing... OK Cancel Apply
5 Validate ☐ - Done	- Run a test build to validate the installation, configuration, and connectivity.

Table 1 – Walk-through: Extending on-premises build services for the TFS on Azure IaaS environment

Extending TFS on Azure IaaS build services

Scenarios

You would typically extend the build servers in the TFS on Azure IaaS environment if you need:

- Additional build agent capacity or specialization for a team project collection in a region.
- A new build controller and agent to target a different team project collection in a region.
- To perform regional builds to avoid expensive sharing of build outputs between regions.

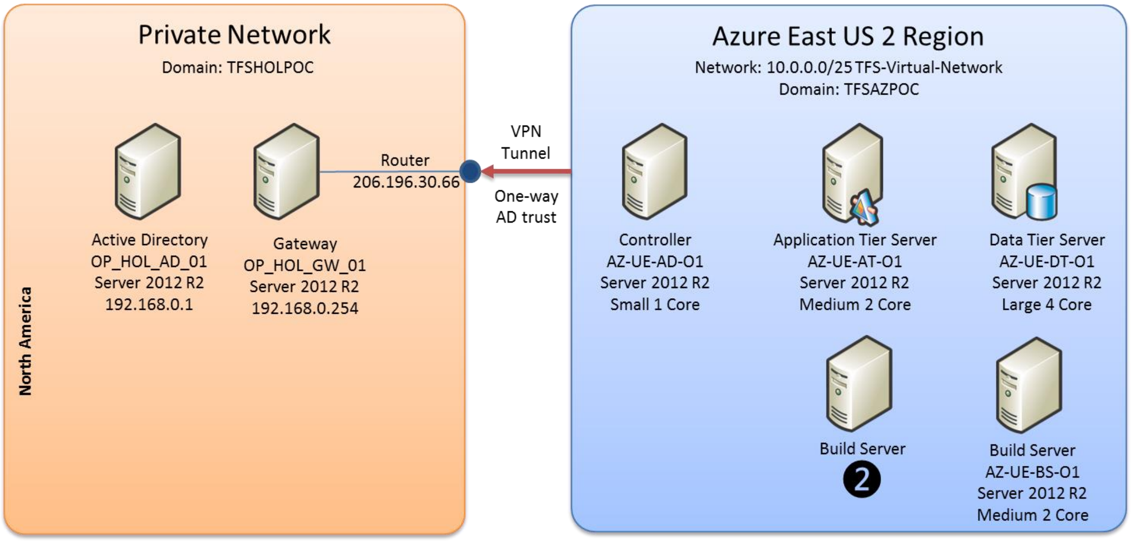


Figure 3 - Extending TFS on Azure IaaS build services

Context

Automating the startup, shutdown and minimizing operational VM times becomes important in this scenario to reduce operational costs.

Walk-through

Please refer to **Build Server (BS) Walkthrough** in the main **TFS on Azure IaaS Guide** the installation and configuration steps.

Extending external build services

Scenarios

You would typically extend the build servers in in a Workgroup outside the TFS Domain if you need to perform:

- Builds in geographically distributed environments, for example home office.
- Builds at external partner sites, who may not have access to the Azure resources.

