



zenon
by COPA-DATA

zenon Handbuch

Installation und Updates

v.8.10



COPADATA

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1 Willkommen bei der COPA-DATA Hilfe

ZENON VIDEO-TUTORIALS

Praktische Beispiele für die Projektierung mit zenon finden Sie in unserem YouTube-Kanal (https://www.copadata.com/tutorial_menu). Die Tutorials sind nach Themen gruppiert und geben einen ersten Einblick in die Arbeit mit den unterschiedlichen zenon Modulen. Alle Tutorials stehen in englischer Sprache zur Verfügung.

ALLGEMEINE HILFE

Falls Sie in diesem Hilfekapitel Informationen vermissen oder Wünsche für Ergänzungen haben, wenden Sie sich per E-Mail an documentation@copadata.com.

PROJEKTUNTERSTÜTZUNG

Unterstützung bei Fragen zu konkreten eigenen Projekten erhalten Sie vom Support-Team, das Sie per E-Mail an support@copadata.com erreichen.

LIZENZEN UND MODULE

Sollten Sie feststellen, dass Sie weitere Module oder Lizenzen benötigen, sind unsere Mitarbeiter unter sales@copadata.com gerne für Sie da.

2 Installation und Updates

Bei der ersten Installation von zenon startet die Installationsroutine automatisch und führt Sie durch den gesamten Installationsvorgang. Falls Sie den Autostart von Medien deaktiviert haben, starten Sie die Installation durch Ausführen der Datei **START.exe** im Wurzelverzeichnis Ihres zenon Installationsmediums.

Hinweise für die Installation:

- ▶ Vor der Installation von zenon:

- ▶ sollten alle aktuellen Betriebssystem-Updates installiert werden
Hinweis: Wenn Sie immer die aktuellste Version (Service Pack) des entsprechenden Betriebssystems verwenden, vermeiden Sie Kompatibilitätsprobleme und Sicherheitslücken.
- ▶ darf kein offener Neustart anstehen
- ▶ Bei Windows 7 Embedded Standard wird zenon über die normale Installationsroutine installiert. Voraussetzungen für die Hardware finden Sie im Kapitel Runtime unter Windows Embedded Standard (auf Seite 39).
- ▶ Die Installation von zenon für Windows CE erfolgt über die normale Installationsroutine. Installiert werden die Dateien für Windows CE in der Version 7.20. Details finden Sie im Kapitel Runtime für Windows CE (auf Seite 45).
- ▶ Während der Installation von zenon wird der **COPA-DATA Multiple Network Protocol Driver (cdprotdrv.sys)** installiert. Um den Treiber zu starten, muss das Betriebssystem nach der Installation neu gestartet werden.

Achtung

Ab Version 7.10 kann zenon nicht auf Systemen installiert werden, auf denen bereits die **Microsoft SQL Server Data Engine (MSDE)** installiert ist. Das betrifft alle Systeme auf denen zenon 6.01 oder 6.20 Version installiert ist.



Info

Erhalten Sie bei einer Installation die Fehlermeldung, dass ein Dienst nicht gestartet werden konnte, dann:

- ▶ starten Sie erst den Rechner neu
- ▶ starten Sie dann das zenon Setup neu

3 zenon Standardinstallation

zenon startet beim Verbinden des zenon Installationsmediums automatisch seine Installationsroutine und führt Sie durch den gesamten Installationsvorgang. Alternativ starten Sie die Installation durch Ausführen der Datei **START.exe** im Wurzelverzeichnis Ihres zenon Installationsmediums.

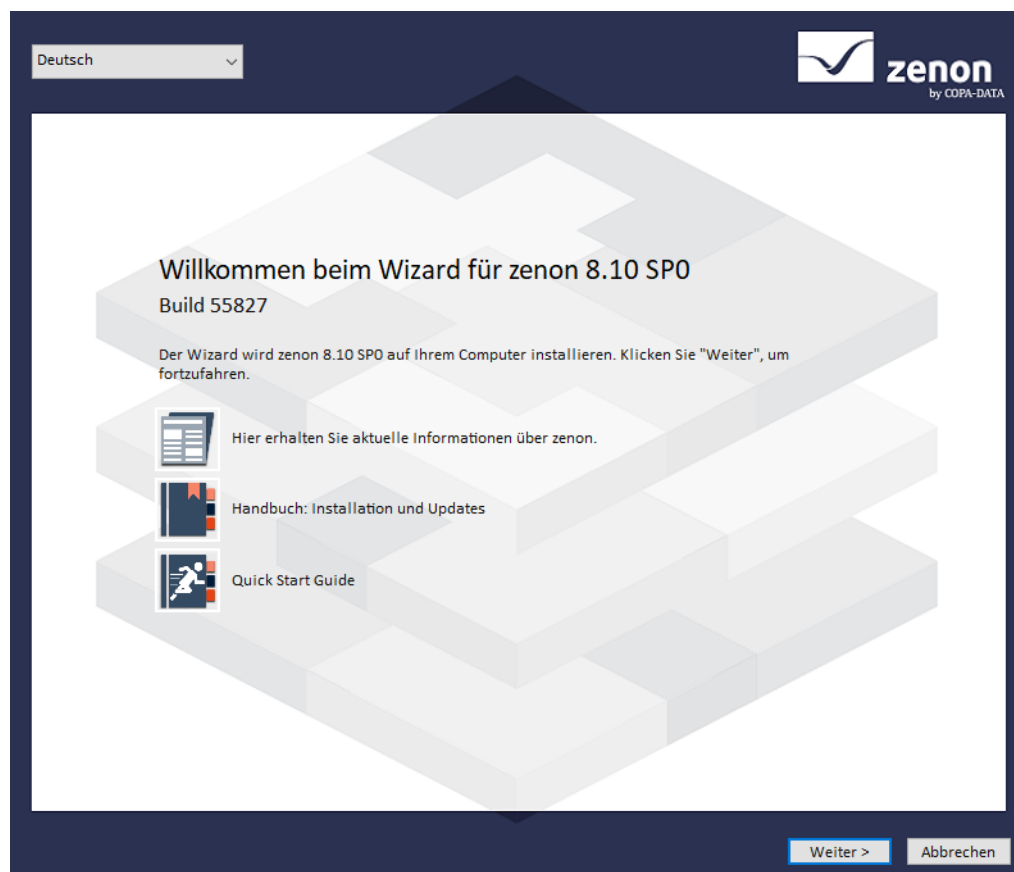
Für den Installationsvorgang sind auf dem Rechner Administratorenrechte erforderlich!

Achtung

Während der Installation wird der Rechner, wenn nötig, automatisch neu gestartet. Schließen Sie vor der Installation alle anderen Programme.

3.1 Startbildschirm

Am Startbildschirm sehen Sie die zu installierende Version inklusive Build-Nummer.



1. Wählen Sie aus der Dropdownliste links oben die gewünschte Sprache für die Installation. Für die Installation stehen folgende Sprachen zur Verfügung:
 - ▶ Deutsch
 - ▶ Englisch
 - ▶ Französisch
 - ▶ Italienisch
 - ▶ Spanisch
2. Informationen zu zenon erhalten Sie mit Klick auf die gewünschte Schaltfläche:



Öffnet eine Animation mit aktuellen Informationen zur zenon Version.



Öffnet die zenon Hilfe zur Installation als PDF.



Öffnet den Quick-Start Guide im PDF-Format mit Tipps für die ersten Projektierungsschritte in zenon.

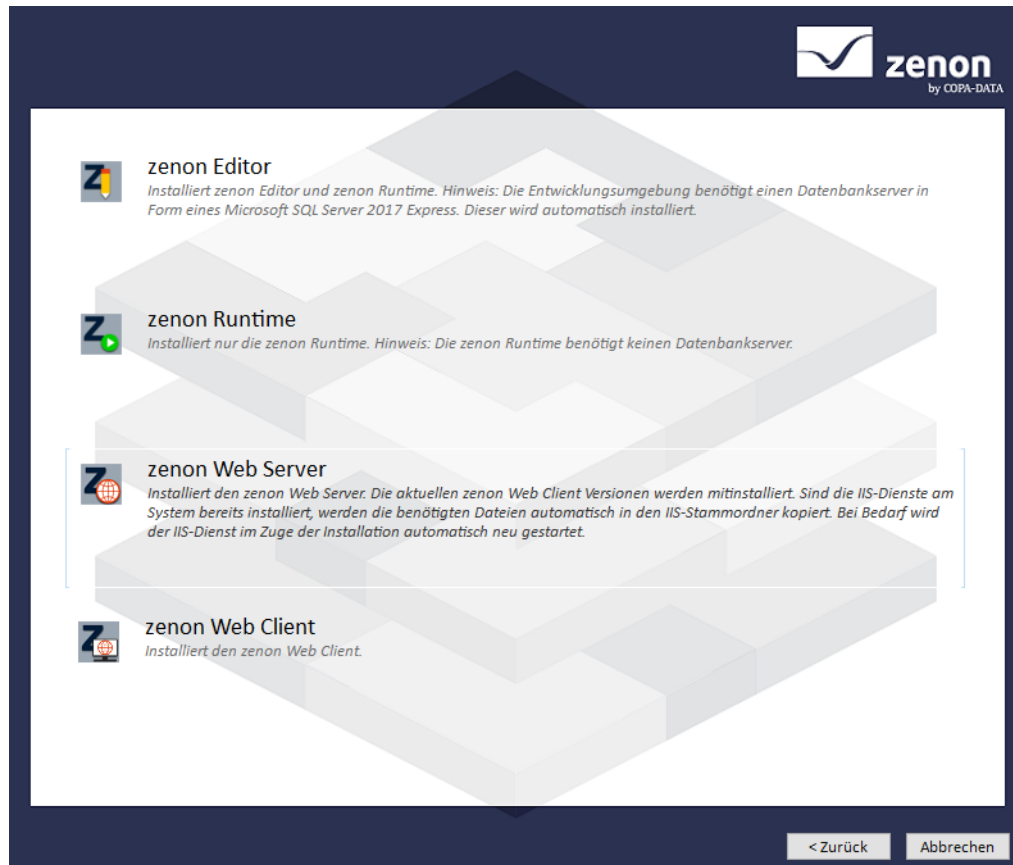
Achtung: Diese Seite kann später nicht erneut eingeblendet werden. Wenn Sie Informationen zur aktuellen Version oder das Handbuch für die Installation benötigen, öffnen Sie diese jetzt.

