# ClockWork 5 Install Guide with SQL Server Setup

INSTRUCTION MANUAL AND REFERENCE FOR IT DEPARTMENTS



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# INSTALLATION OVERVIEW

ClockWork consists of four main software components:

- The ClockWork server application is built on Microsoft WCF technology and provides a central point that all clients connect to;
- The ClockWork client application is a .NET based application installed on the client computers that provides the front-line interface for staff and administrative users. Updates are handled automatically through a web-based update system;
- The ClockWork web application is an ASP.NET based application that provides a frontline interface for some functionality to students and instructors. Functionality is provided through various modules built for different purposes.
- The ClockWork Appointment Sync supports either Microsoft Exchange or Google and optionally syncs all appointments to/from ClockWork (2-way mirror sync).

#### ClockWork Web

The online web modules offer complementary services to students and are available on and off campus. They provide a pluggable authentication system for students to use; stand-alone and LDAP / Active Directory modules are built in and a custom plug-in system is available if required.

#### Database

ClockWork uses a Microsoft Sql Server database as the back-end. Sql Server 2008/2012 Express may be used at no cost if a Sql Server database server is not currently available. The Express version of Sql Server has some limitations when compared with the full version, including a maximum usage of one CPU, a maximum memory usage of 1GB, and a maximum database size of 10 GB. These limitations are not normally a hindrance for an average ClockWork implementation.

# SYSTEM REQUIREMENTS

#### **Application Server**

ClockWork Server uses Microsoft Windows Communication Foundation (WCF) as the back-end for the application server software. WCF is a free Microsoft component on the server, similar to IIS, and runs in conjunction with IIS.

Application Server Requirements			
Processor	2GHz dual core or higher		
Framework	<ul> <li>.NET Framework 3.5 Service Pack 1 (SP1)</li> <li>Windows Communication Foundation (WCF) (this is located in the Windows "Add/remove features" area in Windows)</li> <li>IIS 7 or higher</li> </ul>		
SSL Certificate	<ul> <li>Can be the same SSL certificate used for the web modules (below) if the Application Server is on the same machine as the Web Server (this is the recommended setup)</li> </ul>		
Memory	4GB or more recommended		
Hard Disk	recommended 4GB of free space or more for installation		
Ports	<ul> <li>808 (TCP) and 80 (HTTP) (open to client)</li> <li>26 (SFTP) (server must download updates from a TechnoPro server – this feature is recommended but can be disabled if updates are to be downloaded manually)</li> </ul>		

#### Database Server

ClockWork uses Microsoft Sql Server as the back-end database, and is compatible with any of the 2005 or higher versions. The ClockWork database is intended to run from a server that hosts other databases for other applications; an automated backup schedule should be in place. A virtual machine may be used.

Database Server Requirements		
Software	Microsoft SQL Server 2008 or higher, any edition, is recommended.	
Hard Disk	25 GB minimum recommended for data. Actual data space requirements depend on usage. Backups will require additional space. It is recommended to store a copy of backups externally.	
Sql Server user	<ul> <li>One Sql Server user account with dbread and dbwrite permissions on the ClockWork database</li> <li>One Sql Server user account with truncate, create, and alter permissions on the ClockWork database (for installation and upgrading purposes)</li> </ul>	

#### Web Server

The ClockWork web modules can be installed on an existing web server along-side other applications. A virtual machine may be used.

Web Server Requirements			
Processor	2GHz dual core or higher recommended		
Server-side language	<ul> <li>ASP.NET 3.5 Service Pack 1 (SP1)</li> <li>IIS 7 or higher</li> </ul>		
Operating	Any operating system that supports the http server and		
System	the Server-Side language specified above		
Memory	4 GB or higher recommended		
Hard Disk	2GB of free space for installation, plus sufficient free hard drive		
	space to allow Windows/IIS to run smoothly.		
SSL certificate	A signed SSL certificate is required for secure transmission of data over the Internet.		

### Client (Staff computer)

The client software is installed on each staff computer. The Microsoft .NET Framework 3.5 is a free Microsoft download. ClockWork software updates are provided through a built-in ClockWork-Server-based updating system and can be controlled/restricted at an administrative level.

Client (Staff) Requirements		
Processor	2GHz or faster recommended	
Framework	.NET Framework 3.5 Service Pack 1 (SP1)	
Operating	Windows XP SP3 or later, Windows Vista, Windows 7, or	
System	Windows 8	
Memory	4 GB or more is recommended	
Hard Disk	2GB of free space or more for installation and updates	
Display	SVGA (1024x768) or higher recommended	
Other	Microsoft Word 2003 or higher	

### ClockWork Appointment Syncs (Server)

Outlook (Exchange) and Google Appointment Syncs are available. The sync will run as a Windows Service and perform full 2-way mirror syncs between ClockWork and Google or Exchange. Sync frequency is controlled by a setting.

ClockWork Appointment Sync Requirements			
Processor	2GHz dual core or higher recommended		
Framework	.NET Framework 3.5 Service Pack 1 (SP1)		
Operating	Windows 7 or higher		
System	<ul> <li>Windows Server 2008 or higher</li> </ul>		
Memory	4 GB or more is recommended		
Hard Disk	1GB of free space or more for installation and updates		

### Combination: Application Server and Web Server (Server)

These requirements are recommended if the ClockWork Application and Web Servers will be running on the same machine.

