Add-On Products

RealTime Service

Installation Guide

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CHAPTER 1.

Introduction

This RealTime Service Installation Guide provides a detailed instruction how to install and configure the RealTime Service. The document includes following chapters:

- Introduction
- Installation
- Using RealTime Manager
- Trouble Shooting

The “Introduction” chapter overviews the RealTime Service and the RealTime Manager application, provides some general information regarding RealTime Service functionality.

The “Installation” chapter describes how to install and set up the RealTime Service.

The “Using RealTime Manager” chapter elaborates the RealTime Manager functionality and guides you through the process of configuring the RealTime Service.

The “Trouble Shooting” describes the possible RealTime Service installation, setup and using problems and elaborates general principles of their elimination.

Definitions, Acronyms and Abbreviations

Term	Definition
AD (Active Directory)	Service that provides the means to manage identities and relationships that make up network environments.
Group or distribution list	List of e-mail addresses given one collective name. By referring to the list name internet, users can refer to all addresses on the list simultaneously.
Microsoft .NET Framework	A set of Microsoft software technologies for connecting information, people, systems, and devices. It enables a high level of software integration using Web services: small, discrete, building-block applications that connect to each other as well as to other, larger applications over the Internet.
Microsoft Exchange Server	The messaging platform that provides e-mail, scheduling, online forms, and the tools for custom collaboration and messaging-service applications.
RealTime Manager (RTM)	Windows application designed to configure and manage the RealTime Service
RealTime Service (RTS)	Window Service designed to collect data from the Exchange Server and store it in a specific destination.
UTC (Coordinated Universal Time)	Equivalent to mean solar time at the prime meridian, formerly expressed in GMT.

RealTime Service Overview

The main purpose of the RealTime Service is to track the creation, deletion, modification of items from the Exchange Server and update.

The basic RTS components are:

- The RealTime Manager – it is an administrative program for managing the Configuration Information
- The RealTime Service – it is a Windows service used for real-time synchronization of Exchange items to one of the destinations set up in the RealTime Manager application. This service also manages the license

The RealTime Service collects data from the Exchange Server and stores it in specified destinations. In fact, synchronization happens when the service receives notifications from the Exchange Server in the real time or whenever it is requested. The RealTime Service can perform full synchronization: all data is replicated from the Exchange server and from Active Directory.

The RealTime Manager provides options for saving the configuration of the connecting information, destination store, filtering output data and logging.

Also, the RTS tracks changes in distribution lists (groups) and user changes in these groups from Active Directory. The program must have access to Active Directory to perform these operations.

CHAPTER 2.

RealTime Service Installation

This chapter describes how to install and set up the RealTime Service.

In this chapter you will find:

- Hardware Requirements
- Software Requirements
- Installing Prerequisite Software
- Installing RealTime Service
- Removing RealTime Service
- Post-Installation Setup
- Setting up Permissions for an Exchange Server Account

Hardware requirements

The following requirements are applied to the system with Small, Medium or Large deployment size which depends on the number of calendars.

Style	Requirement
Small: < 50 calendars	CPU: 2 cores, 2 GHz RAM: 4 GB Disk: see note
Medium: < 500 calendars	CPU: 4 cores, 2-3 GHz RAM: 8 GB Disk: see note
Large: > 500 calendars	CPU: 8 cores, 2-3 GHz RAM: 12+ GB Disk see note

NOTE:

For all these configurations, there are also the next hardware requirements.

Storage for RTS: 80 GB for system drive; 4 GB for local cache + space for logs (maximum 900MB per day with highest logging level and highest load).

SQL storage size: depends on the amount of data that will be synchronized into a database. For experience - each copied appointment is approximately 4kb.

These parameters are counted for configurations which include RealTime Service with WebTeam Central or Resource Central only. If server will host any other software, for best performance it is required to add overhead of this software to hardware requirements listed above.

Software Requirements

Go to System Requirements page in Add-On Products website to have an overview of system requirements for RealTime Service.

Accounts and necessary rights

To work with the RealTime Service and Manager you will need the following accounts:

- Windows account that the RTS runs as. It must be a local admin on the machine where it's running. By default, the RTS installer creates the Windows service that runs under the Local System account, which has all necessary rights. It is not recommended to change an account that the RTS Windows service is running as.

- On-premises domain: account used to connect to the domain controller. It must be a domain member with membership in “View-only organization management” group. It is vital for this account to have read access to information related to Exchange servers.
- Cloud Office 365 domain: service principal with membership in Directory Readers role.
- Account used to connect to the Exchange CAS. It must have impersonation rights set in the Exchange.

There are also necessary SQL accounts:

- Server admin for database creation (RTS, Exchange Central).
- Database owner for normal operations - RTS must be able to upgrade databases it works with (for EC/WTC/RC databases it may create necessary indices on demand).

Installing Prerequisite Software

Installing Microsoft .NET Framework

Microsoft .NET Framework 4.8 must be installed to run the RealTime Service.

When starting the RealTime Service installation wizard, the setup wizard will start with detecting, if the .NET 4.8 is installed. If it is not already installed, you should do that.

