



Support Bulletin

TRIMBLE MONITORING

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CLOUD-BASED HOSTING OF TRIMBLE 4D CONTROL IN MICROSOFT AZURE

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Purpose of Document

Hosting Trimble 4D Control on Microsoft Azure's cloud environment must be performed by an experienced Microsoft Azure user. In order to get Trimble 4D Control running on Microsoft Azure one must configure multiple cloud services, connect them properly and follow cyber security best practices. This document provides some guidance to support a successful installation and hosting of Trimble 4D Control in the Microsoft Azure cloud.

Introduction

What is Cloud-Based Hosting?

"Hosted services" is the general term for technology services using infrastructure located outside the service receiver's physical location. The main difference between cloud-based hosting and on site hosting is that Trimble 4D Control is not installed on a local physical server but on a virtual server accessible via the internet.

Benefits of Cloud-Based Hosting

- Costs
 - Operational expenditure (Opex) instead of capital expenditure (CAPEX)
 - Ease of budgeting efforts instead of lengthy approval processes
 - Pay as you go for the capacity you need
- Scalability
 - No guesswork to estimate future server hardware capacity needs
 - Do not get stuck with server hardware once bought
 - Scale up or down as needed
- Availability
 - If your physical server crashes Trimble 4D Control becomes unavailable until Trimble 4D Control is restored on another server. If Trimble 4D Control runs on a Azure virtual machine you can achieve up to 99.99% availability guaranteed by Microsoft.
- Security
 - Protect data and infrastructure with built-in security services
 - Security intelligence to help identify evolving threats
- Maintenance
 - Most cloud-hosted software services include updates, backups, monitoring and upgrade at no additional charge.

What is Microsoft Azure?

Microsoft Azure, commonly referred to as Azure, is a provider of infrastructure as a service (IaaS) and software as a service (SaaS) allowing users to launch general-purpose Microsoft Windows virtual machines and use managed storage services.



Trimble Monitoring Recommendations

Server Specifications per Software Edition

The following table shows the recommended CPU and RAM settings for each Trimble 4D Control software edition. Make sure you take this into consideration when setting up a new virtual machine on Microsoft Azure.

T4D Control Edition*	vCPU	RAM
Field	2	4 GB
Intermediate	2	8 GB
Advanced	4	16 GB

*For all Trimble 4D Control editions 128 GB operating system disk size is sufficient.

Azure SQL Database

Trimble 4D Control is based on a Microsoft SQL database. For a hosted installation of Trimble 4D Control it is highly recommended to use Microsoft Azure SQL Database. By using a managed database service you benefit from scalability, backup, and high availability of the database.

DTU based provisioning should be fine for most installations, however you can use vCore-based provisioning for installations requiring more processing power. The difference between DTU and vCore based on Azure SQL is that the DTU-based model bundles compute, storage, and I/O resources, while the vCore-based model allows independent scaling of compute and storage resources.

Recommended minimum Azure provisioning		DTU based		vCore based*	
T4D Control Features	Databases	Service Tier	DTUs	Service Tier	vCores
Low frequency sensors only	T4DDB	Standard	50	**	**
	T4DDBMonitoring		20		
GNSS high frequency sensors	T4DDB	Standard	100	General	2
	T4DDBMonitoring		50		
10+ Total Station rounds per hour	T4DDB	Standard	100	General	2
	T4DDBMonitoring		50		

*Once you require 200 DTU+ on a database you should rather consider vCore based since the cheapest vCore based configuration is more performant, more flexible than 200 DTU and costs only slightly more.

**vCore based costing starts at around 360 USD which may not be justified for installations with low frequency data processing needs.

Azure Managed Disk for File Storage

All data files generated by Trimble 4D Control should be stored on an Azure Managed Disk. Connect the Azure Managed Disk to your virtual machine and make sure that all data folders specified during installation and setup of Trimble 4D Control are located on the Azure Managed Disk. Managed disks are useful to make your data portable and guard against data loss.

For installations using large data volumes the managed disk can be a HDD instead of an SSD.

We recommend you install MongoDB such that the data files are also on the Managed Disk.

Mailgun for Email Notifications

Trimble 4D Control Web offers e-mail sending using SMTP (Simple Mail Transfer Protocol). For on premise installations, Trimble 4D Control Web is typically configured to use a local mail server for this purpose. However, using a company mail server for email sending becomes problematic when Trimble 4D Control is hosted in the cloud. Instead of trying to open a connection from the outside to your company mail server it is advisable to make use of a 3rd party SMTP service. Our recommendation is using [Mailgun](https://mailgun.com) as an email service provider.

HTTPS when connecting to Web Application

For remote access to the virtual server we highly recommend the Hypertext Transfer Protocol Secure (HTTPS) which is an extension of the Hypertext Transfer Protocol (HTTP). It requires you to own a domain with a valid certificate but guarantees secure communication over the network, and is widely used on the Internet.

Note that the installer of Trimble 4D Control, version 6.1 and higher, offers an option to conveniently set up HTTPS. After installing Trimble 4D Control, purchase an HTTPS certificate on Windows Azure or a certificate authority like Comodo or DigiCert and re-run the installer of Trimble 4D Control to set up the HTTPS access.

Additional Information

Supported Operating Systems

Microsoft Azure offers several different operating systems to choose from. For information on supported operating systems of Trimble 4D Control please refer to its Release Notes.

Software Licensing

An installation of Trimble 4D Control hosted in a Microsoft Azure cloud environment requires to bind the installation to the Trimble License Server using the online licensing method. A cloud environment does not allow access to a physical server and therefore a hardware dongle is not appropriate.

For more information contact MonSol_Support@Trimble.com.