ClockWork Appointment Sync Requirements			
Processor	2GHz dual core or higher recommended		
Framework	.NET Framework 3.5 Service Pack 1 (SP1)		
Operating	Windows 7 or higher		
System	<ul> <li>Windows Server 2008 or higher</li> </ul>		
Memory	6GB minimum, 8GB or more is recommended		
Hard Disk	6GB of free space or more for installation and updates		

### Combination: Application Server and Appointment Sync (Server)

These requirements are recommended if the ClockWork Application server and ClockWork Appointment Sync will be running on the same machine.

ClockWork Appointment Sync Requirements			
Processor	2.4GHz dual core or higher recommended		
Framework	.NET Framework 3.5 Service Pack 1 (SP1)		
Operating	Windows 7 or higher		
System	<ul> <li>Windows Server 2008 or higher</li> </ul>		
Memory	6GB minimum, 8GB or more is recommended		
Hard Disk	6GB of free space or more for installation and updates		

# Combination: Application Server, Web Server and Appointment Sync (Server)

These requirements are recommended if the ClockWork Application Server, Web Server, and Appointment Sync will be running on the same machine.

ClockWork Appointment Sync Requirements			
Processor	2.4GHz dual core or higher recommended		
Framework	.NET Framework 3.5 Service Pack 1 (SP1)		
Operating	Windows 7 or higher		
System	<ul> <li>Windows Server 2008 or higher</li> </ul>		
Memory	8GB minimum, 12GB or more is recommended		
Hard Disk	10GB of free space or more for installation and updates		

\* Please contact us for specific requirements if multiple ClockWork systems will be running from the same machine.

#### ClockWork Licensing Specifications for IT information

Each Department that purchases ClockWork will be allowed the following:

Install a Test and Production version of the "ClockWork Database", the "ClockWork Server Application", the "ClockWork Web Server".

Department may install the "Software Client" on as many computers as they wish. The number of "Concurrent Licenses" purchased will dictate how many users can connect to ClockWork at the same time.



# INSTALLING SQL

## DOWNLOAD SQL

A free version of MS SQL Server (2012 Express) can be downloaded from **www.microsoft.com/en-us/download/details.aspx?id=29062** 

For most functionality, download SQLEXPRADV\_x64\_ENU.exe for a 64 bit operating system and SQLEXPR32\_x86\_ENU.exe for a 32 bit operating system.

### INSTALL SQL

1. Run the SQL Installer



2. Select "New SQL Server stand-alone installation" option



3. Accept the license conditions and click next

License Terms	
To install SQL Server 20	12, you must accept the Microsoft Software License Terms.
License Terms Product Updates Install Setup Files	MICROSOFT SOFTWARE LICENSE TERMS
	These license terms are an agreement between Microsoft Corporation (or based on where you live, one of its affiliates) and you. Please read them. They apply to the software named above, which includes the media on which you received it, if any. The terms also apply to any Microsoft
	updates,
	supplements,
	Internet-based services, and
	<ul> <li>support services</li> </ul>
	🗈 🗐 Copy Print
	✓ I accept the license terms.
	Send feature usage data to Microsoft. Feature usage data includes information about your hardware configuration and how you use SQL Server and its components.
	See the Microsoft SQL Server 2012 Privacy Statement for more information.
	< Back Next > Cancel

#### 4. Installation will begin

18	SQL Server 2012	Setup	
Install Setup Files			
SQL Server Setup will now be in update will also be installed.	stalled. If an update for SQL Server Setup is	found and specified to be included, the	
License Terms Product Updates Install Setup Files	SQL Server Setup files are being installed o	on the system.	
	Task	Status	
	Scan for product updates	Completed	
	Download Setup files	Skipped	
	Extract Setup files	Skipped	
	Install Setup files	In Progress	

#### 5. Select All features and click Next

📸 SQL Server 2012 Setup		
Feature Selection Select the Express features to i	nstall.	
Setup Support Rules Feature Selection Installation Rules Instance Configuration Disk Space Requirements Server Configuration Database Engine Configuration Error Reporting Installation Configuration Rules Installation Progress Complete	Features:	Feature description:         The configuration and operation of each instance feature of a SQL Server instances is isolated from other SQL Server instances. SQL Server instances can operate side-by-side on the same computer.         Prerequisites for selected features:         Already installed:         Windows PowerShell 2.0         Microsoft .NET Framework 3.5         To be installed from media:         Microsoft Visual Studio 2010 Shell         To be installed from internet:         Microsoft .NET Framework 4.0
	Select All Unselect All Shared feature directory: C:\Program File Shared feature directory (x86): C:\Program File	s\Microsoft SQL Server\

6. Leave default settings and click Next

1	SQL	Server 2012	2 Setup		
Instance Configuration Specify the name and instance	I ID for the instance of SQL S	erver. Instance	ID becomes part of t	he installation path.	
Setup Support Rules Feature Selection Installation Rules Instance Configuration Disk Space Requirements Server Configuration Database Engine Configuration Reporting Services Configuration Error Reporting Installation Configuration Rules Installation Progress	<ul> <li>Default instance</li> <li>Named instance:</li> </ul>	SQLExpre	55		
	Instance ID: Instance root directory:	SQLEXPR C:\Progra	SQLEXPRESS C:\Program Files\Microsoft SQL Server\		
	SQL Server directory: Reporting Services directo Installed instances:	C:\Progra ry: C:\Progra	m Files\Microsoft SQ m Files\Microsoft SQ	L Server\MSSQL11.SQ L Server\MSRS11.SQLI	LEXPRESS
	Instance Name In	stance ID	Features	Edition	Version
			< Back	Next > Car	ncel Help