3. Mit Klick auf die Schaltfläche **Weiter** öffnen Sie das Fenster mit den Lizenzbedingungen.
4. Bestätigen Sie die Lizenzbedingungen durch Aktivierung der entsprechenden Checkbox.
Mit Klick auf die Schaltfläche **Drucken** können Sie die Lizenzbedingungen ausdrucken.
5. Mit Klick auf die Schaltfläche **Weiter** öffnen Sie die Datenschutzerklärung.
Lesen Sie die Datenschutzerklärung sorgfältig durch.
Mit Klick auf die Schaltfläche **Drucken** können Sie die Datenschutzerklärung ausdrucken.
6. Aktivieren Sie die die Checkbox zur Datenschutzerklärung.
Damit bestätigen Sie, dass Sie diese gelesen haben.
7. Mit Klick auf die Schaltfläche **Weiter** öffnen Sie das Fenster zur Auswahl des gewünschten Produkts.

Hinweis: Die Schaltfläche Weiter ist nur dann verfügbar, wenn Sie der Lizenzvereinbarung mit Klick auf das Optionsfeld zugestimmt haben.

3.2 zenon Standardinstallation

Wählen Sie das gewünschte Produkt. Es können nur Produkte ausgewählt werden, die noch nicht installiert sind. Wünschen Sie eine Neuinstallation, müssen Sie das bereits installierte Produkt über die Systemsteuerung zuerst deinstallieren.



- ▶ **zenon Editor:**
Installiert zenon Editor und zenon Runtime. Zusätzlich benötigte Komponenten für den Editor werden automatisch mitinstalliert.
- ▶ **zenon Runtime:**
Installiert nur die zenon Runtime.
- ▶ **zenon Web Server:**
Installiert den zenon Web Server und die jeweils aktuellen zenon Web Clients.
- ▶ **zenon Web Client:**
Installiert nur den zenon Web Client.



Info

Bei Auswahl von **zenon Web Server** oder **zenon Web Client** startet umgehend die Installation.

Bei Auswahl von **zenon Editor** oder **zenon Runtime** öffnet sich der Dialog zur Auswahl der Edition.

3.3 Auswahl der Edition - Installationsart (Benutzerdefinierte Installation)

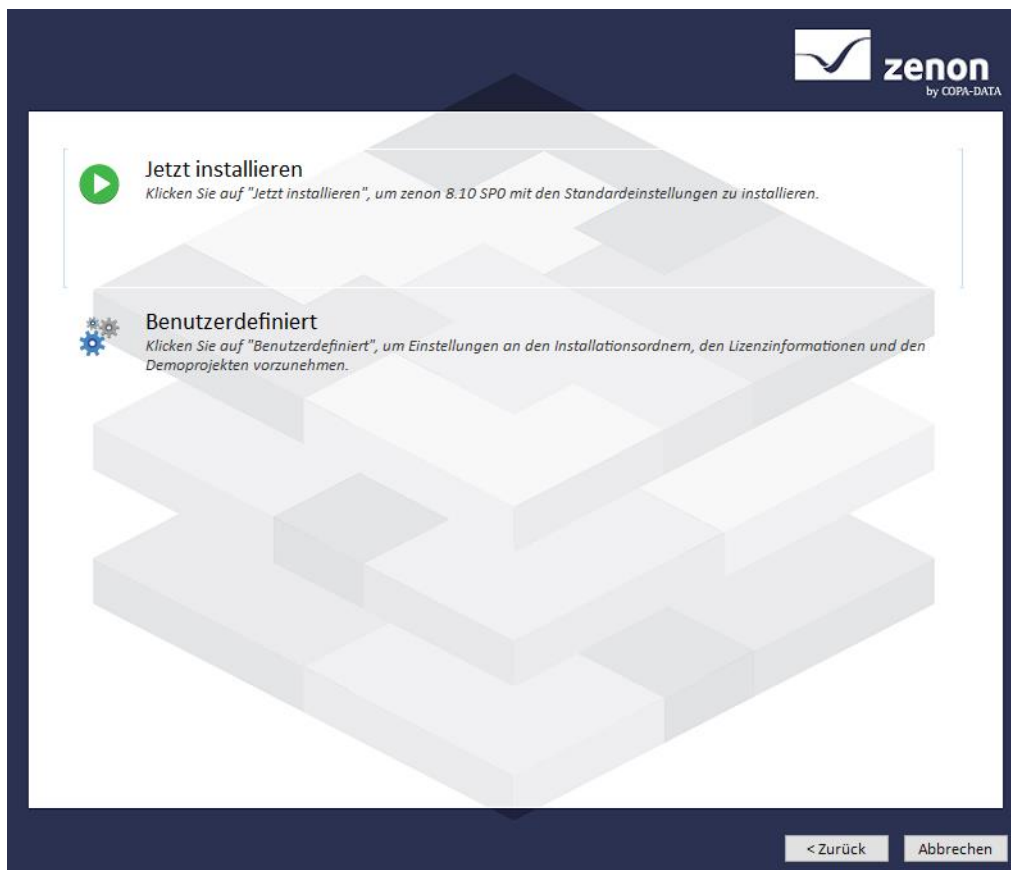
Mit Klick auf das gewünschte Produkt öffnen Sie das Fenster zu Auswahl der Edition.

1. Wählen Sie die lizenzierte Version:

- ▶ **zenon**
- ▶ **zenon Energy Edition**

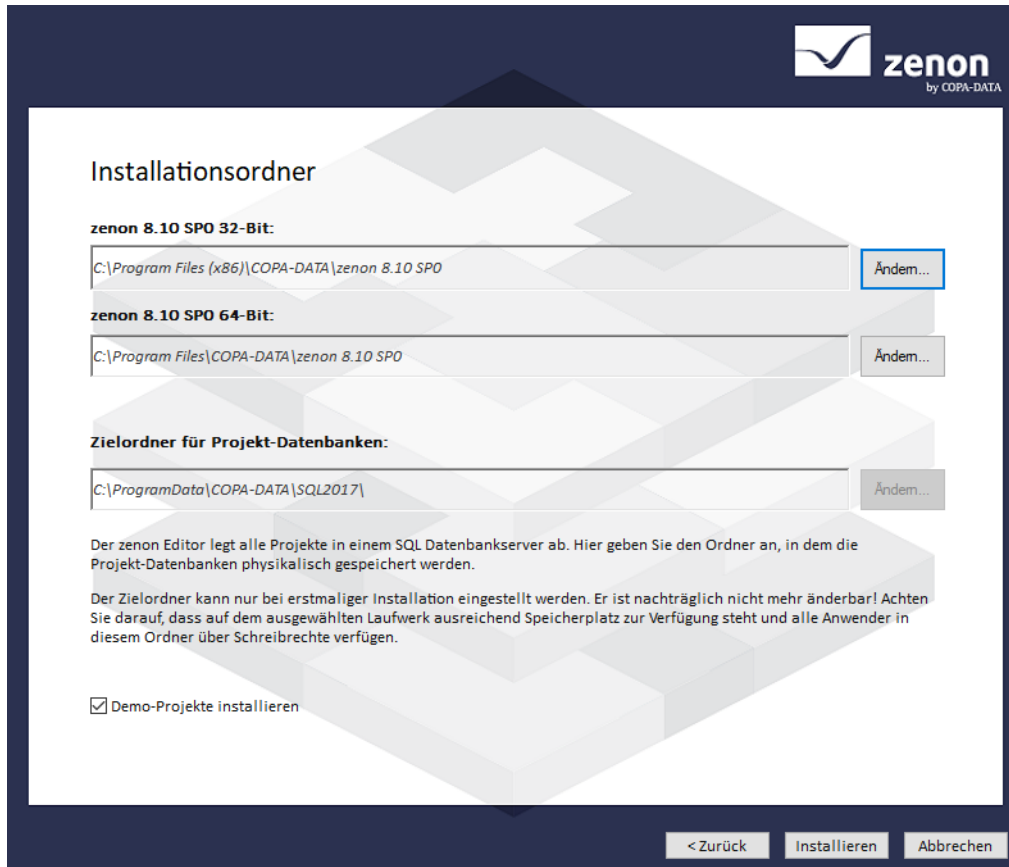


2. Mit Klick auf die gewünschte Edition öffnen Sie das Fenster zur Auswahl der Installationsart:



- ▶ **Jetzt installieren:**
Startet die Installation der gewählten Edition.
Eventuell wird der Rechner während der Installation automatisch neu gestartet. Folgen Sie den weiteren Anweisungen des Wizards.
- ▶ **Benutzerdefiniert:**
Öffnet weitere Fenster zur individuellen Installation.
Hier können Sie den Installationspfad ändern und entscheiden, ob Sie Demoprojekte installieren möchten.