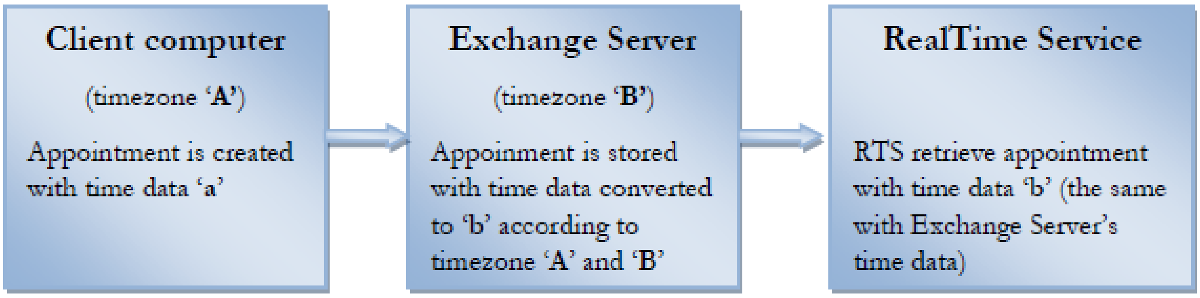
So, if your .NET 4.8 (“dotnet”) is missing, please, go to Microsoft’s Download page (or you may use another reliable source), and download the .NET 4.8 Framework and install it on your PC or workstation.

Installing Microsoft Exchange Server

There must be an Exchange Server installed on a computer within your network for the RealTime Service to work with. Please, refer to the standard Microsoft Exchange Server documents for detailed instruction how to install the Microsoft Exchange Server.

The RealTime Service works with Microsoft Exchange Server 2013/2016/2019/Online and Office 365 Editions. There are several requirements you must meet before using RealTime Service with Exchange Servers:

- Microsoft Exchange Server 2013/2016/2019/Online and Office 365 Editions allows you to create special types of mailboxes: room mailboxes and equipment mailboxes
- Room mailbox is a mailbox to be assigned specifically to Meeting Rooms. Its associated user account will be disabled in the Active Directory
- Equipment mailbox: This is a mailbox specific to equipment, (i.e., TV, Projector, GPS etc.). As with a Resource mailbox, this kind of mailbox will create a disabled user in Active Directory
- Time zone on Exchange Server



Client computer

(timezone ‘A’)

Appointment is created with time data ‘a’

Exchange Server

(timezone ‘B’)

Appoinment is stored with time data converted to ‘b’ according to timezone ‘A’ and ‘B’

RealTime Service

RTS retrieve appointment with time data ‘b’ (the same with Exchange Server’s time data)

According to the above diagram, data of appointments that RTS receives from the Exchange server has the same time zone with that of the Exchange server.

Thus, to obtain accurate data (time data “a” = time data “b”), please, get sure that the time zone on client computers, where appointments are created, have the same value with the time zone on the Exchange Server.

Windows Azure Active Directory Module for Windows PowerShell and Microsoft Online Services Sign-In Assistant

This both software pieces are used for creating or updating service principal used by RTS to access cloud AD. They should be installed on the system that runs RTS.

You can find them here: http://technet.microsoft.com/en-us/library/jj151815.aspx#BKMK_Requirements

Installing RealTime Service

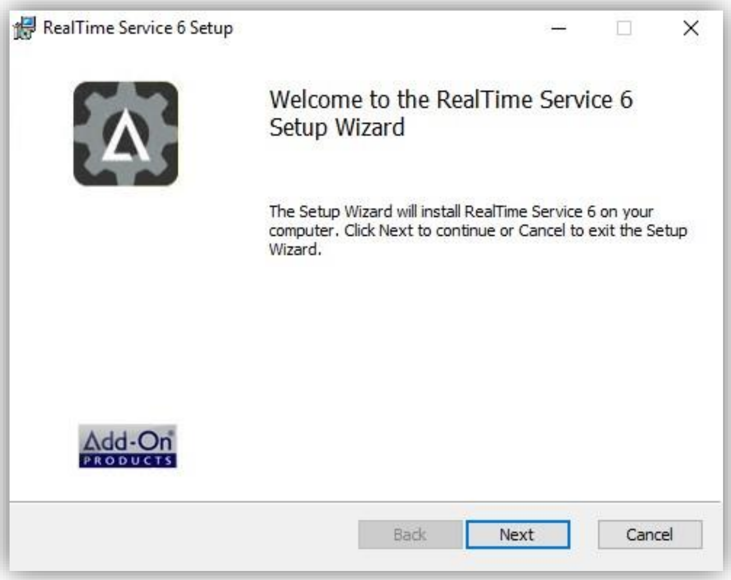
Once you have launched the RealTime Service setup wizard, follow its instructions as it is described in the next section to install the RealTime Service.

Step by Step Instruction

You have the option of performing a clean installation or an upgrade from a previous version of the RealTime Service.

Fresh RealTime Service installation

If you are performing a fresh installation, you will see the welcome screen shown in the figure below:



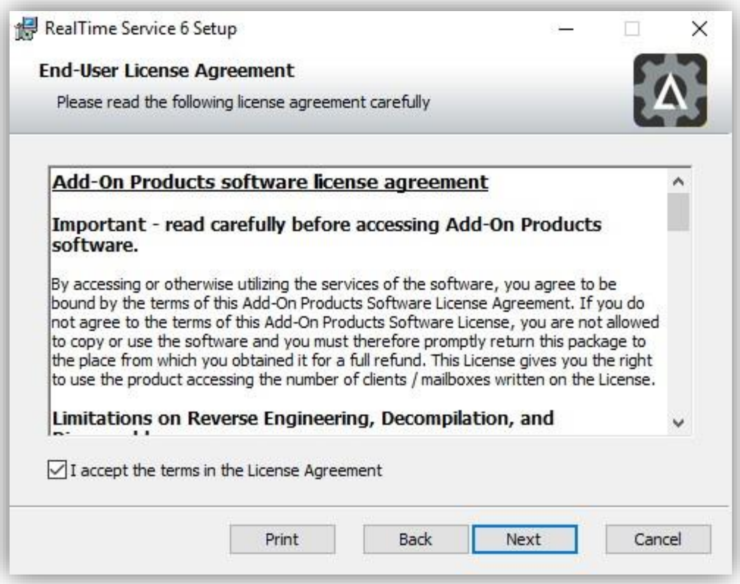
RealTime Service 6 Setup

Welcome to the RealTime Service 6 Setup Wizard

The Setup Wizard will install RealTime Service 6 on your computer. Click Next to continue or Cancel to exit the Setup Wizard.

Figure 1. RealTime Service setup wizard

Click ***"Next"*** to proceed with the installation. You will see the ***"End-User License Agreement"*** displayed on the next screen.



RealTime Service 6 Setup

End-User License Agreement

Please read the following license agreement carefully

Add-On Products software license agreement

Important - read carefully before accessing Add-On Products software.

By accessing or otherwise utilizing the services of the software, you agree to be bound by the terms of this Add-On Products Software License Agreement. If you do not agree to the terms of this Add-On Products Software License, you are not allowed to copy or use the software and you must therefore promptly return this package to the place from which you obtained it for a full refund. This License gives you the right to use the product accessing the number of clients / mailboxes written on the License.

Limitations on Reverse Engineering, Decompilation, and

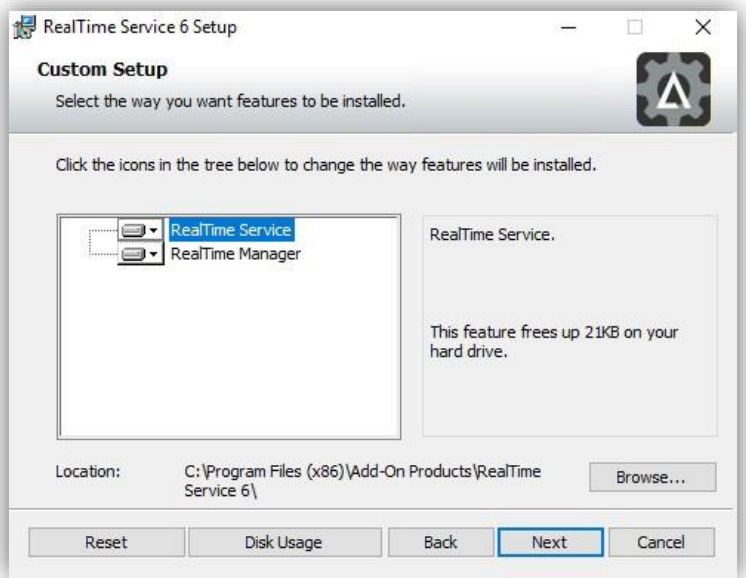
☑ I accept the terms in the License Agreement

Figure 2. End-User License Agreement

In order to proceed with the installation, you must confirm that you agree with the terms of the license agreement. Read the terms carefully and then decide whether you would like to install the software or not.

If you accept the license agreement terms, mark the checkbox ***"I accept the terms in the License Agreement"*** and click ***"Next"*** to continue.

On the next screen (see the figure below), you need to specify the installation path for the RealTime Service. Click ***"Browse"*** and navigate to the desired location in order to change the default installation path. To keep the default installation path (*C:\Program Files\Add-On Products\RealTime Service* 6\), just press the ***"Next"*** button.



RealTime Service 6 Setup

Custom Setup

Select the way you want features to be installed.

Click the icons in the tree below to change the way features will be installed.

- RealTime Service
- RealTime Manager

RealTime Service.

This feature frees up 21KB on your hard drive.

Location: C:\Program Files (x86)\Add-On Products\RealTime Service 6\

Figure 3. Custom setup

Besides the installation path, you can select here what components will be installed on the computer – just click on icons of the RealTime Service or the RealTime Manager for that. You will see the options like on the picture below.

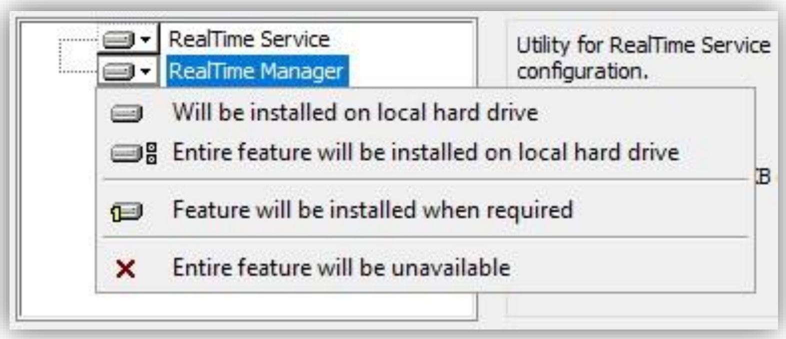
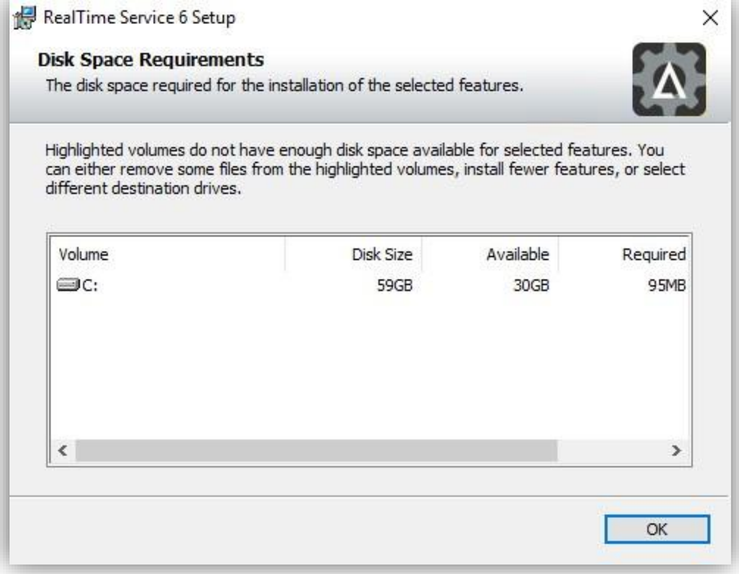