7. Leave default settings again and click **Next**. Configuration will be done later.

1	SQL Server 201	2 Setup			×
Server Configuration Specify the service accounts and	l collation configuration.				
Setup Support Rules	Service Accounts Collation				
Feature Selection Installation Rules	Microsoft recommends that you use	a separate account for each	SQL Server servi	ce.	
Instance Configuration	Service	Account Name	Password	Startup Type	
Disk Space Requirements	SQL Server Database Engine	NT Service\MSSQL\$SQL		Automatic 🗸	
Server Configuration	SQL Server Reporting Services	NT Service\ReportServer		Automatic 🗸	
Database Engine Configuration	SQL Full-text Filter Daemon Launc	NT Service\MSSQLFDLa		Manual	
Reporting Services Configuration	SQL Server Browser	NT AUTHORITY\LOCAL		Disabled 🗸	
Error Reporting Installation Configuration Rules Installation Progress Complete					
		< Back Next	> Can	el Help	

8. Authentication Mode: Select "Mixed Mode" and select an SQL admin. Then click Next

5	SQL Server 2012 Setup
Database Engine Confi	guration
Specify Database Engine auther	ntication security mode, administrators and data directories.
Setup Support Rules	Server Configuration Data Directories User Instances FILESTREAM
Feature Selection Installation Rules	Specify the authentication mode and administrators for the Database Engine.
Instance Configuration	Authentication Mode
Disk Space Requirements	Windows authentication mode
Server Configuration	O Mixed Mode (SQL Server authentication and Windows authentication)
Database Engine Configuration	
Reporting Services Configuration	specify the password for the SQL Server system administrator (sa) account.
Error Reporting	Enter password:
Installation Configuration Rules	Confirm password:
Complete	Specify SQL Server administrators
	Win8ClockWork\mark (mark) SQL Server administrators
	have unrestricted access to the Database Engine.
	Add Current User Add Remove
	< Back Next > Cancel Help

#### 9. Select Install Only and click Next



#### 10. Keep click Next until installation is complete then click Close

1	SQL Server 2012 Setup			- • ×
Complete Your SQL Server 2012 installati	on completed successfully with product updates.			
Setup Support Rules Feature Selection Installation Rules Instance Configuration Disk Space Requirements Server Configuration Database Engine Configuration Reporting Services Configuration Error Reporting Installation Configuration Rules Installation Progress <b>Complete</b>	Information about the Setup operation or possible r Feature Management Tools - Basic SQL Server Data Tools Database Engine Services Full-Text and Semantic Extractions for Search SQL Server Replication Reporting Services - Native Details: Viewing Product Documentation for SQL S Only the components that you use to view and been installed. By default, the Help Viewer com SQL Server, you can use the Help Library Man- your local computer. For more information, see <http: ?linkid="224683&lt;br" fwlink="" go.microsoft.com="">20246831 Summary log file has been saved to the following lo C\Program Files\Microsoft SQL Server\110\Setup B \Summary Win8ClockWork 20120619 063706.txt</http:>	erver manage the document ager component to do Use Microsoft Books (http://go.microsof cation: tootstrap\Log\2012061	ntation for SQL 5 ne library. After i winload docume 5 Online for SQL 1.com/fwlink/?Lir 9 063706	Server have nstalling ntation to <u>Server</u> hkID=
			Close	Help

# CREATING THE DATABASE

### CREATE NEW DATABASE

1. Open SQL Server Management Studio

Microsoft SQL Server Management Studio	- 0
File Edit View Debug Tools Window Help	
: [] - · · · · · · · · · · · · · · · · · ·	-
Object Explorer 🗸 🖟 🗙	
Connect - 🕄 🛃 = 🍸 🖻 🍒	
B 🚯 WinkScheckWorkIschExPRESS (Sch. Sen	
🗄 🦢 Databases	
B Security	
🗄 🛄 Management	

2. Right click on **Databases** in the left pane and select **New Databse** 



3. Name the Database "ClockWork" and click Ok



### PREPARE DATABASE

1. Right click on the newly created database and select New Query





#### \*The following queries must be executed in this order

2. Paste "ClockWorkTables" query into the white space then click **Execute**.

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🐻 Win8ClockWork/SQLEXPRESS (SQL Server 11.0.2100 - W 🔺	00 /****** Object: ForelanKey [FK WorkshooFeesPaid Workshoos] Script Date: 84/08/2008 89:52:84 *	110	
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3. Click **New Query.** Paste "ClockWorkData" query into the white space then click **Execute**.



4. Click **New Query.** Paste "DatabasePatch" query into the white space then click **Execute**.

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Cenned - 👷 👷 🗉 🍸 🗐 🔏	ALTER TABLE (NorkshopfeesPaid) MOCHECK CONSTRAINT [FK_NorkshopfeesPaid_People1)	Current connection	parameters •
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ChardWoellser2	ALTER TABLE (Workshops, target) MITH MOCHECK ADD CONSTRAINT [FC_Workshops_target_Workshops] FORE REFERENCES (Workshops) ([Workshop2D]) 00 ALTER TABLE (Workshops, target) MOCHECK CONSTRAINT [FC_Workshops_target_Workshops] 00 /****** Object: Forelgenzy [FC_Workshops_target_Workshops_target_Lookup] Soript Date: 84/86/2 ALTER TABLE (Workshops_target] IND/HECK ADD CONSTRAINT [FC_Workshops_target_Workshops_target EFFERMENTS (Workshops_target_Lookup) ((Workshops_target_Lookup12)) 00 ALTER TABLE (Workshops_target_MOCHECK ADD CONSTRAINT [FC_Workshops_target_Workshops_target_Lookup2]) 00 ALTER TABLE (Workshops_target_MOCHECK CONSTRAINT [FC_Workshops_target_Workshops_target_Lookup2]) 00 00 00 00 00 00 00 00 00 0	Connection state Display name Login name Server name Server name Service name Servi	i Open WindCodWork(SQLD) WindCodWork(SQLD) III.02100 C 54