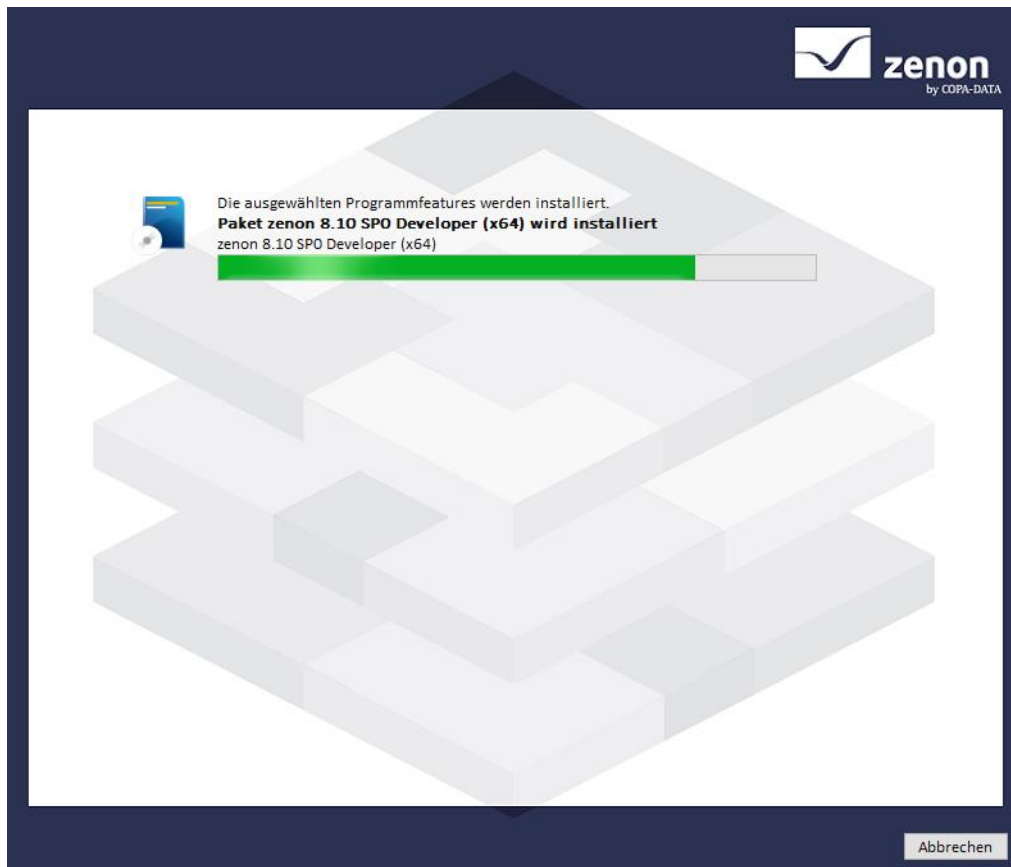
3. Mit Klick auf die Schaltfläche **Weiter** öffnen Sie das Fenster für die Anpassung der Installationsordner:



- ▶ Definieren Sie bei Bedarf Ihre individuellen Ordner für die 32-Bit Version und die 64-Bit Version des Programms.
Klicken Sie dazu die Schaltfläche **Ändern...**
 - ▶ Legen Sie den Zielordner für Projekt-Datenbanken fest.
Achtung: Der hier gewählte Speicherort muss über ausreichend Speicherplatz verfügen. Alle Benutzer benötigen Schreibrechte.
 - ▶ Falls Sie das Demo-Projekt mitinstallieren möchten, aktivieren Sie die entsprechende Checkbox.
Das Demo-Projekt demonstriert beispielhaft mögliche Einsatzszenarien in verschiedenen Branchen.
4. Klicken Sie auf die Schaltfläche **Installieren**:
Die Installation der gewählten Edition wird gestartet.
Eventuell wird der Rechner während der Installation automatisch neu gestartet. Folgen Sie den weiteren Anweisungen des Wizards.

3.4 Installation und Abschluss

Während der Installation werden Sie in der Fortschrittsanzeige über den Installationsfortschritt und den aktuellen Installationsschritt informiert.



Der Installationsvorgang kann einige Zeit in Anspruch nehmen. Schalten Sie während dieser Zeit Ihren Rechner nicht aus. Stellen Sie auch sicher, dass Ihr Rechner nicht automatisch in den Ruhezustand versetzt wird.

INSTALLATION ABBRECHEN

Mit Klick auf die Schaltfläche **Abbrechen** können Sie die Installation unterbrechen. Vor Abbruch der Installation erfolgt eine Sicherheitsabfrage.

Mögliche Aktionen:

- ▶ **Ja:** Die Installation wird abgebrochen. Es wird der Dialog für eine fehlerhafte Installation angezeigt.
- ▶ **Nein:** Die Installation wird fortgesetzt.

ABSCHLUSS DER INSTALLATION

Die erfolgreiche Installation wird über einen Dialog angezeigt.

1. Klicken Sie die Schaltfläche **Fertig stellen** um die Installation abzuschließen.
2. Starten Sie das Setup neu, um weitere Produkte wie z.B. den **zenon Web Server** zu installieren.

ABGEBROCHENE ODER FEHLERHAFTE INSTALLATION

Tritt bei der Installation ein Fehler auf oder wurde die Installation abgebrochen wird dies in einem Dialog angezeigt.

1. Klicken Sie die Schaltfläche **Fertig stellen** um das Setup zu beenden.
2. Versuchen Sie die Installation erneut.
Eine Ursache für einen Abbruch kann eine ausstehende Installation eines Updates des Windows Betriebssystems sein.

4 zenon Logic Runtime für Windows (Standalone Installation)

Am Installationsmedium finden Sie im Verzeichnis *%AdditionalSoftware%\COPA-DATA zenon Logic Runtime* die Installationspakete für eine Standalone Installation der **zenon Logic Runtime für Windows**.

INHALTE DES ZENON LOGIC RUNTIME-INSTALLATIONSPAKETES

Mit dem Standalone Setup für die **zenon Logic Runtime für Windows** werden alle Komponenten für den Betrieb der 61131-3 Runtime am Zielsystem installiert. Dies umfasst unter anderem auch Komponenten zur Lizenzierung und Diagnose . Es werden keine Projektierungskomponenten installiert.

VORAUSSETZUNGEN FÜR DIE INSTALLATION

Beachten Sie die allgemeinen Systemvoraussetzungen für die Installation des Produkts. Es dürfen keine Vorab-Installationen von **zenon Operator/Supervisor** oder **zenon Logic Runtime für Windows (Standalone)** vorliegen.

Das Produkt setzt bereits installierte Software am Zielsystem voraus. Sie finden diese auch im *%AdditionalSoftware%* Verzeichnis des Installationsmediums. Führen Sie daher gegebenenfalls die Installation der folgenden Pakete manuell aus:

- ▶ **Microsoft Visual Studio C++ Redistributables**
- ▶ **WIBU-SYSTEMS CodeMeter Runtime Kit**

Nach erfolgter Installation führen Sie das für Ihr Zielsystem passende Installationspaket (x86 oder x64) aus.

**Info**

Die Installation beinhaltet keine Lizenz für das Produkt. Die zenon Logic Runtime startet somit im Test-Modus. Die Lizenzierung kann anhand der allgemeinen Lizenzierungswerkzeuge vorgenommen werden.

UPDATE

Für das Update einer bereits installierten Version deinstallieren Sie diese und führen Sie eine erneute Installation durch.

5 Unbeaufsichtigte Installation und Deinstallation

zenon kann auch unbeaufsichtigt installiert (Silent Installation) und deinstalliert (Silent Remove) werden.

**Info**

Die unbeaufsichtigte Installation und Deinstallation ist möglich für alle zenon Versionen ab 7.10.

UNBEAUF SICHTIGTE INSTALLATION AB ZENON 7.20

Syntax: **scada.exe /silent /language:[Nummer] CDPROP_EDITION=[Edition] CDPROP_TYPE=[Typ] ISFeatureInstall=[Features]**

| Parameter | Argumente | Beschreibung |
|------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------|
| scada.exe | | Aufruf der Installation. |
| /silent | | Unbeaufsichtigte Installation. |
| /language: | <ul style="list-style-type: none"> ▶ 1031: Deutsch ▶ 1033: Englisch ▶ 1034: Spanisch ▶ 1036: Französisch ▶ 1040: Italienisch | Auswahl der Sprache. Beispiel Englisch: language:1033 |
| CDPROP_EDITION= | <ul style="list-style-type: none"> ▶ ENERGY ▶ SUPERVISOR ▶ OPERATOR ▶ PHARMA | Auswahl der Edition. Beispiel Energy Edition: CDPROP_EDITION=ENERGY Wird für zenon Web Server |

| Parameter | Argumente | Beschreibung |
|--------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------|
| | <ul style="list-style-type: none"> ▶ SCIENCE | und zenon Web Client nicht benötigt. |
| CDPROP_TYPE= | <ul style="list-style-type: none"> ▶ ED: Editor und Runtime ▶ RT: Runtime | <p>Auswahl Editor oder Runtime.</p> <p>Beispiel Runtime: CDPROP_TYPE=RT</p> <p>Wird für zenon Web Server und zenon Web Client nicht benötigt.</p> |
| ISFeatureInstall= | <ul style="list-style-type: none"> ▶ PREREQUISITES_EDITOR,SCADA: Editor ▶ PREREQUISITES_RUNTIME,SCADA: Runtime ▶ PREREQUISITES_WEBSERVER,WEBSERVER: Web Server ▶ PREREQUISITES_WEBCLIENT,WEBCLIENT: Web Client | <p>Auswahl der zu installierenden Features.</p> <p>Beispiel zenon Editor: ISFeatureInstall=PREREQUISITES_EDITOR,SCADA</p> |

Beispiele:

- ▶ Installation Editor, Deutsch, Energy Edition:
scada.exe /silent /language:1031 CDPROP_EDITION=ENERGY CDPROP_TYPE=ED ISFeatureInstall=PREREQUISITES_EDITOR,SCADA
- ▶ Installation Runtime, Englisch, Supervisor Edition:
scada.exe /silent /language:1033 CDPROP_EDITION=SUPERVISOR CDPROP_TYPE=RT ISFeatureInstall=PREREQUISITES_RUNTIME,SCADA
- ▶ Installation zenon Web Server, Deutsch:
scada.exe /silent /language:1031 ISFeatureInstall=PREREQUISITES_WEBSERVER,WEBSERVER
- ▶ Installation zenon Web Client, Deutsch:
scada.exe /silent /language:1031 ISFeatureInstall=PREREQUISITES_WEBCLIENT,WEBCLIENT

UNBEAUF SICHTIGTE DEINSTALLATION AB ZENON 7.20

Die **GUID** ist Teil des Pfades und versionsabhängig. In den Dateieigenschaften einer **GUID** ist die zugehörige Version ersichtlich.