RealTime Service
RealTime Manager
Utility for RealTime Service configuration.
Will be installed on local hard drive
Entire feature will be installed on local hard drive
Feature will be installed when required
Entire feature will be unavailable

Figure 4. Select components to install

Thus, you can install just one component on the PC or choose another variant.

Also, on this step of installation you can check the free space on your local disks, it may be needed for choosing the installation path. So, press the ***"Disk Usage"*** button for that, then you will see the window like below.


RealTime Service 6 Setup

Disk Space Requirements

The disk space required for the installation of the selected features.

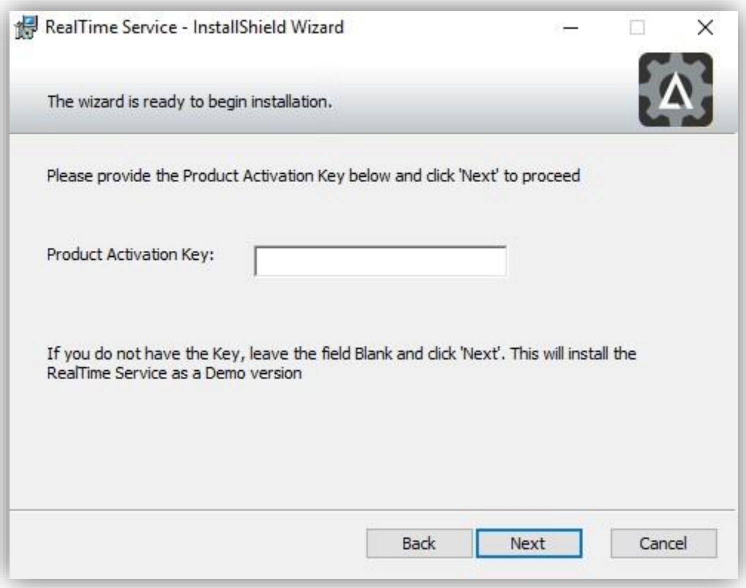
Highlighted volumes do not have enough disk space available for selected features. You can either remove some files from the highlighted volumes, install fewer features, or select different destination drives.

Volume	Disk Size	Available	Required
C:	59GB	30GB	95MB

Figure 5. Disk Space Requirements

Press ***"OK"*** to close this window.

Proceed forwards to the screen where you are required to enter Product Activation Key.


RealTime Service - InstallShield Wizard

The wizard is ready to begin installation.

Please provide the Product Activation Key below and click 'Next' to proceed

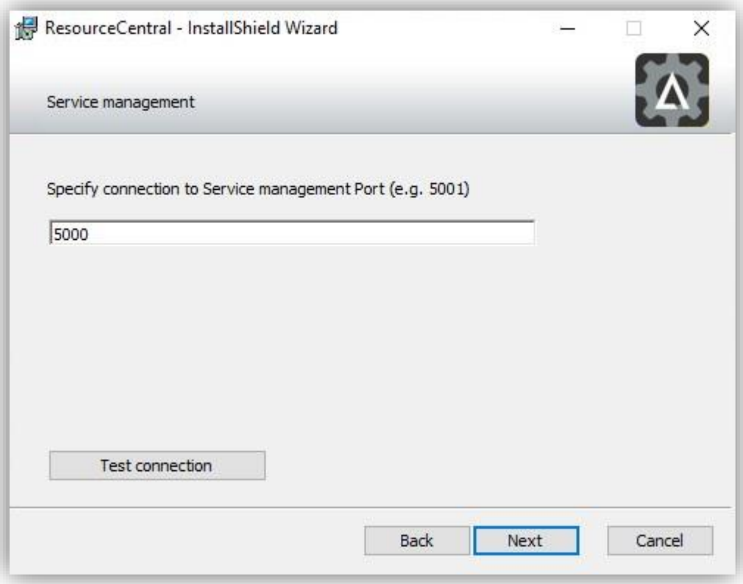
Product Activation Key:

If you do not have the Key, leave the field Blank and click 'Next'. This will install the RealTime Service as a Demo version

Figure 6. Product Activation Key

If you do not want to enter the key at this step, you can leave it blank and click [**Next**].