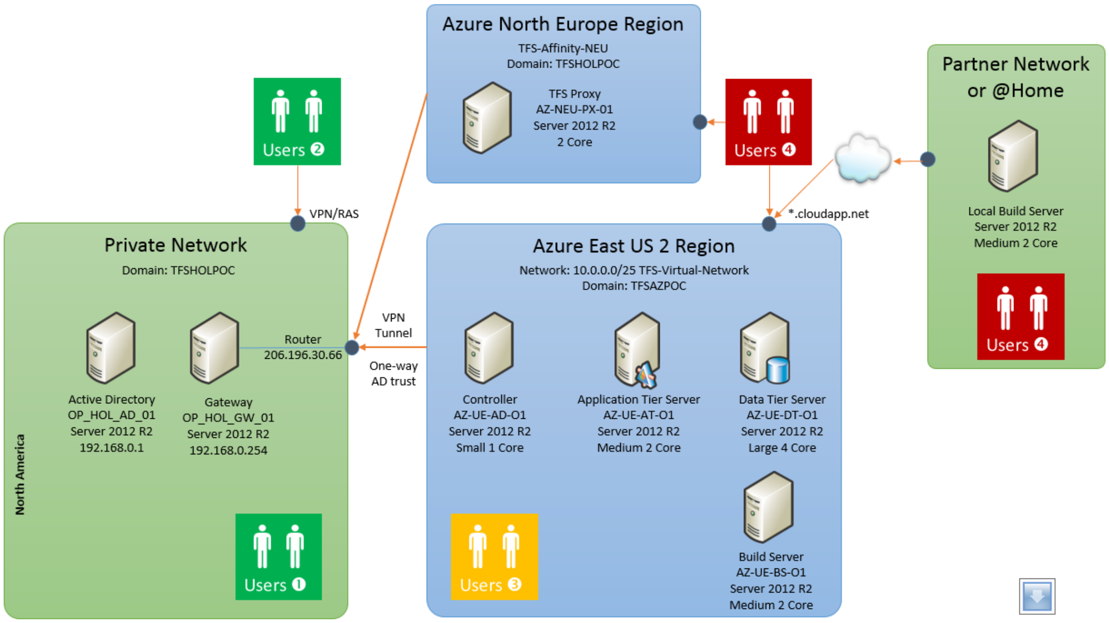


Figure 4 - Extending external build services

Context

Installing TFS Build in a Workgroup outside the TFS Domain is necessary in some cases, e.g. when there are external partners involved and these developers might need an own TFS Build environment in their team location. This is a challenge because within a Workgroup the *Visual Studio Team Foundation Build Host Service 2013* cannot run under a domain services account. In this case, a workaround called Shadow Account is the solution.

Shadow Account means to create a local account as a service account (e.g. *localTFSBuild*) on the TFS Build machine and the same account as local account on the Visual Studio Team Foundation Server Application Tier.

NOTE

In the Shadow Account solution it is IMPORTANT that both local account have the same name and the same password. Otherwise the authentication from the *Visual Studio Team Foundation Build Host Service 2013* to the TFS will not work.