Ohne LOG-Datei:

- ▶ Pfad: %ProgramFiles(x86)%\InstallShield Installation Information\{GUID}
Beispiel: C:\Program Files (x86)\InstallShield Installation Information\{9BE6EDFE-3465-486F-87EE-1C439DE5EA9A}
- ▶ Syntax: **SCADA.exe /remove /silent**

Mit LOG-Datei:

- ▶ Pfad: %ProgramFiles(x86)%\InstallShield Installation Information\{GUID}
Beispiel: C:\Program Files (x86)\InstallShield Installation Information\{9BE6EDFE-3465-486F-87EE-1C439DE5EA9A}
- ▶ Syntax: **SCADA.exe /remove /silent /log"%TEMP%"**

UNBEAUF SICHTIGTE INSTALLATION ZENON 7.10 UND 7.11

Syntax: **scada.exe /silent /language:[Nummer] CDPROP_EDITION=[Edition] CDPROP_TYPE=[Typ] ISFeatureInstall=[Features]**

| Parameter | Argumente | Beschreibung |
|--------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------|
| scada.exe | | Aufruf der Installation. |
| /silent | | Unbeaufsichtigte Installation. |
| /language: | <ul style="list-style-type: none"> ▶ 1031: Deutsch ▶ 1033: Englisch ▶ 1034: Spanisch ▶ 1036: Französisch ▶ 1040: Italienisch | Auswahl der Sprache. Beispiel Englisch: language:1033 |
| CDPROP_EDITION= | <ul style="list-style-type: none"> ▶ ENERGY ▶ SUPERVISOR ▶ OPERATOR ▶ PHARMA | Auswahl der Edition. Beispiel Energy Edition: CDPROP_EDITION=ENERGY Wird für zenon Web Server nicht benötigt. |
| CDPROP_TYPE= | <ul style="list-style-type: none"> ▶ ED: Editor und Runtime ▶ RT: Runtime | Auswahl Editor oder Runtime. Beispiel Runtime: CDPROP_TYPE=RT Wird für zenon Web Server nicht benötigt. |
| ISFeatureInstall= | <ul style="list-style-type: none"> ▶ WIBU,SCADA,MS,MSALL,SQL,COMMON: | Auswahl der zu installierenden Features. |

| Parameter | Argumente | Beschreibung |
|-----------|-----------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------|
| | Editor ▶ WIBU,SCADA,MS,MSALL,COMMON: Runtime ▶ WIBU,WS,MSALL,COMMON: Web Server | Beispiel zenon Editor: ISFeatureInstall=WIBU,SCADA,MS,MSALL,SQL,COMMON |

Beispiele:

- ▶ Installation Editor, Deutsch, Energy Edition:
**scada.exe /silent /language:1031 CDPROP_EDITION=ENERGY CDPROP_TYPE=ED
ISFeatureInstall=WIBU,SCADA,MS,MSALL,SQL,COMMON**
- ▶ Installation Runtime, Englisch, Supervisor Edition:
**scada.exe /silent /language:1033 CDPROP_EDITION=SUPERVISOR CDPROP_TYPE=RT
ISFeatureInstall=WIBU,SCADA,MS,MSALL,COMMON**
- ▶ Installation zenon Web Server, Deutsch:
scada.exe /silent /language:1031 ISFeatureInstall=WIBU,WS,MSALL,COMMON

UNBEAUF SICHTIGTE DEINSTALLATION VERSION 7.10 UND ZENON 7.11**ZENON 7.10**

Pfad: C:\Program Files (x86)\InstallShield Installation
Information\{860C41F0-6034-4822-BCF1-88D4849AE897}

Syntax: **SCADA.exe /remove /silent**

ZENON 7.11

Pfad: C:\Program Files (x86)\InstallShield Installation
Information\{ED00D319-77B8-4C58-8D67-2DA2D48E90DB}

Syntax: **SCADA.exe /remove /silent**

6 Fehlerbehandlung

PRÜFUNG VOR DER INSTALLATION

Vor der Installation werden die Voraussetzungen am System überprüft. Falls Voraussetzungen nicht erfüllt werden, werden Ihnen diese auf einer eigenen Seite mit Hinweisen zur Behebung angezeigt.

FEHLER WÄHREND DER INSTALLATION

Treten während der Installation Fehler auf, erhalten Sie eine Fehlermeldung.

Falls Sie zur Lösung Hilfe vom Technische Consulting der COPA-DATA benötigen:

1. Erstellen Sie nach Möglichkeit einen Screenshot der Fehlermeldung.
2. Navigieren Sie zum Ordner %Temp%/SCADALOG.
3. Hier finden Sie die Log-Dateien der Installation.
4. Erzeugen Sie mit dem Inhalt des Ordners eine ZIP-Datei.
5. Schicken Sie Datei und Screenshot an support@copadata.com.

Falls Sie das Meldungsfenster schon geschlossen haben, finden Sie die Log-Dateien mit den Installationsinformationen für SQL-Server im Ordner:

C:\Program Files\Microsoft SQL Server\110\Setup Bootstrap\LOG

Tipp: Die Datei **Summary.txt** gibt einen Anhaltspunkt, wo das Problem liegen könnte.

Info

Firewalls: Bei der Installation konfiguriert zenon automatisch die mit Windows installierte Firewall. Firewalls anderer Hersteller müssen vom Anwender korrekt konfiguriert werden.

HÄUFIGE FEHLERQUELLEN BEI DER INSTALLATION:

- ▶ Virenschanner ist aktiv und blockiert die Installation durch fehlerhaftes Erkennen von Viren. Lösung: Rechner vom Netzwerk abhängen, Virenschanner deaktivieren, Installation durchführen
- ▶ Firewall wurde nicht korrekt konfiguriert. Lösung: Rechner vom Netzwerk abhängen, Firewall deaktivieren, Installation durchführen
- ▶ Fehlerhafte SQL-Installation ist im System bereits vorhanden. Lösung: Projektbackups erstellen sofern noch möglich, SQL Server deinstallieren, SQL Ordner umbenennen, Installation erneut starten.

7 Windows Updates

Achtung: Automatische Windows-Updates beeinflussen die Installation!

Wird während des zenon Setups ein Update des Windows Betriebssystems ausgeführt, kann das zu Problemen bei der Installation von zenon führen.

Um das zu vermeiden:

- ▶ Deaktivieren Sie das automatische Windows-Update für den Zeitraum der Installation.
- ▶ Führen Sie Windows-Updates vor der Installation von zenon aus.

8 Virens Scanner

Antiviren-Software kann die Installation von zenon verlangsamen oder diese sogar verhindern.

Hinweis: Führt die von Ihnen eingesetzte Antiviren-Software zu Problemen bei der Installation, deaktivieren Sie die Antiviren-Software für die Zeitdauer der Installation. Die betroffenen Rechner können in diesem Zeitraum höheren Risiken ausgesetzt sein. Aktivieren Sie die Antiviren-Software sofort nach der Installation von zenon wieder.

9 Dateistruktur

Die Dateistruktur wird während der Installation angelegt oder erweitert.

Dabei werden die zenon Programmdateien in einem Ordner abgelegt, der während der Installation angegeben wird.

Zusätzlich wird während der Installation nach einem Ordner für die SQL-Datenbanken der Projekte gefragt. Auf dem Speichermedium für die Projektablage (SQL, Bilder usw.) muss genügend freier Platz reserviert sein, da hier alle aktuellen und zukünftigen Projektdaten abgelegt werden.

| Ordner | Pfad |
|-------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Programmordner | 32-Bit System: <i>%Program Files%\COPA-DATA\zenon7xxx</i> 64-Bit System: <i>%Program Files%\COPA-DATA\zenon7xxx</i> <i>%Program Files (x86)%\COPA-DATA\zenon7xxx</i> |
| Programmdatenordner, z. B. Globale Symbole, Druckvorlagen, Log-Dateien, usw. | <i>%ProgramData%\COPA-DATA\zenon7xxx</i> |
| Datenbankordner (SQL) | <i>%ProgramData%\COPA-DATA\SQL</i> |
| Systemordner | <i>%ProgramData%\COPA-DATA\System</i> |
| Einstellungen Editor und | <i>%Users%\UserName\AppData\Local\COPA-DATA\zenon>Edit</i> |

| Ordner | Pfad |
|------------------------------------|-----------------------------------------------------------------|
| Profile | <i>or</i> |
| Einstellungen für Diagnosis Viewer | <i>%Users%\UserName\AppData\Local\COPA-DATA\zenon\Diag View</i> |

DEFINITION RUNTIME-ORDNER UND DATEN-ORDNER

RUNTIME-ORDNER

Der Editor erzeugt die Runtime-Dateien im Runtime-Ordner oder diese werden per Remote-Transport in diesen Ordner übertragen. Der Runtime-Ordner wird beim Kompilieren eines Projektes im Editor erstellt oder aktualisiert. Dieser Ordner kann im zenon Editor mit der Projekteigenschaft **Runtime-Ordner** parametrisiert werden. Bei Remote-Übertragung wird der Runtime-Ordner in den Einstellungen für den Remote-Transport festgelegt.

DATEN-ORDNER

Die Runtime speichert alle in der Runtime erzeugten Datendateien, wie etwa Alarmdateien, Archivdateien usw. im Daten-Ordner. Standardmäßig wird der Daten-Ordner als Unter-Ordner zum Runtime-Ordner angelegt. Er erhält automatisch den Namen des Rechners, auf dem die Runtime läuft. Dieser Speicherort kann in den Projekteigenschaften (**Allgemein/Datenordner**) geändert werden.

Tipp: Setzen Sie den Daten-Ordner nie auf ein entfernbare Laufwerk wie einen USB Stick oder ein Netzlaufwerk. Es wird empfohlen, die Daten lokal aufzuzeichnen und extern zu sichern.

Achtung

Falls der angegebene Pfad nicht existiert oder nicht verfügbar ist, werden von der Runtime keine Daten mehr geschrieben. Das bedeutet 100% Datenverlust. Die Runtime bleibt bedienbar, muss aber neu gestartet werden, sobald der Pfad wieder verfügbar ist. Die Verfügbarkeit des Ordners kann mit der Systemtreibervariablen **Runtime-Ordner nicht verfügbar** (**SYSDRV.chm::/25965.htm**) überprüft werden.

10 Freie Ports

zenon und zenon Logic benötigen für die Kommunikation im Netzwerk bestimmte Kommunikationsports. Wenn andere Programme, wie z. B. ein bereits installierter SQL-Server, diese

Ports belegen, kann dies die Kommunikation von zenon stören. Viele Ports sind in zenon über das **Startup Tool** oder Eigenschaften im Editor veränderbar.