At the screen of service management, you are required to specify a connection to Service Management port:


ResourceCentral - InstallShield Wizard

Service management

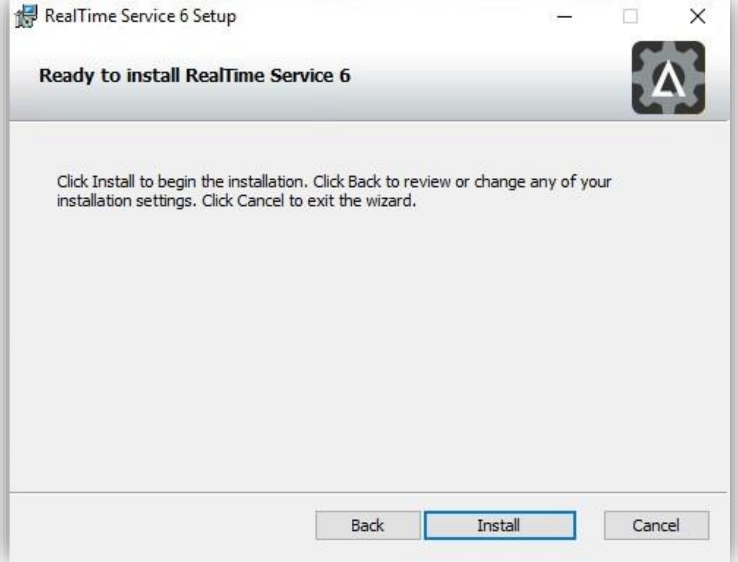
Specify connection to Service management Port (e.g. 5001)

5000

Figure 7. Service management port

The next step in the installation process is the screen which reports that the installer is ready to install the RealTime Service on your computer.

You can review the installation settings specified during the previous steps by clicking ***"Back"***. If you are sure that everything has been specified correctly, click ***"Install"*** to begin the installation.



RealTime Service 6 Setup

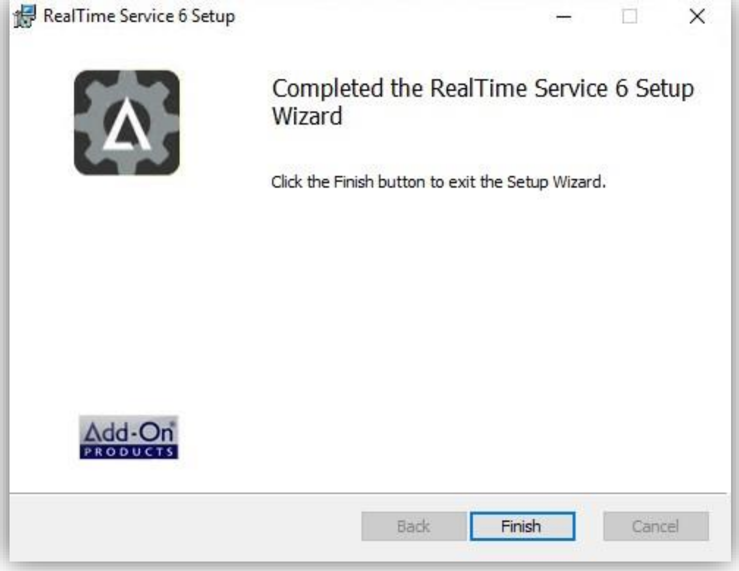
Ready to install RealTime Service 6

Click Install to begin the installation. Click Back to review or change any of your installation settings. Click Cancel to exit the wizard.

Figure 8. **Ready to install**

The progress bar will provide a visual indication of how much of the program has been installed.

When the installation is complete, a screen will appear informing you, if the installation is successful – see the picture below.



RealTime Service 6 Setup

Completed the RealTime Service 6 Setup Wizard

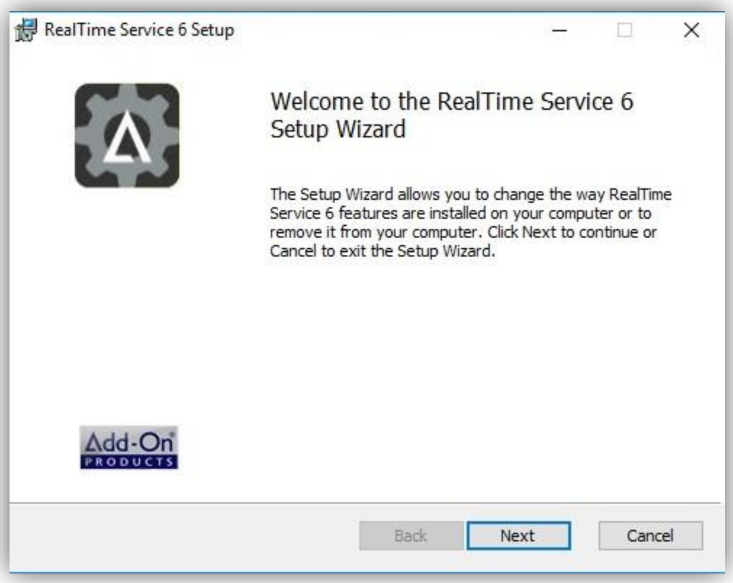
Click the Finish button to exit the Setup Wizard.

Figure 9. **Finish installation**

Click ***"Finish"*** to exit the RealTime Service installation wizard.