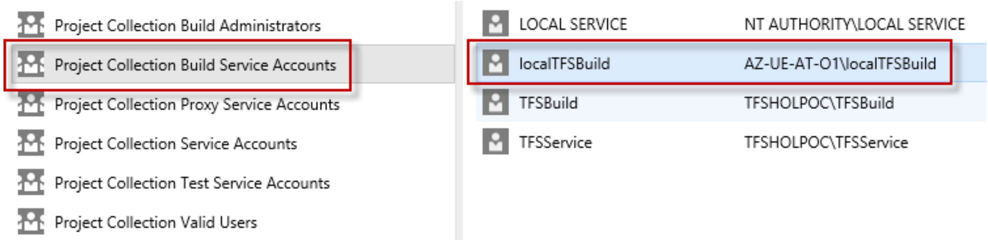
Walk-through

Build Server Walkthrough

NOTE

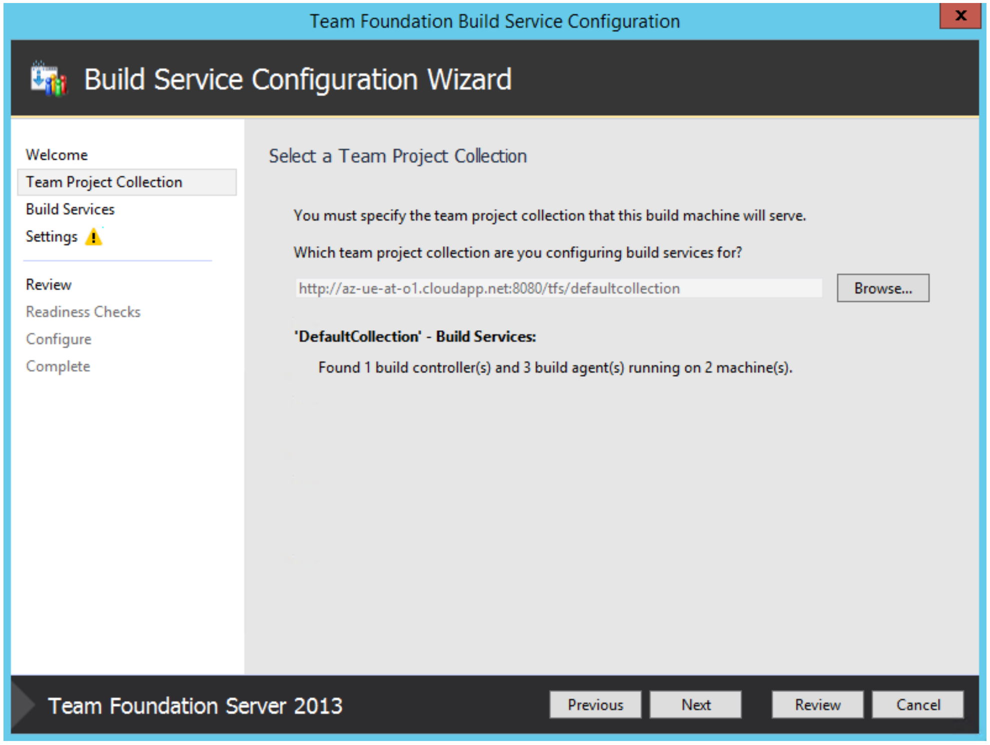
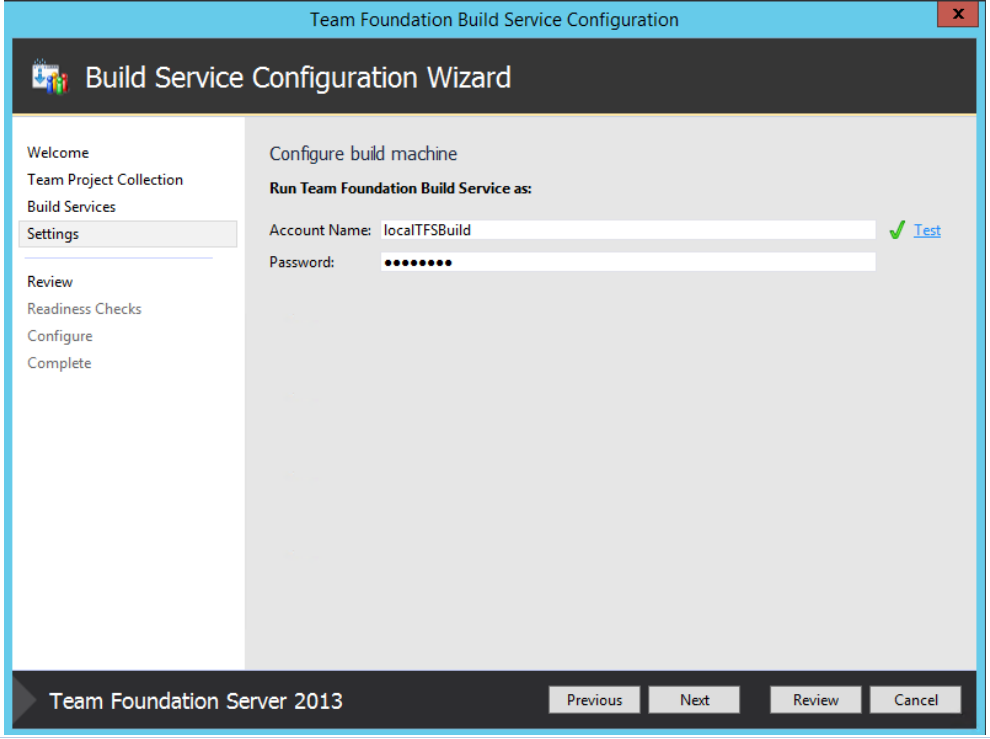
In some cases it makes sense to have a separate Build Server dedicated to a specific developer team outside of the organisation (e.g. a partner is involved or an external developer team). This Build Server is not located in azure or on premise as a domain joined server.

This walkthrough shows how to setup a Build Server as a workgroup machine and connected to the TFS in Azure.