So überprüfen Sie die Belegung der Ports:

1. Geben Sie auf der Komandozeile `netstat -a -n -o` ein.
Die Kommandozeile erhalten Sie unter Windows mit:
 - ▶ Windowstaste+R
 - ▶ geben Sie `cmd` ein und bestätigen Sie mit **OK**
 - ▶ ein DOS-Eingabefenster öffnet sich
 - ▶ geben Sie hier den `netstat` Befehl ein
2. Sie erhalten eine Liste mit allen aktiven TCP/IP und UDP Ports.
3. Überprüfen Sie bei den abhörenden Ports (Status: *ABHÖREN*) ob für die von zenon und zenon Logic benötigten Ports die Prozess-ID (PID) den Prozessen von zenon und zenon Logic entspricht.
Diese PIDs können im **Windows Task Manager** ausgelesen werden. Öffnen Sie dazu den **Windows Task Manager** und wechseln Sie in die Registerkarte **Dienste**.
4. Verwendet eine andere Software diese Ports, konfigurieren Sie diese Software um.
Welche Ports zenon und zenon Logic nutzen, sehen Sie in der Tabelle **Portbelegung durch zenon und zenon Logic**. Hier sehen Sie auch, ob Ports in diesen Programmen anpassbar sind.

PORTBELEGUNG DURCH ZENON UND ZENON LOGIC

| Anwendung | Beschreibung | Ports | Transport-Protokoll |
|-------------------------|--------------------------------------------------------------------------------|-------------|---------------------|
| stratonrt[k].exe | zenon Logic Runtime pollende Kommunikation und zenon Logic Workbench. | ▶ 1200-1210 | TCP |
| stratonrt[k].exe | | ▶ 4500-4510 | TCP |
| stratonrt[k].exe | zenon Logic Redundanz. | ▶ 7000-7010 | TCP |
| stratonrt[k].exe | zenon Logic Runtime spontane Kommunikation. | ▶ 9000-9010 | TCP |
| zennetsrv.exe | zenon Netzwerkdienst. | ▶ 1100-1100 | TCP |
| zensysrv.exe | zenon Transportservice. | ▶ 1101 | TCP |
| zendbsrv.exe | zenon Datenbankdienst. | ▶ 1103 | TCP |

| Anwendung | Beschreibung | Ports | Transport-Protokoll |
|-----------------|-------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------|---------------------|
| zenAdminsrv.exe | zenon Verwaltungsdienst. | ► 50777 | TCP |
| zenLogSrv.exe | zenon Logging-Dienst. | ► 50780 | TCP |
| zenvnc.exe | zenon Remote Desktop Dienst. | ► 5600 (fix) ► 5610 (fix) | TCP |
| CodeMeter.exe | Code Meter Dongle Dienst. | ► 22350 (veränderbar, muss aber unverändert bleiben) | TCP |
| WkSvW32.exe | WibuKey Netzwerkdienst. | ► 22347 (fix) | TCP |
| Zenrt32.exe | Message Control mit Voice over IP. | ► 5060: SIP ► 4000: RTP ► 4001: RTCP (fix) SIP und RTP sind konfigurierbar über den Editor. RTCP wird vom System automatisch gesetzt. | UDP |

11 Installation einer älterer Version nach der Installation von zenon 8.10 (64-Bit Betriebssystem)

Wird auf einem 64-Bit Betriebssystem nach der Installation von zenon 8.10 eine zenon Version mit niedrigerer Versionsnummer als 7.10 installiert, müssen nach deren Installation die 64-Bit Dienste über die Kommandozeile neu registriert werden. Die Registrierung kann über eine Batch-Datei oder manuell erfolgen.

Mit Batch Datei registrieren:

1. kopieren Sie vom zenon Installationsmedium die Datei **Register.bat**.
2. Sie finden diese im Ordner: ... \AdditionalSoftware\Register Admin Service and Log Service (x64)\
3. Führen Sie die Datei auf dem betreffenden Rechner als Administrator aus.

Manuelle Registrierung:

1. starten Sie die Kommandozeile mit Administratorrechten

2. navigieren Sie zum Ordner *%Program Files%\Common Files\COPA-DATA\zenAdminSrv*
3. starten Sie den Dienst **zenAdminSrv.exe** mit dem Parameter **-service**
4. navigieren Sie zum Ordner *%Program Files%\Common Files\COPA-DATA\zenLogSrv*
5. starten Sie den Dienst **zenLogSrv.exe** mit dem Parameter **-service**

Beispiel

zenAdminSrv:

- ▶ Ordner: *C:\Program Files\Common Files\COPA-DATA\zenAdminSrv*
- ▶ Befehl: **zenAdminSrv.exe -service**

zenLogSrv:

- ▶ Ordner: *C:\Program Files\Common Files\COPA-DATA\zenLogSrv*
- ▶ Befehl: **zenLogSrv.exe -service**

12 Parallele Installation von Version 7.x mit Version 6.51

Wird eine Version 7.x auf einem System installiert, auf dem bereits zenon 6.51 installiert ist, muss nach der Installation der **Multiple Network Protocol Driver** nach einem Reboot neu installiert werden.

FÜR X64-SYSTEME

Zur Neuinstallation:

1. Starten Sie das System neu.
2. Öffnen Sie am Installationsmedium den Pfad *AdditionalSoftware\COPA-DATA Multiple Network Protocol Driver*.
3. Führen Sie die Datei **MNDPx64Setup.bat** aus.

Damit wird der Treiber neu installiert und korrekt mit den Netzwerkadaptern verknüpft.

FÜR X86-SYSTEME

Zur Neuinstallation:

1. Starten Sie das System neu.
2. öffnen Sie am Installationsmedium den Pfad *AdditionalSoftware\COPA-DATA Multiple Network Protocol Driver*

3. führen Sie die Datei **MNDPx86Setup.bat** aus

Damit wird der Treiber neu installiert und korrekt mit den Netzwerkadaptern verknüpft.

13 Systemvoraussetzungen

zenon 8.10 kann auf allen aktuellen Microsoft Betriebssystemen eingesetzt werden. zenon wird immer auf den neuesten Versionen der Betriebssysteme mit den neuesten verfügbaren Service Packs und Hotfixes getestet.

Änderungen durch Service Packs, Hotfixes oder Patches von Microsoft können Inkompatibilitäten bewirken und die Funktionsfähigkeit der Software beeinflussen. In diesem Fall wird COPA-DATA so früh wie möglich eine aktualisierte Version von zenon zur Verfügung stellen. Nähere Informationen erhalten Sie in diesem Fall vom COPA-DATA Support: support@copadata.com.

Achtung

Beachten Sie bei der Projektierung:

- ▶ Für die optimale Darstellung von zenon in der Runtime wird für die Windows **Anzeige** die Standardeinstellung (entspricht 100%) empfohlen. Höhere Werte können dazu führen, dass grafische Elemente, Symbole, Texte usw. nicht korrekt angezeigt werden.
- ▶ Windows Themen können Elemente in der Runtime überlagern. Achten sie bei der Projektierung auf einen passenden Abstand von Elementen zum Bildschirmrand.

▶

13.1 Desktop Betriebssysteme

Unterstützte Desktop Betriebssysteme und mindestens erforderliches Windows Service Pack/Version:

| Betriebssystem | zenon Editor | zenon Runtime | zenon Web Server | zenon Web Client | zenon HTML Web Engine | zenon Logic Runtime | zenon Analyzer Server |
|------------------------------------------------------------------------------------------------------------------|-----------------|---------------|------------------|------------------|-----------------------|---------------------|-----------------------------------------------|
| Windows 7 (Professional, Enterprise und Ultimate Version, jeweils x86 und x64 Versionen) | Nicht lauffähig | SP 1 | SP 1 | SP 1 | SP 1 | SP 1 | Nicht lauffähig |
| Windows Embedded Standard 7 (vorausgesetzt, alle notwendigen Betriebssystemkomponenten sind vorhanden) | Nicht lauffähig | SP 1 | SP 1 | SP 1 | SP 1 | SP 1 | Nicht lauffähig |
| Windows 8 und 8.1 (Standard, Professional, Enterprise, jeweils x86 und x64 Versionen) | Nur x64 ab SP 0 | SP 0 | SP 0 | SP 0 | SP 0 | SP 0 | Nur x64 mit SP 0 |
| Windows Embedded 8 Standard (vorausgesetzt, alle notwendigen Betriebssystemkomponenten sind vorhanden) | Nicht lauffähig | SP 0 | SP 0 | SP 0 | SP 0 | SP 0 | Nicht lauffähig |
| Windows 10 (Home, Pro, Enterprise, Education, Pro Education, Enterprise LTSC, IoT Enterprise, | Nur x64 ab 1507 | 1507 | 1507 | 1507 | 1507 | 1507 | Nur Home, Pro und Enterprise (jeweils x64) ab |

| Betriebssystem | zenon Editor | zenon Runtime | zenon Web Server | zenon Web Client | zenon HTML Web Engine | zenon Logic Runtime | zenon Analyzer Server |
|-----------------------|--------------|---------------|------------------|------------------|-----------------------|---------------------|-----------------------|
| Pro for Workstations) | | | | | | | 1507 |

13.2 Server Betriebssysteme

Unterstützte Server Betriebssysteme und mindestens erforderliches Windows Service Pack/Version:

[illegible]

13.3 Server und Desktop Betriebssysteme bis Windows 8.1

Überblick der unterstützten Server- und Desktop Betriebssysteme bis Windows 8.1

| | Windows Embedded 7/8 Standard | Windows Embedded 8.1 Pro/Industry | Windows 7 SP1/Windows 8 und 8.1/ Server 2008 (R2) SP1, 2012 und 2012 R2 | Windows CE |
|------------------------|-------------------------------|-----------------------------------|-------------------------------------------------------------------------|---------------------------------|
| Editor | -- | X | X | -- |
| Runtime | X | X | X | -- |
| Runtime für Windows CE | -- | -- | -- | X |
| Web Server | X | X | X | X (nur Web Server Pro Light) |
| Web Client | X | X | X | -- |
| HTML Web Engine | X | X | X | -- |

Legende:

- ▶ X: unterstützt
- ▶ --: nicht unterstützt

Achtung: Ab Version 7.50 wird Windows CE nicht mehr unterstützt.