# CREATING SQL LOGINS

### CREATE CLOCKWORKUSER LOGIN

1. Right Click Security and select New -> Login



2. Enter the username "ClockWorkUser" and choose a password

3	Login -	New		
Select a page	Script 👻 📑 Help			
Server Roles       Was Mapping       Securables       Status	Login name: Vindows authentication SQL Server authentication Password: Confirm password: Specify old password Old password: Enforce password expira User must change passw Mapped to certificate	OockWorkUser		Search
Connection	Map to Credential			✓ Add
Server: Win8ClockWork\SQLEXPRESS Connection: Win8ClockWork\mark Win8ClockWork\mark	Mapped Credentials	Credential	Provider	
Progress				Remove
Ready	Default database: Default language:	ClockWork <default></default>		•
			ок	Cancel

### CONFIGURE CLOCKWORKUSER LOGIN

1. Click **User Mapping** in the left pane. Under Database role membership for: ClockWork, check off **db\_datareader** and **db\_datawriter** then click **OK** 

Login Properties - ClockWork	User				
Select a page		▼ Help			
General Server Roles	Users mapped to this login:				
Securables	Map	Database	User	Default Schema	
Status	<b>V</b>	ClockWork	ClockWorkUser	dbo	
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		msdb			
		tempdb			
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Server: TECHNO-BACKUP\SQLEXPRES:		ccessadmin	LE		
Connection	✓ db_d	atareader			
TECHNO-BACKUP\Mark LePage	V db_d	atawriter			
View connection properties	db_d db_d	dladmin enydatareader enydatawriter			
Progress	db_o	wner			
Ready	i db_se ✓ public	ecurityadmin C			
				ОК	Cancel



## CREATE CLOCKWORKUPDATESUSER LOGIN



1. Right Click Security and select New -> Login

2. Enter the username "ClockWorkUpdatesUser" and choose a password

3	Login -	New		
Select a page	Script 🔻 📑 Help			
Server Roles	Login name: Vindows authentication SQL Server authentication Password: Confirm password: Specify old password Old password: Enforce password policy Enforce password expira User must change passw Mapped to certificate Mapped to asymmetric key	ClockWorkUser	~	Search
Connection	Map to Credential		~	Add
Server: Win8ClockWork\SQLEXPRESS Connection: Win8ClockWork\mark Win8ClockWork\mark	Mapped Credentials	Credential	Provider	
Progress				Remove
Ready	Default database: Default language:	ClockWork <default></default>	~	
			ОК	Cancel:

### CONFIGURE CLOCKWORKUPDATEUSER LOGIN

1. Click **User Mapping** in the left pane. Under Database role membership for: ClockWork, check off **db\_datareader**, **db\_datawriter**, **db\_owner**, **db\_securityadmin** then click **OK** 

Select a page	CP Control	- 173 11-1-				
P General	Script					
I Server Roles I User Mapping	Users mapped to this login:					
Securables	Map	Database	User	Default Schema		
Status		ClockWork	ClockWorkUser	dbo		
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# SERVER 2012 PREPERATION

#### 1. Install the following roles

Select one or more roles to install on the selected server.