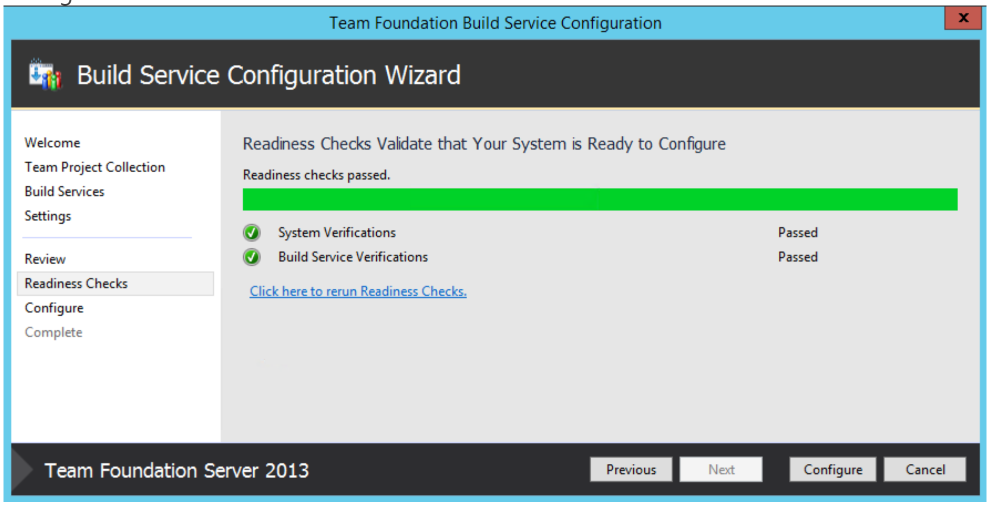
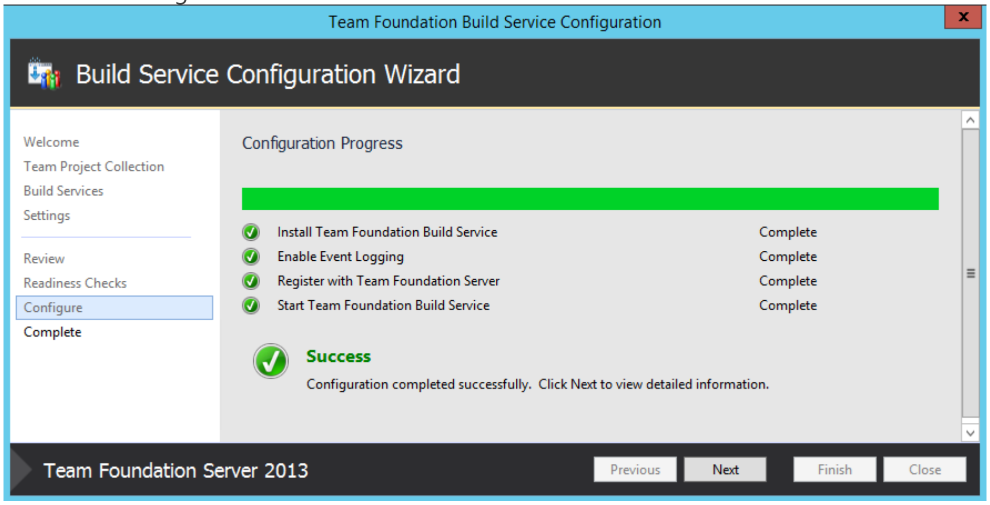
Step	Instructions
1 Create VM □ - Done	• Setup a Build Server machine as a workgroup machine (not domain joined). • The Build Server can be a physical or virtual machine. • Install a supported OS of your choice - see Team Foundation Server install guide [12] for details -.
2 Create local service accounts □ - Done	• Create a local account **localTFSBuild** on the **Build Server**. • Create the same local account **localTFSBuild** with the **same password** as **shadow account** on the TFS AT Server **AZ-UE-AT-O1.cloudapp.net**.
3 Provide shadow account access to target TPC □ - Done	• Connect to the security website of the *Team Project Collection* (e.g. *DefaultCollection*) you want to connect the TFS Build Server with: http://az-ue-at-o1.cloudapp.net:8080/tfs/DefaultCollection/_admin/_security/#_a=members • Add the local shadow account **AZ-UE-AT-O1\localTFSBuild** on the TFS to the TFS-Group **Project Collection Build Service Accounts**:  Project Collection Build Administrators Project Collection Build Service Accounts Project Collection Proxy Service Accounts Project Collection Service Accounts Project Collection Test Service Accounts Project Collection Valid Users LOCAL SERVICE NT AUTHORITY\LOCAL SERVICE localTFSBuild AZ-UE-AT-O1\localTFSBuild TFSBuild TFSHOLPOC\TFSBuild TFSService TFSHOLPOC\TFSService • By adding the shadow account to this TFS-Group, the Visual Studio Team Foundation Build Host Service 2013 will be able to connect and access the target Team Project Collection.
4 Optional PING test □ - Done	• Once logged on, ping the Azure POC domain controller by IP and FQDN.
5 Disable IE Enhanced Security □ - Done	• For Server OS only: Select **Server Manager**, **Local Server,** and disable the **Internet Explorer Enhanced Security** to be able to download software from the internet.
6 Download software □ - Done	• Download the Team Foundation Server software, for example from MSDN subscriptions: MSDN TFS Family [13]

[12] http://msdn.microsoft.com/en-us/library/dd631902.aspx

[13] https://msdn.microsoft.com/en-us/subscriptions/securedownloads/hh442898#searchTerm=Visual%20Studio%20Team%20Foundation%20Server%202013&ProductFamilyId=0&Languages=en&PageSize=10&PageIndex=0&FileId=0