Re-installing RealTime Service

After you have launched the RealTime setup wizard, if you have already installed RealTime Service before, you will see the screen shown in the figure below:

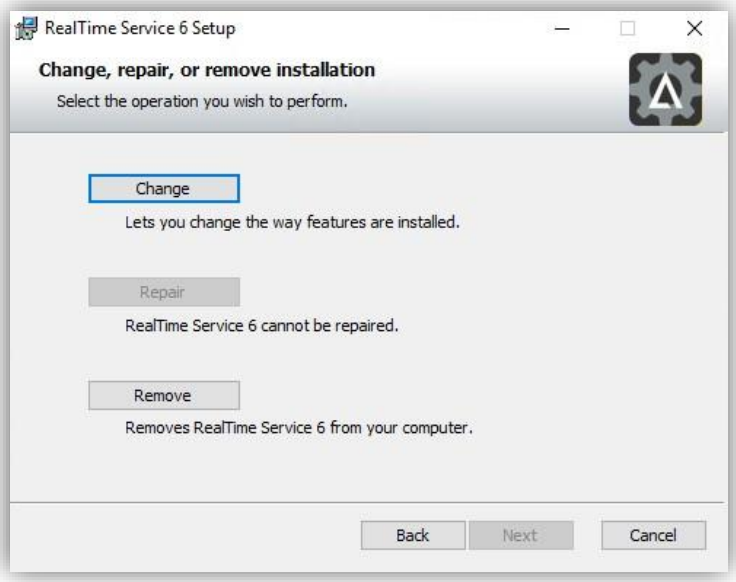


Welcome to the RealTime Service 6 Setup Wizard

The Setup Wizard allows you to change the way RealTime Service 6 features are installed on your computer or to remove it from your computer. Click Next to continue or Cancel to exit the Setup Wizard.

Figure 10. **RTS Setup wizard**

If you press the ***"Next"*** button, you will be offered to repair, remove, or change the RealTime Service (see the picture below).



Change, repair, or remove installation

Select the operation you wish to perform.

Lets you change the way features are installed.

RealTime Service 6 cannot be repaired.

Removes RealTime Service 6 from your computer.

Figure 11. **Change, repair or remove**

If you press the ***"Change"*** button, you will just re-install the application.

The option of repairing is currently unavailable.

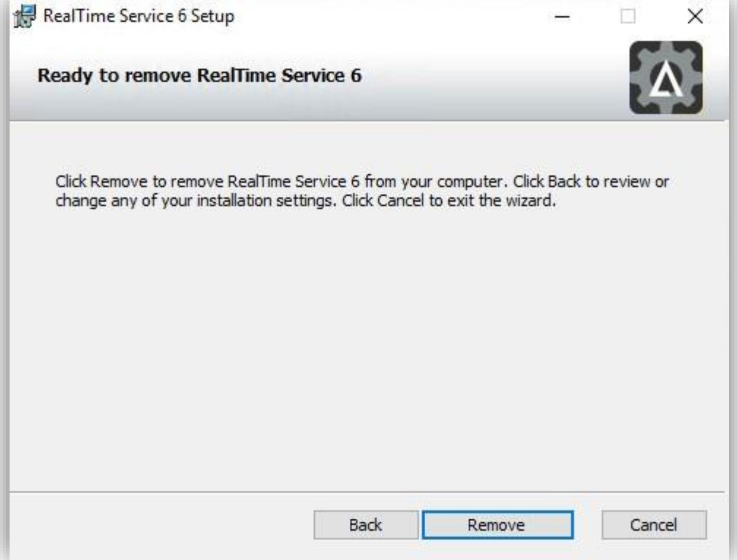
And, if you have to remove the RealTime Service, press the correspondent button. Read more about removing of the RTS in the following chapter.

When you install a newer version of the RealTime Service, its installation is processed as fresh – without offering changing, removing, or repairing options.

Removing RealTime Service

You can remove the RTS from your computer in two ways: through the Control panel or using the setup wizard.

When you press the ***"Remove"*** button in the setup wizard (see the picture above), you will see the following screen:



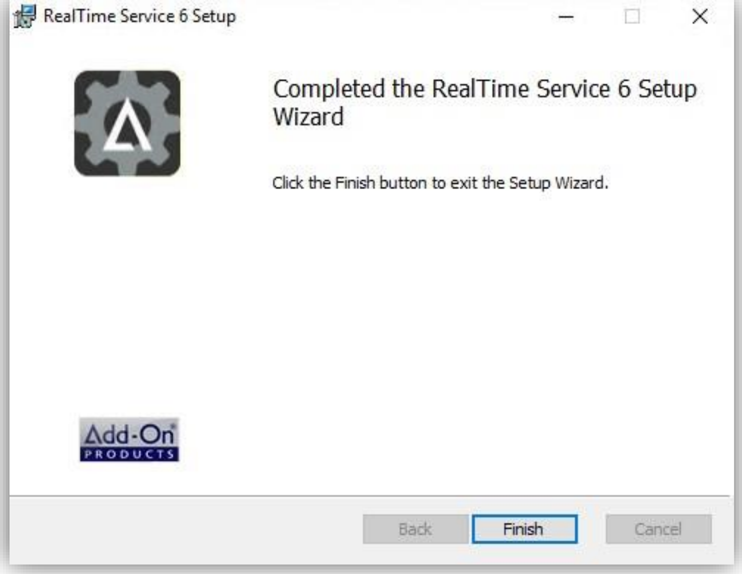
Ready to remove RealTime Service 6

Click Remove to remove RealTime Service 6 from your computer. Click Back to review or change any of your installation settings. Click Cancel to exit the wizard.

Figure 12. Ready to remove

Read the text on the screen and press the ***"Remove"*** button if you still need to uninstall the application.