Hyper-V     Network Policy and Access Services     Print and Document Services     Remote Access     Remote Desktop Services     Volume Activation Services      Volume Activation Services      Web Server (IIS) (Installed)      Web Server (Installed)     P @ Common HTTP Features (Installed)     P @ Health and Diagnostics (Installed)     P @ Performance (Installed)     @ @ Security (Installed)	
<ul> <li>Network Policy and Access Services</li> <li>Print and Document Services</li> <li>Remote Access</li> <li>Remote Desktop Services</li> <li>Volume Activation Services</li> <li>Volume Activation Services</li> <li>Web Server (IIS) (Installed)</li> <li>Web Server (Installed)</li> <li>Web Server (Installed)</li> <li>Common HTTP Features (Installed)</li> <li>Health and Diagnostics (Installed)</li> <li>Performance (Installed)</li> <li>Security (Installed)</li> </ul>	^
<ul> <li>Print and Document Services</li> <li>Remote Access</li> <li>Remote Desktop Services</li> <li>Volume Activation Services</li> <li>✓ Web Server (IIS) (Installed)</li> <li>✓ Web Server (Installed)</li> <li>✓ Web Server (Installed)</li> <li>✓ E Common HTTP Features (Installed)</li> <li>✓ Health and Diagnostics (Installed)</li> <li>✓ Performance (Installed)</li> <li>✓ Security (Installed)</li> </ul>	
Remote Access     Remote Desktop Services     Volume Activation Services      Volume Activation Services      Web Server (IIS) (Installed)      ✓ Web Server (Installed)      ✓ Web Server (Installed)      ✓ ■ Health and Diagnostics (Installed)      ■ Performance (Installed)      ■ Security (Installed)	
<ul> <li>Remote Desktop Services</li> <li>Volume Activation Services</li> <li>Web Server (IIS) (Installed)</li> <li>Web Server (Installed)</li> <li>Common HTTP Features (Installed)</li> <li>Health and Diagnostics (Installed)</li> <li>Performance (Installed)</li> <li>Security (Installed)</li> </ul>	
Volume Activation Services      Web Server (IIS) (Installed)      Web Server (Installed)     Web Server (Installed)     ■ Common HTTP Features (Installed)     ■ Health and Diagnostics (Installed)     ■ Performance (Installed)     ■ Security (Installed)	
<ul> <li>✓ Web Server (IIS) (Installed)</li> <li>✓ Web Server (Installed)</li> <li>&gt; Common HTTP Features (Installed)</li> <li>&gt; Health and Diagnostics (Installed)</li> <li>&gt; Performance (Installed)</li> <li>&gt; Security (Installed)</li> </ul>	
<ul> <li>✓ Web Server (Installed)</li> <li>▷ □ Common HTTP Features (Installed)</li> <li>▷ □ Health and Diagnostics (Installed)</li> <li>▷ □ Performance (Installed)</li> <li>▷ □ Security (Installed)</li> </ul>	
<ul> <li>Common HTTP Features (Installed)</li> <li>Health and Diagnostics (Installed)</li> <li>Performance (Installed)</li> <li>Security (Installed)</li> </ul>	
<ul> <li>Health and Diagnostics (Installed)</li> <li>Performance (Installed)</li> <li>Security (Installed)</li> </ul>	
<ul> <li>Performance (Installed)</li> <li>Security (Installed)</li> </ul>	
Security (Installed)	
<ul> <li>Application Development (Installed)</li> </ul>	
✓ .NET Extensibility 3.5 (Installed)	
✓ .NET Extensibility 4.5 (Installed)	
Application Initialization	
ASP (Installed)	
ASP.NET 3.5 (Installed)	
ASP.NET 4.5 (Installed)	
CGI	
✓ ISAPI Extensions (Installed)	
✓ ISAPI Filters (Installed)	
Server Side Includes	≡
WebSocket Protocol	
FTP Server	
IIS Hostable Web Core	
<ul> <li>Management Tools (Installed)</li> </ul>	
✓ IIS Management Console (Installed)	
▲ IIS 6 Management Compatibility (Installed)	)
✓ IIS 6 Metabase Compatibility (Installed	)
✓ IIS 6 Management Console (Installed)	
✓ IIS 6 Scripting Tools (Installed)	
✓ IIS 6 WMI Compatibility (Installed)	
✓ IIS Management Scripts and Tools (Installe)	èc
Management Service (Installed)	
Windows Deployment Services	
Windows Server Update Services	
< III >	$\sim$

#### 2. Install the following features:

#### Features

⊿	.NET Framework 3.5 Features (Installed)
	✓ .NET Framework 3.5 (includes .NET 2.0 and 3.0) (Installed)
	✓ HTTP Activation (Installed)
	✓ Non-HTTP Activation (Installed)
⊿	✓ .NET Framework 4.5 Features (Installed)
	✓ .NET Framework 4.5 (Installed)
	ASP.NET 4.5 (Installed)
	▲ ✓ WCF Services (Installed)
	✓ HTTP Activation (Installed)
	Message Queuing (MSMQ) Activation (Installed)
	✓ Named Pipe Activation (Installed)
	✓ TCP Activation (Installed)
	TCP Port Sharing (Installed)

## WINDOWS SERVER 2012 FIX

# This step is only for windows server 2012. If using another version of server, please skip this step.

- 1. Open the following file in a text editor, such as Notepad, as an administrator: %windir%\Microsoft.NET\Framework\v2.0.50727\CONFIG\web.config
- 2. Add the following configurations section before the "</configuration>" tag.

**Note**: the "</configuration>" tag is located at the bottom of the file.

```
<system.serviceModel>
<serviceHostingEnvironment>
<add name="net.tcp"
transportConfigurationType="System.ServiceModel.Activation.TcpHostedTransportConfigur
ation, System.ServiceModel, Version=3.0.0.0, Culture=neutral,
PublicKeyToken=b77a5c561934e089" />
<add name="net.pipe"
transportConfigurationType="System.ServiceModel.Activation.NamedPipeHostedTransportCo
nfiguration, System.ServiceModel, Version=3.0.0.0, Culture=neutral,
PublicKeyToken=b77a5c561934e089" />
<add name="net.msmg"
transportConfigurationType="System.ServiceModel.Activation.MsmqHostedTransportConfigu
ration, System.ServiceModel, Version=3.0.0.0, Culture=neutral,
PublicKeyToken=b77a5c561934e089" />
<add name="msmq.formatname"
transportConfigurationType="System.ServiceModel.Activation.MsmqIntegrationHostedTrans
portConfiguration, System.ServiceModel, Version=3.0.0.0, Culture=neutral,
PublicKeyToken=b77a5c561934e089" />
</serviceHostingEnvironment>
</system.serviceModel>
```