Es wird die zenon CE Version 7.20 installiert. Um diese zu nutzen, müssen die Runtime-Dateien für die Version 7.20 erzeugt werden.

13.4 Windows CE und Windows Embedded

Unterstützte Betriebssysteme:

| Betriebssystem | zenon Editor | zenon Runtime | zenon Web Server | zenon Web Client | zenon HTML Web Engine | zenon Logic Runtime | zenon Analyzer Server |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------|--------------------|------------------|------------------|-----------------------|---------------------|-----------------------|
| Windows CE 6.0 (ARM und x86) Achtung: Wird nur bis Version 7.20 unterstützt. Ab Version 7.50 müssen Runtime-Dateien für 7.20 erzeugt werden. | Nicht lauffähig | Nur zenon Operator | Nur Pro Light | Nicht lauffähig | Nicht lauffähig | lauffähig | Nicht lauffähig |
| Windows Embedded Compact 7 (ARM und x86) Achtung: Wird nur bis Version 7.20 unterstützt. Ab Version 7.50 müssen Runtime-Dateien für 7.20 erzeugt werden. | Nicht lauffähig | Nur zenon Operator | Nur Pro Light | Nicht lauffähig | Nicht lauffähig | lauffähig | Nicht lauffähig |

13.5 Windows 10

Überblick der unterstützten Desktop Betriebssysteme für Windows 10

| Windows Version | zenon Supervisor / Operator | Everywhere by zenon | zenon Logic Runtime |
|--------------------------------------------------------|-----------------------------|---------------------|---------------------|
| Windows 10 Home | X | X (PC) | X |
| Windows 10 Mobile | -- | X (Mobile) | -- |
| Windows 10 Pro | X | X (PC) | X |
| Windows 10 Enterprise | X | X (PC) | X |
| Windows 10 Education | X | X (PC) | X |
| Windows 10 Mobile Enterprise | -- | X (Mobile) | -- |
| Windows 10 IoT Core | -- | -- | -- |
| Windows 10 IoT Enterprise (Windows 10 Enterprise LTSB) | X | X (PC) | X |

Legende:

- ▶ X: verfügbar
- ▶ --: nicht lauffähig

13.6 Systemvoraussetzungen bei Verwendung von DirectX

Bei der Verwendung von *DirectX Hardware* oder *DirectX Software* müssen folgende Mindestvoraussetzungen erfüllt werden:

Hinweis: Für umfangreiche Projekte oder mehrere gleichzeitig geladene Projekte muss die Hardware entsprechend leistungstärker sein. Dadurch können die Mindestvoraussetzungen steigen.

| Parameter | Mindestvoraussetzung | Empfohlen |
|-----------------------------------------------|------------------------------------------------------------------------|-------------------------------------------------------------|
| CPU: | Single Core mit SSE2 Unterstützung. | Quad Core oder mehr Cores |
| Grafikkarte: (Nur DirectX Hardware) | DirectX 11 Mainstream Grafikkarte. Hinweis: Insbesondere bei | Dedizierte DirectX 11 AMD oder nVidia High-End Grafikkarte. |

| Parameter | Mindestvoraussetzung | Empfohlen |
|-----------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------|
| | Verwendung eines integrierten Grafikchips kann es, abhängig vom eingesetzten Treiber, zu Beeinträchtigungen der Darstellungsqualität kommen. | |
| Grafikspeicher: (Nur DirectX Hardware) | 1 GB VRAM Hinweis: Die tatsächlich benötigte Größe ist abhängig von der Anzahl der aufgeschalteten Bilder und der dargestellten Elemente. | 2 GB VRAM |
| Treiber Grafikkarte: (Nur DirectX Hardware) | Aktuellster Treiber des Grafikkartenherstellers. | |
| Betriebssystem: | <p><i>DirectX Hardware</i> und <i>DirectX Software</i> funktionieren nur auf Betriebssystemen mit <i>DirectX 11.1</i> - Unterstützung.</p> <p>Wenn das System <i>DirectX 11.1</i> nicht unterstützt, wird automatisch auf <i>Windows Basis</i> umgeschaltet.</p> <p>Die aktuelle <i>DirectX</i>-Runtime muss installiert sein. Diese wird für zenon mit dem Setup mit installiert. Für den zenon Web Client muss sie manuell installiert werden.</p> | |

Die DirectX Hardwarefähigkeit der Grafikkarte und des Treibers können Sie mit dem Windows Betriebssystem-Tool **dxdiag.exe** überprüfen.

Bis Windows 7: Prüfen Sie unter **Anzeige** den Wert **DDI-Version**. Der Wert *11* zum Beispiel steht für DirectX 11.

Ab Windows 8: In der Registerkarte **Display** werden unter **Feature Levels** alle unterstützten DirectX-Versionen angezeigt. DirectX 11 wird zum Beispiel als *11.0* angezeigt.

13.7 Zusätzliche Software

SQL SERVER

Der zenon Editor arbeitet mit einer SQL Datenbank. Diese wird bei der Installation des zenon Editors mitinstalliert:

- ▶ Bis inklusive Version 6.20 SP4: **SQL-Server 2000 (MSDE)**
- ▶ Ab Version 6.21 SP0: **SQL Server 2005 Express**

- ▶ Ab Version 7.00 SP0: **SQL Server 2008R2 SP1 Express**
- ▶ Ab Version 7.10 SP0: **SQL Server 2012 SP1 Express**
- ▶ Ab Version 7.20 SP0: **SQL Server 2012 SP2 Express**
- ▶ Ab Version 7.50 SP0: **SQL Server 2012 SP3 Express**
- ▶ Ab Version 7.60 SP0: **SQL Server 2012 SP3 Express**
- ▶ Ab Version 8.00 SP0: **SQL Server 2012 SP3 Express**
- ▶ Ab Version 8.10 SP0: **SQL Server 2017 Express**

Achtung

Beachten Sie bei einem Wechsel der Version oder bei einem Service Pack Update des SQL Servers: Projekte müssen in der ursprünglichen Version gesichert und exportiert und dann in der neuen Version wieder importiert werden.

Hinweis: Ist eine zenon Version mit der gleichen SQL Server Version, aber mit einem anderen Service Pack, bereits vorhanden, wird dieses Service Pack durch die neue zenon Installation nicht upgedated. Das Service Pack Update kann entweder manuell oder über das Windows Update erfolgen.

DONGLE

- ▶ Die für den Dongleschutz erforderliche Software CodeMeter wird immer automatisch mitinstalliert.
- ▶ Die WibuKey Software ist am Installationsmedium verfügbar im Pfad:
`...\\AdditionalSoftware\\WIBU-SYSTEMS CodeMeter Runtime Kit`

13.8 Benutzerrechte

Für die Installation sind Windows Administratorrechte erforderlich.

Für den laufenden Betrieb sind Standard Windows Benutzerrechte erforderlich. Die Benutzerkontensteuerung (UAC) kann auf höchster Sicherheitsstufe aktiviert sein.

13.9 Hardwarevoraussetzungen

PC Version und CE Version von zenon stellen unterschiedliche Ansprüche an die benötigte Hardware. In diesem Kapitel finden Sie die Hardwarevoraussetzungen für die einzelnen Versionen von Editor und Runtime sowie zenon Web Server und zenon Web Client.

Der Editor nutzt als SQL-Server einen Microsoft SQL Server und stellt höhere Ansprüche an die Hardware als die Runtime. Sollen Editor und Runtime gleichzeitig auf einem System laufen, addieren sich die Voraussetzungen.

Achtung

Es werden Grafikkarten mit eigenem Grafikspeicher und DirectX-Unterstützung empfohlen. Shared Memory-Grafikkarten beanspruchen eventuell zu viel Arbeitsspeicher und führen damit zu Leistungseinbußen. Beachten Sie das Kapitel Systemvoraussetzungen bei Verwendung von DirectX (auf Seite 33). Für den Einsatz von Multi-Touch ist die empfohlene Konfiguration aus diesem Kapitel zu beachten.

PERFORMANCE-OPTIMIERUNG

Beachten Sie, dass alle Angaben nur die minimalen Anforderungen an Ihr System darstellen. Eine höherwertige Ausstattung Ihrer Hardware verbessert die Leistung von zenon erheblich.

- ▶ Statten Sie Ihre Hardware - sowohl Clients und vor allem Server - mit genügend Arbeitsspeicher (RAM) aus.
- ▶ Optimieren Sie die Hardware für die Datensicherung, z.B. mit einem schnellen SSD-Datenspeicher.
- ▶ Stimmen Sie die Hardware der Clients und des Netzwerks aufeinander ab. Ein System ist immer so leistungsfähig wie seine schwächste Komponente.
- ▶ Optimieren Sie Ihre Netzwerkarchitektur, z.B. durch Einsatz einer Verkabelung mit einer hohen Datenübertragungsrate und entsprechenden Geräten (Switches und Router).
- ▶ Für den Einsatz in einer virtuellen Umgebung achten Sie auf eine entsprechende performance-optimierte Konfiguration des virtuellen Systems.