After that you will see the screen with uninstalling progress bar, and then – the screen which informs about complete removing of RTS from your PC – see this screen below.



Completed the RealTime Service 6 Setup Wizard

Click the Finish button to exit the Setup Wizard.

Figure 13. Finish uninstallation

Press ***"Finish"*** to close the setup wizard.

As one more way, you can remove the RealTime Service by following the below steps:

1. Click the ***“Start”*** menu, select ***“Control Panel”***, find there ***“Add or Remove Programs”***.
2. The list of all programs installed on your computer will be shown in the ***“Add or Remove Programs”*** window.
3. Select the ***“RealTime Service”*** entry from the list and click ***“Remove***”.

Thus, all files from the “Program Files” folder will be removed.

The newly created files will not be removed in the folder \ProgramData\Add-On Products\RealTime Service 6. You have to remove them manually if you need.

Post-Installation Setup

Setting Up RealTime Service

Prior to using RealTime Service, you should take several post-installation setup steps to configure the proper operation of the solution. After you installed the RealTime Service, you must then set it up by using the RealTime Manager:

1. Create a user for the RealTime Service to connect to Exchange Server. See the Appendix A for more details
2. Set up a Connection String to the Configuration Database for the RealTime Service
3. Load a Purchased License for the RealTime Service
4. Set up a connection to the Exchange Server
5. Configure the output to the Exchange Central, Resource Central and the WebTeam Central databases including setting connections and groups

For detailed information on how to do the step 2 to 5, refer to corresponding sections in the RealTime Service User Guide.

CHAPTER 3.

Trouble Shooting

RealTime Service Fails to Install

During installation of the RealTime Service, the installation program can unexpectedly stop and display a message about an installation failure.

Usually, the installer fails, because it detects that the required software is not installed on target computers. Normally, the error message specifies what software is missing.

Please read the System Requirements section to make sure that all required software is in place before installation.

Appointment Timezone

If the RTS obtains wrong appointment time data, please check if the time zone on client computers, where appointments are created, have the same value with the time zone on the Exchange Server.

CHAPTER 4.

Appendixes

Appendix A

In order for the program to be able to run and to get proper access to calendars information on the Exchange Server, the Exchange Impersonation is used. You can read how to configure it in the following link: Configure impersonation | Microsoft Docs.

Appendix B

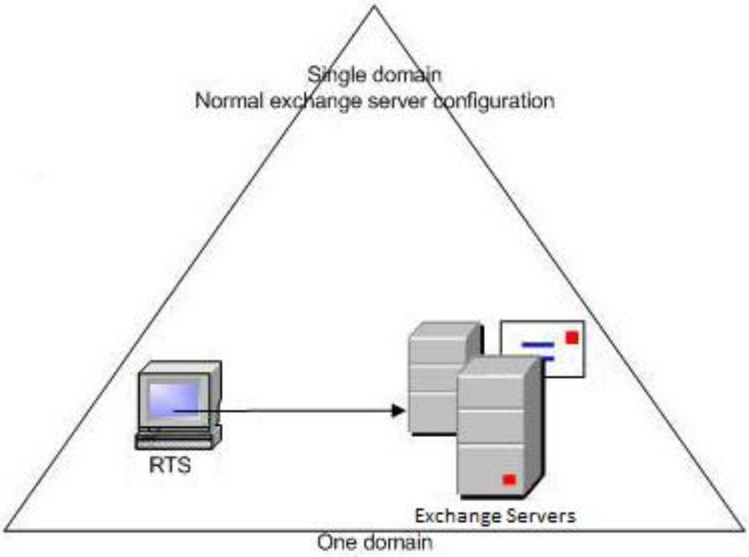
Here Supported Environments of the RealTime Service 6 and Account Permissions for each Environment are described.

The RealTime Service 6 supports various environments.

In order for the program to be able to run and to get proper access to calendar information on the Exchange Server, the application needs to be run under an account that has rights to impersonate other users. These account credentials (Username and Password) are entered in the "***Exchange Servers"*** tab of the RealTime Service settings in the RealTime Manager. For information about how to set necessary permissions for the account of each environment, please see the graphs below.

Single Domain

A single domain with one or many Domain Controller(s) structure is shown in this chapter.



Components:

- Exchange Server: Exchange Server 2013 / 2016 / 2019
- Domain Controller: Windows Server 2008 R2 / 2012 / 2012 R2 / 2016 / 2019 / 2022
- Client: Windows Server 2008 R2 / 2012 / 2012 R2 / 2016 / 2019 / 2022