3. Add the following configuration sections to the file, if they do not already exist:

```
<protocols>
<add name="net.tcp"
processHandlerType="System.ServiceModel.WasHosting.TcpProcessProtocolHandler,
System.ServiceModel.WasHosting, Version=3.0.0.0, Culture=neutral,
PublicKeyToken=b77a5c561934e089"
appDomainHandlerType="System.ServiceModel.WasHosting.TcpAppDomainProtocolHandler,
System.ServiceModel.WasHosting, Version=3.0.0.0, Culture=neutral,
PublicKeyToken=b77a5c561934e089"
validate="false" />
<add name="net.pipe"
processHandlerType="System.ServiceModel.WasHosting.NamedPipeProcessProtocolHandler,
System.ServiceModel.WasHosting, Version=3.0.0.0, Culture=neutral,
PublicKeyToken=b77a5c561934e089"
appDomainHandlerType="System.ServiceModel.WasHosting.NamedPipeAppDomainProtocolHandle
r, System.ServiceModel.WasHosting, Version=3.0.0.0, Culture=neutral,
PublicKeyToken=b77a5c561934e089"
validate="false" />
<add name="net.msmg"
processHandlerType="System.ServiceModel.WasHosting.MsmqProcessProtocolHandler,
System.ServiceModel.WasHosting, Version=3.0.0.0, Culture=neutral,
PublicKeyToken=b77a5c561934e089"
appDomainHandlerType="System.ServiceModel.WasHosting.MsmqAppDomainProtocolHandler,
System.ServiceModel.WasHosting, Version=3.0.0.0, Culture=neutral,
PublicKeyToken=b77a5c561934e089"
validate="false" />
<add name="msmg.formatname"
processHandlerType="System.ServiceModel.WasHosting.MsmqIntegrationProcessProtocolHand
ler, System.ServiceModel.WasHosting, Version=3.0.0.0, Culture=neutral,
PublicKeyToken=b77a5c561934e089"
appDomainHandlerType="System.ServiceModel.WasHosting.MsmqIntegrationAppDomainProtocol
Handler, System.ServiceModel.WasHosting, Version=3.0.0.0, Culture=neutral,
PublicKevToken=b77a5c561934e089"
validate="false" />
</protocols>
```

- 4. Save the file.
- 5. After the file is saved, follow steps 4.2 4.4 again for the following file, and then restart the computer.

%windir%\Microsoft.NET\Framework64\v2.0.50727\CONFIG\web.config

# INSTALL CLOCKWORK CLIENT

### **INSTALL CLOCKWORK CLIENT ON SERVER**

1. Run the client file and follow the on screen instructions

🐻 ClockWork.5-12-05-24.msi

2. When complete, run the ClockWork Connection tool as an Administrator



3. Click Show old connection tool



26

4. Enter the database server name or IP and the database name

Clock	Work Database Connection Setup
File	Tools
V	This tool will allow you to set and check the connection settings for this computer to connect to the ClockWork Database for the currently logged in user. Please enter the appropriate settings and use the 'Test Connection' and 'Test Database Password' buttons to verify your settings.
	1. Select the type of database you are using:       SQL Server
	2. Select or enter a database server name or IP: ClockWorkDatabase Refresh List
) 	3. Enter the database name (this will normally be 'ClockWork'): ClockWork 4. Enter information to logon to the database server: ▼ Use Integrated Security
	Username: Password:
	Test Connection
8 i	5. Enter the database encryption/decryption password for your department:
	Test Connection And Password
A 🛃	dd to favourites  😪 Save 🄀 Close

5. Uncheck Use Integrated Security and enter the username and password of the server

Clock	kWork Databas	se Connection Setup	3
File	Tools		
	This comp user. F	s tool will allow you to set and check the connection settings for this uter to connect to the ClockWork Database for the currently logged in Please enter the appropriate settings and use the 'Test Connection' and 'Test Database Password' buttons to verify your settings.	
	1. Select the ty SQL Server	ype of database you are using:	
	2. Select or en ClockWorkD	ter a database server name or IP: atabase ▼ Refresh List	
	3. Enter the da ClockWork	atabase name (this will normally be 'ClockWork'):	
<b>%</b>	4. Enter inform ☐ Use Integ	nation to logon to the database server: rated Security	
	Username:	ClockWorkUser	
	Password:	******	
		Test Connection	
8	5. Enter the da	atabase encryption/decryption password for your department:	
	Test	Connection And Password	Fil
A	dd to favou	rites 💦 Favourites 🖌 Save 样 Close	

6. Test the connection



7. Click on "Tools" then "Initialize ClockWork". Follow the on-screen instructions. When creating user, check off "Make admin user". Choose a strong encryption password.

8. Enter the **encryption password** from the previous step and click "Test connection and password"

🛢 Cloc	kWork Database Connection Setup				
File	Tools				
V	This tool will allow you to set and check the connection settings for this computer to connect to the ClockWork Database for the currently logged in user. Please enter the appropriate settings and use the Test Connection' and Test Database Password' buttons to verify your settings.				
	1. Select the type of database you are using:				
-	2. Select or enter a database server name or IP: sqlprod.colostate.edu				
	State the database name (this will parmality to (Closed Mork/W))           RDSClockWork         ClockWork Connection Settings				
<b>%</b>	Enter information to logon 1     Database Connection Succeeded!				
	Username: RDSClockW( Password: ************************************				
	Test Connection				
8	5. Enter the database encryption/decryption password for your department:				
	Test Connection And Password				
<b>I</b>	Add to favourites 📦 Favourites 🖌 Save 💥 Close				