13.9.1 Editor

Die Mindestvoraussetzungen beziehen sich auf eine Komplettinstallation des Editors. Für umfangreiche Projekte oder mehrere gleichzeitig geladene Projekte muss die Hardware entsprechend leistungstärker sein. Dadurch können die Mindestvoraussetzungen steigen.

| Hardware | Mindestvoraussetzung | Empfohlen |
|-----------------|----------------------------------------------------------------------------------------------------------|-----------|
| CPU | Single Core mit SSE2 Unterstützung. | Quad Core |
| Arbeitsspeicher | Ab 4 GB Hinweis: Je mehr Projekte Sie gleichzeitig im Speicher halten, desto höher ist der | 8 GB |

| Hardware | Mindestvoraussetzung | Empfohlen |
|--------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------|
| | Speicherbedarf. | |
| Festplatte | Mindestens 4 GB freier Speicherplatz für die Komplettinstallation plus Speicherplatz für die Projekte. | |
| Bildschirmauflösung | Extended VGA mit 1024 x 768. Achtung: Manche Dialoge, z.B. der Filter des AML/CEL Bildes, sind bei einer Höhe von weniger als 850 Pixels schlecht oder u. U. nicht bedienbar. | Doppel-Bildschirmsystem: 2 Mal 1920 x 1080 |
| Grafikkarte | 64 MB dedizierter Speicher. Karten mit Shared Memory können zu Leistungseinbußen führen. Beachten Sie das Kapitel Systemvoraussetzungen bei Verwendung von DirectX (auf Seite 33). | |
| Eingabegeräte | Standardtastatur und Standardmaus. | |
| USB Schnittstelle oder DVD-Laufwerk | Für die Installation, abhängig vom Installationsmedium. Die Installation ist auch über das Netzwerk möglich. Installationsdateien können auch aus dem Kundenbereich der COPA-DATA Website heruntergeladen werden. | |
| Parallele oder USB Schnittstelle | Bei Dongle-Lizenzierung für Dongle erforderlich. Bei Netzwerkdongle nur für Dongleserver nötig. | |
| Netzwerkanschluss (optional) | 10 MBit/s mit TCP/IP Protokoll für Remote-Transport, Netzwerkdongle, Projektsicherungen auf zentralem Dateiserver, mehrplatzfähiger Editor usw. | 1000 MBit/s |

Hinweis: Bei Verwendung umfangreicher mehrplatzfähigen Projekten beachten Sie die Informationen im Kapitel Hardwarevoraussetzungen.

13.9.2 Runtime

Die Mindestvoraussetzungen beziehen sich auf eine Komplettinstallation der Runtime. Für umfangreiche Projekte oder mehrere gleichzeitig geladene Projekte muss die Hardware entsprechend leistungstärker sein. Dadurch können die Mindestvoraussetzungen steigen.

| Hardware | Mindestvoraussetzung | Empfohlen |
|-------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------|
| CPU | Single Core mit SSE2 Unterstützung. | Quad Core |
| Arbeitsspeicher | <p>Ab 512 MB.</p> <p>Hinweis: Projekte mit großen Datenmengen, Netzwerkprojekte, mehrere parallele Projekte und Projekte im Redundanzbetrieb benötigen mehr Speicher.</p> | 4096 MB |
| Festplatte | <p>2 GB freier Speicherplatz für Runtime-Installation plus Speicherplatz für die Projekte.</p> <p>Achtung: Wenn Sie historische Daten aufzeichnen (z. B. Archivdaten oder Alarm-/CEL-Daten), muss ausreichend Festplattenplatz zur Verfügung stehen oder bei der Projektierung dafür gesorgt werden, dass die historischen Daten ausgelagert oder gelöscht werden.</p> | |
| Bildschirmauflösung | <p>1024 x 768.</p> <p>Beachten Sie auch den Hinweis in der Infobox unter der Tabelle.</p> | |
| Grafikkarte | <p>64 MB dedizierter Speicher. Karten mit Shared Memory können zu Leistungseinbußen führen. Beachten Sie hierbei das Kapitel Systemvoraussetzungen bei Verwendung von DirectX (auf Seite 33).</p> | |
| Eingabegeräte | <p>Tastatur und/oder Maus. Auch die Bedienung über einen Touchscreen ist möglich. Für den Touchscreen stehen Ihnen viele individuelle, gestaltbare Softkeyboards zur Verfügung. Zusätzlich besteht die Möglichkeit der Multi-Touch-Bedienung.</p> | |
| USB Schnittstelle (optional) | <ul style="list-style-type: none"> ▶ Für Installation. Installation auch über Netzwerk oder andere Datenträger möglich. ▶ Für Dongle. Auch Netzwerkdongle möglich. | |
| Netzwerkanschluss | 64 kBits/s für Standard Client/Server Projekte. | 1000 Mbit/s Full duplex |

| Hardware | Mindestvoraussetzung | Empfohlen |
|------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------|
| (optional) | 100 Mbit/s Fullduplex für Redundanzbetrieb. | für Standard Client/Server Projekte. |
| Remoteverbindung (optional) | Minimalvoraussetzung: Wählmodem mit 9600 Bits/s. | 1 MBit/s Fullduplex. |
| WAN Einsatz (optional) | Beliebige Verbindung über Router, z. B. per ISDN oder DSL. Die Datenübertragung ist im WAN technisch bedingt langsamer als im lokalen Netzwerk. Beachten Sie die möglichen Datenübertragungsraten der von Ihnen eingesetzten WAN-Technik bereits bei der Projekterstellung. | |
| Message Control (optional) | Die Voraussetzungen dafür finden Sie im Kapitel Message Control. | |
| Schnittstellen (optional) | Die nötigen Schnittstellen hängen von den Anforderungen der SPS und/oder Busanbindung ab, z. B.: serielle RS232 oder RS422/485 Schnittstellen, ISA/PCI Steckplätze, usw. | |

Info

Die minimale empfohlene Auflösung in der Runtime beträgt 1024 x 768 Pixel. Es können auch kleinere Auflösungen projiziert werden. Allerdings sind dann möglicherweise einige Online-Dialoge nicht bedienbar. Werden diese nicht verwendet, kann die Auflösung auch niedriger gewählt werden.

13.9.3 Runtime unter Windows Embedded Standard

Die Mindestanforderungen beziehen sich auf eine an das Betriebssystem Windows Embedded Standard 7 SP1 mit Plattformupdate angepasste Installation der Runtime. Für umfangreiche Projekte muss die Hardware entsprechend leistungstärker sein.

Diese Tabelle gibt nur die von der Standard-Installation abweichenden Werte wieder. Die restlichen Parameter entsprechen den im Kapitel Hardwarevoraussetzungen für die Runtime (auf Seite 37) beschriebenen Werten.

| Hardware | Mindestanforderung | Empfohlen |
|-----------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------|
| Arbeitsspeicher | <ul style="list-style-type: none"> ▶ 512 MB. Hinweis: Projekte mit großen Datenmengen, Netzwerkprojekte, mehrere parallele Projekte und Projekte im Redundanzbetrieb benötigen mehr Speicher. | <ul style="list-style-type: none"> ▶ 2048 MB |
| Speichermedium | <ul style="list-style-type: none"> ▶ 2 GB freier Speicherplatz am Laufwerk C:\ vor der Installation von .NET Framework 3.5 und 4.5 ▶ 800 MB freier Speicherplatz nach der Installation von .NET Framework ▶ plus Speicherplatz für die Projekte, Archive, etc. | <ul style="list-style-type: none"> ▶ 80 GB |

Achtung: Wenn Sie historische Daten aufzeichnen (z. B. Archivdaten oder Alarm-/CEL-Daten), muss ausreichend Festplattenplatz zur Verfügung stehen oder bei der Projektierung dafür gesorgt werden, dass die historischen Daten ausgelagert oder gelöscht werden.

13.9.4 Runtime für Windows CE

Die Mindestanforderungen beziehen sich auf eine Komplettinstallation der Runtime für Windows CE. Für umfangreiche Projekte muss die Hardware entsprechend leistungstärker sein.

| Hardware | Mindestanforderung | Empfohlen |
|-------------------|----------------------------------------------------------------------------------------------|----------------------------------------|
| CPU | Mindestens 400 MHz | 1 GHz |
| Arbeitsspeicher | 64 MB | 1024 MB für Windows CE 6.0. |
| Speichermedium | 64 MB freier Speicherplatz. Permanent beschreibbarer remanenter Speicher für Projektdaten | 256 MB freier Speicherplatz oder mehr. |
| Netzwerkanschluss | Für Standard Client/Server Projekte: 10 Mbit/s Full duplex. | |

Achtung

Ab Version 7.50 wird Windows CE nicht mehr unterstützt. Es wird die zenon CE Version 7.20 installiert. Um diese zu nutzen, müssen die Runtime-Dateien für die Version 7.20 erzeugt werden.

13.9.5 Web Server

Die Mindestvoraussetzungen beziehen sich auf eine Komplettinstallation des Web Servers. Für umfangreiche Projekte oder mehrere gleichzeitig geladene Projekte muss die Hardware entsprechend leistungsstärker sein. Dadurch können die Mindestvoraussetzungen steigen.

| Hardware | Mindestvoraussetzungen | Empfohlen |
|-----------------------------------------|--------------------------------------------------|----------------------------|
| CPU | Single Core mit SSE2 Unterstützung. | |
| Arbeitsspeicher | Ab 1024 MB | |
| Festplatte | 256 MB freier Speicherplatz. | 1 GB freier Speicherplatz. |
| Netzwerkanschlus s | 10 Mbit/s Full duplex. | 1000 Mbit/s Full duplex. |
| Remoteverbindun g (optional) | Mindestvoraussetzung: Wählmodem mit 9600 Bits/s. | 1 MBit/s Full duplex. |

13.9.6 Web Client

Die Mindestvoraussetzungen beziehen sich auf eine Komplettinstallation des zenon Web Clients. Für umfangreiche Projekte oder mehrere gleichzeitig geladene Projekte muss die Hardware entsprechend leistungsstärker sein. Dadurch können die Mindestvoraussetzungen steigen.

| Hardware | Mindestvoraussetzung | Empfohlen |
|-----------------------------------------|--------------------------------------------------------------------------------------|-----------------------------|
| CPU | Single Core mit SSE2 Unterstützung. | Quad Core |
| Arbeitsspeicher | Ab 1024 MB | |
| Festplatte | 64 MB freier Speicherplatz für zenon Web Client plus Speicherplatz für die Projekte. | 80 GB freier Speicherplatz. |
| Netzwerkanschlus s | 10 Mbit/s Full duplex. | 1000 Mbit/s Full duplex. |
| Remoteverbindun g (optional) | Mindestvoraussetzung: Wählmodem mit 9600 Bits/s. | 1 MBit/s Full duplex. |
| Grafikkarte | 64 MB dedizierter Speicher. Karten mit Shared | |

| Hardware | Mindestvoraussetzung | Empfohlen |
|----------|----------------------------------------------------------------------------------------------------------------------------------------------|-----------|
| | Memory können zu Leistungseinbußen führen. Beachten Sie hierbei das Kapitel Systemvoraussetzungen bei Verwendung von DirectX (auf Seite 33). | |

14 Pfade für Installation und Betrieb

Pfade für zenon:

- ▶ Installation
- ▶ Editor
- ▶ Runtime



Info

Viele Standardpfade können Sie sich mit dem **set** Kommando anzeigen lassen:

- ▶ starten Sie die Kommandozeile (Eingabe **cmd** im Windows Startbereich)
- ▶ geben Sie den Befehl **set** ein
- ▶ mit Betätigen der Taste **Eingabe** werden Default-Ordner für Windows und zenon angezeigt

Hinweis: Da absolute Pfade sich in verschiedenen Betriebssystemen unterscheiden können, werden in diesem Kapitel Pfade immer als Windows Umgebungsvariablen angezeigt. Zum Beispiel *%ProgramData%* statt *C:\ProgramData*.