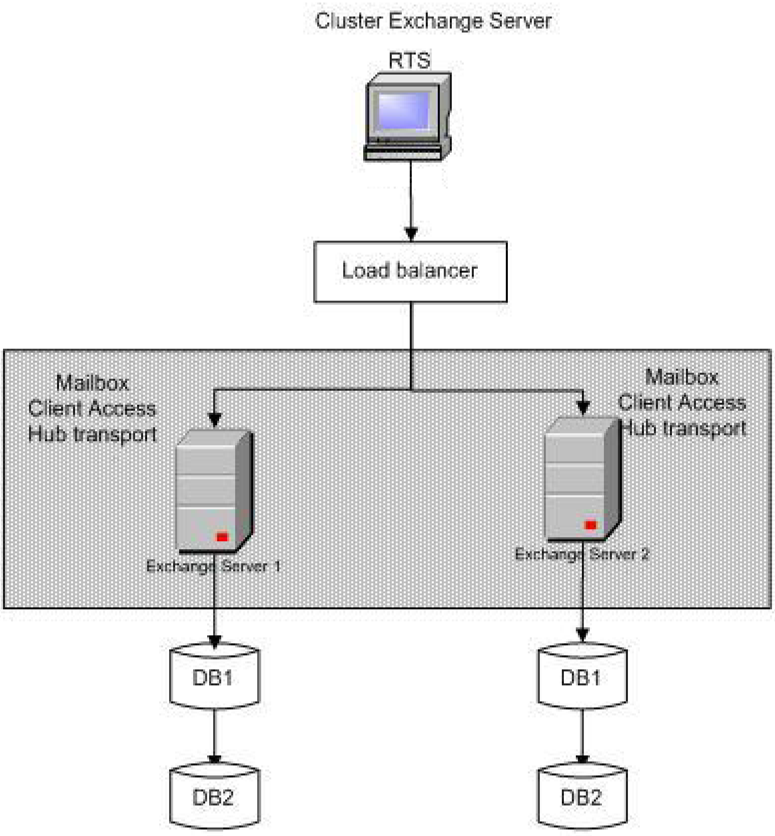
Exchange Cluster Domain

A server cluster is an arrangement of individual computers that each run the Microsoft Windows Cluster service. The computers that compose the server cluster are connected to each other through a network and a shared disc system.

See the Exchange Cluster Domain Topology on the picture below.

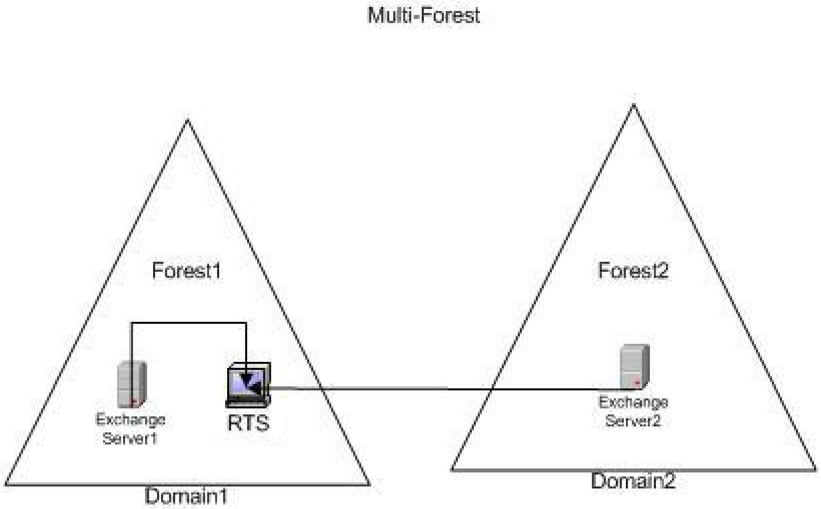
Components:

- Exchange Server: Exchange Server 2013 / 2016 / 2019
- Domain Controller: Windows Server 2008 R2 / 2012 / 2012 R2 / 2016 / 2019 / 2022
- Client: Windows Server 2008 R2 / 2012 / 2012 R2 / 2016 / 2019 / 2022


Cluster Exchange Server
RTS
Load balancer
Mailbox
Client Access
Hub transport
Exchange Server 1
Mailbox
Client Access
Hub transport
Exchange Server 2
DB1
DB2
DB1
DB2

Multi-Forest

In the multi-forest configuration, the RealTime service may be located in any of them.


Multi-Forest
Forest1
Exchange Server1
RTS
Domain1
Forest2
Exchange Server2
Domain2

Components:

- Exchange Server: Exchange Server 2013 / 2016 / 2019
- Domain Controller: Windows Server 2008 R2 / 2012 / 2012 R2 / 2016 / 2019 / 2022
- Client: Windows Server 2008 R2 / 2012 / 2012 R2 / 2016 / 2019 / 2022

Office 365 / Exchange Online

Office 365 hosts its own cloud domain for your organization, even if you already have on-premises one. In this configuration RTS is installed on-premises and does not require having local domain.

Components:

- Exchange Server: Office 365 / Exchange Online
- RTS host: Windows Server 2008 R2 / 2012 / 2012 R2 / 2016 / 2019 / 2022

Appendix C

Inbound and outbound RealTime Service (RTS) ports and needed IP addresses

Overview of inbound and outbound ports that RTS is using:

NOTE: The ports listed below are valid no matter where Realtime Service (RTS) is installed (on premise or in the cloud). If installed behind a firewall, then appropriate inbound ports and outbound ports should be used for RTS to communicate with other components.

RTS Inbound	Port	Description
Manager Service	5000	configurable
Calendar Service	5001	configurable
Push notifications subscription	10002	configurable

RTS Outbound	Port	Description
DNS	53	
Kerberos	88	
SQL Server	1433	Configurable in database settings
On-premise exchange	443	Access Exchange using EWS, configurable in exchange URL
On-premise LDAP	88,53,389	Not configurable
Office 365	80, 443	Access AD and Exchange, not configurable

RTM Outbound	Port	Description
DNS	53	
Kerberos	88	
RTS Manager Service	5000	Configurable

Overview of needed IP addresses:

You can have an overview of IP addresses RTS is using when talking to Office 365 by visiting this page: http://technet.microsoft.com/en-us/library/hh373144.aspx and look for the needed IP addresses in 3 sections:

- Office 365 portal and identity
- Exchange Online
- Exchange Online Protection (EOP)