# SET UP SSL CERTIFICATE

### SET UP SSL CERTIFICATE

1. Run MMC as an administrator

Programs (1)	
Files (2)	File description: Microsoft Management Console
GDT_U.VSS	Company: Microsoft Corporation
GDT M.VSS	Date created: 7/13/2009 7:49 PM
	Size: 2.04 MB
🔎 See more results	115
mmc	× Shut down >

2. Go to 'File' and click 'Add/Remove Snap

-	🚡 Console1 - [Console Root]						
-	File	Action	View	Favorites	Window	He	
		New			Ctrl+N		
		Open			Ctrl+O		
⊳		Save			Ctrl+S		
		Save As					
		Add/Rem	ove Sna	p-in	Ctrl+M		
		Options					
		1 SQLServ	erMana	ger10.msc			
		2 compm	gmt.ms	c			
		Exit					

3. Double click on 'Certificates'

vailable snap-ins:		Selected snap-ins:	
Snap-in	Vendor 🔺	Console Root	Edit Extensions
📩 ActiveX Control	Microsoft Cor		
🛺 Authorization Manager	Microsoft Cor		Remove
🔂 Certificates	Microsoft Cor		
Component Services	Microsoft Cor		Move Up
Computer Managem	Microsoft Cor		
Hevice Manager	Microsoft Cor	u. 1	Move Down
🜁 Disk Management	Microsoft and		
🛃 Event Viewer	Microsoft Cor		
📔 Folder	Microsoft Cor		
Group Policy Object	Microsoft Cor		
internet Information	Microsoft Cor		
Internet Information	Microsoft Cor		
Survity Monitor	Microsoft Cor		0.dvap.ced
🔜 IP Security Policy Ma	Microsoft Cor 🔟	I	Advanceu
escription:			
The Certificates span-in alls	we you to browse the conter	ts of the certificate stores for v	ourself a service, or a computer
nne cerandades snaphn aid	wayou to provise the conter	is of the certificate stores for y	barseir, a service, or a compater.

#### 4. Select Computer account and click Next

Certificates snap-in		×
This snap-in will always manage certificates for:		
O My user account		
Service account		
Computer account		
	< Back Ne	xt > Cancel

Select Computer	×
Select the computer you want this snap-in to manage.	
I his snap-in will always manage:	
<ul> <li>Local computer: (the computer this console is running on)</li> </ul>	
C Another computer:	
Allow the selected computer to be changed when launching from the command line. This	
only applies if you save the console.	
< Back Finish Cance	

### SET CERTIFICATE PERMISSIONS

1. Right click on certificate and click on 'All Takes' then 'Manage Private Keys'



2. Click on 'Add' and add users "IIS\_IUSRS" and "NETWORK SERVICE". They must both have full control.

Permissions for ClockWork priv	ate keys	×				
Security						
Group or user names:	Group or user names:					
SYSTEM						
Administrators (TECHNO-BAC	KUP\Administrat	ors)				
Account Unknown(S-1-5-5-0-2	298470)					
IIS_IUSRS (TECHNO-BACKU	JP\IIS_IUSRS)					
NETWORK SERVICE						
		Bamaua				
	Add	Hemove				
Permissions for IIS_IUSRS	Allow	Deny				
Full control	<b>V</b>					
Read	<b>V</b>					
Special permissions						
For special permissions or advanced settings, Advanced Advanced.						
Learn about access control and permissions						
ОК	Cancel	Apply				

3. Right click on Certificate and click 'All Tasks' then 'Export'

	0	ISCEXTEMALCA ROOL		
¢	Open	a Online Root Certificatio		
e	All Tasks 🔹 🕨	Open		
F		t		
F	Cut	Export t		
Ŀ	Сору	pht (c) 1997 Microsoft Cc		
4	Delete	t Global Root CA		
4		t High Assurance EV Roc		
2	Properties ot CA X3			
•	Help	net Certification Authori		
		ust net Secure Server Certific		



5. Choose No, do not export the private key and click Next

Certificate Export Wizard		×
Export Private Key You can choose to export the private key v	with the certificate.	
Private keys are password protected. If yo certificate, you must type a password on a	ou want to export the private key later page.	with the
Do you want to export the private key with	n the certificate?	
O Yes, export the private key		
No, do not export the private key		
Learn more about <u>exporting private keys</u>		
	< Back Next >	Cancel

6. Choose **DER encoded binary X.509 (.CER)** and click Next.

5 #7 Certificates (.P7B)
h if possible
=X)
h if possible
ssful

7. Save this file on the desktop. Name is "ClockWorkCertificate"

File name:				
C:\Users\RDSClo	ockWork_adm\Desk	top\ClockWorkCe	rtificated.cer	Browse

leted the Certificate Expo wing settings: C:\L No ne certification path No DER
wing settings: C:\L No ne certification path No DER
C:\L No ne certification path No DER
ne certification path No DER
DER

# INSTALL CLOCKWORK SERVER

### **INSTALL CLOCKWORK SERVER**

1. Run the server installation file

Organize 👻 Include in	library      Share with      Burr	n New folder		
🔆 Favorites	Name	Date modified	Туре	Size
🧮 Desktop	😽 ClockWorkServer.msi	6/6/2012 10:42 AM	Windows Installer	71,153 KB
〕 Downloads	🐻 setup.exe	6/6/2012 10:41 AM	Application	484 KB
🔛 Recent Places				
🥽 Libraries				
Documents				
J Music				
Pictures				
📑 Videos				
💻 Computer				
🏭 Local Disk (C:)				
👝 Local Disk (D:)				
💿 DVD RW Drive (E:) Ju				
🖵 tpro (\\192.168.1.184				
📬 Network				