Step	Instructions
7 Install and configure software	- Install Team Foundation Build Server - See Team Foundation Server install guide [14] for details. - Build Service configuration wizard snippets. - **IMPORTANT** – Use the **FQDN** or **IP** to connect with the TFS:  Team Foundation Build Service Configuration Build Service Configuration Wizard Welcome Team Project Collection Build Services Settings Review Readiness Checks Configure Complete Browse... Team Foundation Server 2013 Previous Next Review Cancel Select a Team Project Collection You must specify the team project collection that this build machine will serve. Which team project collection are you configuring build services for? http://az-ue-at-o1.cloudapp.net:8080/tfs/defaultcollection **'DefaultCollection' - Build Services:** Found 1 build controller(s) and 3 build agent(s) running on 2 machine(s). **IMPORTANT** - Use the local account **localTFSBuild** as shadow account in this step:  Team Foundation Build Service Configuration Build Service Configuration Wizard Welcome Team Project Collection Build Services Settings Review Readiness Checks Configure Complete ✓ Test Team Foundation Server 2013 Previous Next Review Cancel Configure build machine **Run Team Foundation Build Service as:** Account Name: localTFSBuild Password: ••••••••

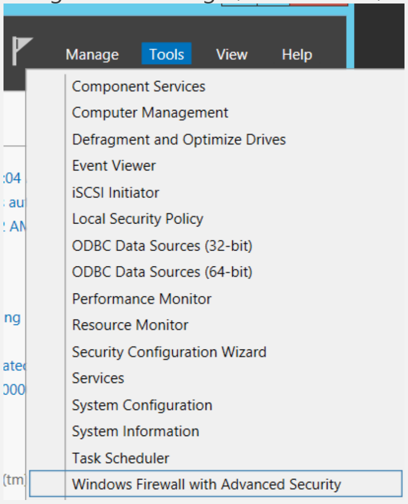
[14] http://msdn.microsoft.com/en-us/library/dd631902.aspx

Step	Instructions
	• Configuration review success:  Team Foundation Build Service Configuration Build Service Configuration Wizard Welcome Team Project Collection Build Services Settings Review Readiness Checks Configure Complete Readiness Checks Validate that Your System is Ready to Configure Readiness checks passed. ✓ System Verifications Passed ✓ Build Service Verifications Passed Click here to rerun Readiness Checks. Team Foundation Server 2013 Previous Next Configure Cancel • Final Build Configuration for POC:  Team Foundation Build Service Configuration Build Service Configuration Wizard Welcome Team Project Collection Build Services Settings Review Readiness Checks Configure Complete Configuration Progress ✓ Install Team Foundation Build Service Complete ✓ Enable Event Logging Complete ✓ Register with Team Foundation Server Complete ✓ Start Team Foundation Build Service Complete Success Configuration completed successfully. Click Next to view detailed information. Team Foundation Server 2013 Previous Next Finish Close
8 Verify Firewall ☐ - Done	• Review TFS Default Network Settings [15] and verify that the required firewall ports are open after installation.

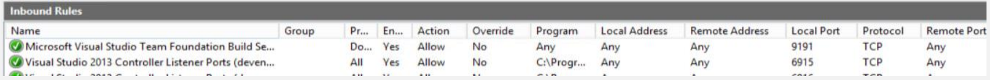
[15] http://msdn.microsoft.com/en-us/library/ms252473.aspx#Default

<table>
<tr><th>Step</th><th>Instructions</th></tr>
<tr><td></td><td>

- Using Server Manager, select **Tools**, **Windows Firewall with Advanced Security**



- Verify the inbound rules and ports


Inbound Rules

<table>
<tr><th>Name</th><th>Group</th><th>Pr...</th><th>En...</th><th>Action</th><th>Override</th><th>Program</th><th>Local Address</th><th>Remote Address</th><th>Local Port</th><th>Protocol</th><th>Remote Port</th></tr>
<tr><td>Microsoft Visual Studio Team Foundation Build Se...</td><td></td><td>Do...</td><td>Yes</td><td>Allow</td><td>No</td><td>Any</td><td>Any</td><td>Any</td><td>9191</td><td>TCP</td><td>Any</td></tr>
<tr><td>Visual Studio 2013 Controller Listener Ports (deven...</td><td></td><td>All</td><td>Yes</td><td>Allow</td><td>No</td><td>C:\Progr...</td><td>Any</td><td>Any</td><td>6915</td><td>TCP</td><td>Any</td></tr>
</table>

</td></tr>
</table>

Table 2 – Walk-through: Extending external build services