2. Follow the on screen instructions

B ClockWorkServer		×		
👸 ClockW	ork 5 server instal	LER		
Please take a moment to read the license agreement now. If you accept the terms below, click "I Agree", then "Next". Otherwise click "Cancel".				
End User License Agreement for ClockWork Enterprise				
IMPORTANT - READ CAREFULLY: This End-User License Agreement ("EULA") is a legal agreement between you, a specific University department or specific College department ("LICENSEE") and TechnoPro Computer Solutions, Inc. ("LICENSOR") concerning the use of ClockWork Enterprise Scheduler software ("SOFTWARE").				
BY USING THIS ALL OR ANY AGREE TO THE TERMS AND	PORTION OF THE SOFTWARE YOU	- <b>-</b>		
🗇 I Do Not Agree	I Agree			
	Cancel < Back Nex	b		

#### 3. Select DefaultAppPool and click next

🔂 ClockWorkServer			
ClockW	ork 5	SERVER	RINSTALLER
The installer will install ClockWorkServer	to the following wel	b location.	
To install to this web location, click "Nex	t". To install to a dif	ferent web locat	ion, enter it below.
<u>S</u> ite: Default Web Site Virtual directory: ClockWorkServer Application Pool: DefaultAppPool		▼ )	Disk Cost
	Cancel	< Back	Next >

4. Finish the installation

ClockWorkServer	
ClockWork	5 SERVER INSTALLER
ClockWorkServer is being installed.	
Please wait	
Canc	el (Back Next)

### CREATE .INI FILE

- 1. Run Configuration Wizard
- 2. Under ClockWorkServer tab, enter database server name or ip, database name, username and password of user 'ClockWorkUser' created in step 3.1, encryption password and click on **Test Connection and Password**.

🗟 ClockWork	kServer Configurat	tion Wizard - 5.12.0601			
Database	e 💫 Licenses 🧉	💕 Host Names 🛛 🙀 Security	$\langle \rangle \times$		
ClockWorl	kServer Database	e Patch Connection	$\langle \rangle \times$		
ſ		Load From File			
L		Load From File			
	1. Select the type	e of database you are using:			
	System.Data.S	SqlClient -			
	2. Select or ente	r a database server name or IP:			
	TECHNO-BAC	TECHNO-BACKUP\SQLEXPRESSTEST			
	3. Enter the data	3. Enter the database name (this will normally be 'ClockWork'):			
	ClockWork	No direct db access			
	4. Enter informat	tion to logon to the database server:			
	📃 Use Integrate	ed Security			
	Username:	clockworkusor			
	Password:	******			
		Test Connection			
	5. Enter the data	base encryption/decryption password:			
6					
	Test Connection And Password				
Save	e 🎽 Cano	cel			
• 0ure					

 Under Database Patch Connection tab, enter database server name or ip, database name, username and password of user 'ClockWorkUpdateUser' created in step 3, encryption password and click on Test Connection and Password.



4. Under Licenses tab, click on Add Licenses.



5. Click on the key then browse to your .cwk key file then click Import Keys.



- 6. Under the Host Names tab, enter the current server's ip address in Intranet
- 7. Under the Security tab, click on Load Certificate. Open the Certificate created in Step 5.



8. Click Save



- 9. Save this .ini file into C:\inetpub\wwwroot\ClockWorkServer and C:\Program Files (x86)\TechnoPro Computer Solutions\ClockWork5.
- 10. Save this .ini file on all client machines in C:\Program Files (x86)\TechnoPro Computer Solutions\ClockWork5

# ACTIVATE SERVER

1. Open "ClockWork Admin".



2. Click Settings -> ClockWork Main Settings -> System

	System	
	Setting	Value
Students	Disable software updates	No
	Department name	Learning Assistance Center
Screens (data)	Minimum ClockWork version	
	Use the ClockWork server. The ClockWork server should be installed and configured before this is turned on.	Yes
Buttons		
	The date format to use (ex. yyyy-MM-dd)	MM/dd/yy
Appointments	The time format to use (ex. hh:mm tt, h:mm)	hh:mm tt
<b>-</b>		
S Exams	Language 1 description	English
	Language 2 description	
Courses		
Miscollanoous	Messaging system enabled	No
wiscenarieous		
	updating wode (now the updates will be performed - U means normal, T means close ClockWork and launch the updater as a process)	
Sur officie app booking	Descrit som has to one for investige students from external database	
Accommodations	Report number to run for antiquing students from external database	
M	report number to run for previewing students non external usatuses	1
Personal Options	Data sync report to run to import student courses (o to usable) Decement for anonymtad data (importing students from automal database	-1
2	Panort number to num for netting group membershing for students from external database	
lnventory	Report id for looking up student by first or last name using the 1 ookup student' button in the intake form	
	Data Sync report if for the report that moves the data into the Clack/Work tables (custom data and custom courses)	-1
Alternative Format	Data Sync report id for the batch sync report (updates all active ClockWork students once a day)	-1
System	What email method should be used for sending out emails? (examples: Outlook)	
	· · · · · · · · · · · · · · · · · · ·	

3. Double click on "Use the ClockWork Server. The ClockWork server should be installed and configured before this is turned on." And select "True" then save.

# RUN CLOCKWORK

- 1. Open "ClockWork Database Scheduler"
- 2. Enter your username and password from step 6.7
- 3. The bottom right hand corner of the window should say "Connected to Server"