INSTALLATION

Bei der Installation werden Pfade gesetzt für:

- ▶ zenon Editor
- ▶ zenon SQL-Ordner

Nur die Pfade für zenon Editor und zenon SQL-Ordner sind anpassbar.
Das Setup benötigt Administratorrechte, das gilt auch für die Änderung der Installationspfade.

VORAUSSETZUNGEN

Die Installationspfade von vorausgesetzter Drittanbieter-Software entsprechen den Standardpfaden der jeweiligen Hersteller und sind beim Setup nicht änderbar.

Welche zusätzlichen Softwarepakete installiert werden, hängt ab von der Installationsart:

- ▶ zenon Editor
- ▶ zenon Runtime
- ▶ zenon Web Client
- ▶ zenon Logic Runtime

| Voraussetzungen | Editor | Runtime | Webclient | zenon Logic Runtime |
|-----------------------------------------------------------|--------|---------|-----------|---------------------|
| Microsoft .NET Framework 4.6.2 | + | + | + | - |
| Microsoft SQL Server 2017 Express (x64) | + | - | - | - |
| Microsoft Visual C++ 2010 Redistributable | + | + | + | + |
| Microsoft Visual C++ 2013 Redistributable | + | + | - | - |
| Microsoft Visual C++ 2017 Redistributable | + | + | + | + |
| Microsoft .NET Core Hosting Bundle 2.1.5 | - | - | - | - |
| CodeMeter Runtime Kit 6.80 | + | + | - | + |
| Microsoft Visual Studio Tools for Applications VSTA 2.0 | + | + | + | - |
| Microsoft Visual Studio 2008 Remote Debugger | + | + | - | - |
| Mircosoft Web Deploy 3.6 | - | - | - | - |
| Visual Basic for Applications VBA 7.1 | + | + | + | - |
| Visual Basic for Applications Language Pack VBA 7.1 | + | + | + | - |
| COPA-DATA Multiple Network Protocol Driver | + | + | - | + |

ZENON

Die Installation von zenon Editor setzt zwei Pfade:

- ▶ zenon Editor:
 - ▶ 32-Bit Systeme: %ProgramFiles(x86)%\COPA-DATA\zenon [Version]
 - ▶ 64-Bit Systeme: %ProgramFiles%\COPA-DATA\zenon [Version]

Diese Pfade können bei der Installation angepasst werden.

- ▶ zenon SQL-Ordner:
 - ▶ ab Version 8.10: %ProgramData%\COPA-DATA\SQL2017\

Diese Pfade können manuell über die zenDB.ini geändert werden.

ZENON EDITOR

Im zenon Editor werden standardmäßig folgende Pfade benutzt:

| Objekt | Pfad |
|-------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------|
| Arbeitsplatz | %CD_USERDATA% Zum Beispiel: C:\Users\Public\Documents\zenon_Projects |
| Projekte | %CD_USERDATA% Zum Beispiel: C:\Users\Public\Documents\zenon_Projects Tipp für Tastenkombination: Projekt markieren -> Strg+Alt+D |
| SQL-Ordner des Projekts | %ProgramData%\COPA-DATA\[SQL-Ordner]\[UID]\FILES Tipp für Tastenkombination: Projekt markieren -> Strg+Alt+E |
| project.ini | %ProgramData%\COPA-DATA\[SQL-Ordner]\[UID]\FILES\zenon\system |
| zenon6.ini | %ProgramData%\COPA-DATA\System Zum Beispiel: C:\ProgramData\COPA-DATA\System |
| Sicherung | %ProgramData%\COPA-DATA\[SQL-Ordner]\[UID]\BACKUP %ProgramData%\COPA-DATA\[SQL-Ordner]\[UID]\FILES\[Projekte] |
| Kompilierte Dateien | %CD_USERDATA%\[Arbeitsbereich]\[Projekt]\RT |
| Externe Dateien | %CD_USERDATA%\[Arbeitsbereich]\[Projekt]\RT\FILES\... Hinweis: Im Projekt einstellbar über Eigenschaft Dateiablage. |
| Systemdateien | Windows Systemordner. |

ZENON RUNTIME

In der zenon Runtime werden standardmäßig folgende Pfade benutzt:

| Objekt | Pfad |
|---------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------|
| Projekte | %CD_USERDATA%\[Arbeitsbereich]\[Projekt]\RT |
| Externe Dateien | %CD_USERDATA%\[Arbeitsbereich]\[Projekt]\RT\FILES\... |
| Exportierte Archive, Chronologische Ereignislisten und Alarmmeldeliste | %CD_USERDATA%\[Arbeitsbereich]\[Projekt]\Export Hinweis: Wird bei erstem Export angelegt. |
| Systemdateien | Windows Systemordner. |

ZENON LOGIC

Pfade für zenon Logic werden analog zu den zenon Pfaden angelegt.

15 zenon für Windows CE

BESTANDTEILE

Die CE Version von zenon setzt sich aus folgenden Komponenten zusammen:

- ▶ zenon CE Runtime
- ▶ Sprach DLLs
- ▶ Netzwerk DLL
- ▶ Treiber DLLs
- ▶ zenon6.ini
- ▶ Transportservice



Achtung

Ab Version 7.50 wird Windows CE nicht mehr unterstützt. Es wird die zenon CE Version 7.20 installiert. Um diese zu nutzen, müssen die Runtime-Dateien für die Version 7.20 erzeugt werden.

VORAUSSETZUNGEN FÜR INSTALLATION DER RUNTIME AUF REMOTE-SYSTEMEN

- ▶ Auf dem CE Terminal muss der Transportservice (**SysSrvCE.exe**) von zenon installiert und gestartet sein oder eine ActiveSync-Verbindung bestehen. Hinweise zur manuellen Installation über Datenträger finden Sie im Kapitel Manuelle Installation und Runtime-Update (auf Seite 55).
- ▶ Das CE Terminal, auf das die neuen Daten übertragen werden sollen, muss für den ordnungsgemäßen Transport über mindestens 8 Megabyte freien Speicher "Program Memory" verfügen. Dieser Parameter kann über das Control Panel **Systemeigenschaften** angepasst werden.

VORGANGSWEISE

Details zu Kompatibilität, Installation und Update finden Sie in den Kapiteln:

- ▶ CE Versionen / Prozessorunterstützung (auf Seite 46)
- ▶ Update Windows CE Runtime (auf Seite 48)



Info

Wird beim Start von **zenonrce.exe** auch die Datei **sysssrvce.exe** ausgeführt, dann kann sichergestellt werden, dass immer eine TCP-Verbindung aufgebaut werden kann. Damit ist nur eine Datei für die Autostart-Funktionalität nötig. Allerdings muss zwischen beide Starts eine Zeitverzögerung projiziert werden.

Ursache: Beim Start von **zenonRCE** startet automatisch auch **zenLogSrvCE**. Aber auch beim Start von **sysssrvce** wird **zenLogSrvCE** mitgestartet.

Werden **zenonRCE** und **sysssrvce** innerhalb eines sehr kurzen Zeitraums gestartet, versuchen beide, **zenLogSrvCE** zu starten. Das führt das zu einer Fehlermeldung.

Lösung: Um dies zu vermeiden, projizieren Sie eine Verzögerung zwischen den Start von **zenonRCE** und **zenLogSrvCE**. Dazu können Sie in der **zenon6.ini** den Eintrag **STARTDELAY=** setzen. Damit wird die Runtime (**zenLogSrvCE**) später gestartet. Es wird dann überprüft, ob **zenLogSrvCE** bereits läuft und dieser nicht mehr neu gestartet.

15.1 CE - Versionen und Prozessorunterstützung

In der zenon Version 7.20 werden folgende Windows CE Versionen und Prozessoren unterstützt:

Prozessoren:

- ▶ x86

- ▶ ARM V4/V5

CE-Versionen:

- ▶ CE 6.00
- ▶ Windows Embedded Compact 7

Informationen zu unterstützten CE Versionen und Prozessoren für frühere zenon Versionen finden Sie in der jeweiligen Dokumentation oder erhalten Sie beim COPA-DATA Support.

Achtung

Ab Version 7.50 wird Windows CE nicht mehr unterstützt. Es wird die zenon CE Version 7.20 installiert. Um diese zu nutzen, müssen die Runtime-Dateien für die Version 7.20 erzeugt werden.

15.2 Systemdateien

Die Runtime für Windows CE setzt das Vorhandensein unterschiedlichster Systemdateien voraus. Fehlt eine dieser Dateien, so erzeugt das Betriebssystem eine Fehlermeldung beim Starten der Runtime, dass eine oder mehrere Komponenten nicht gefunden wurden. Folgende Systemdateien sind unbedingt erforderlich:

| Datei | Beschreibung |
|-----------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| mfc90u.dll | Erforderlich für die Runtime. Es kommt eine Fehlermeldung beim Starten, wenn diese Datei nicht vorhanden ist. |
| msvcr90.dll | Erforderlich für die Runtime. Es kommt eine Fehlermeldung beim Starten, wenn diese Datei nicht vorhanden ist. |
| atl90.dll | Nicht erforderlich für das Starten der Runtime, aber für den Einsatz eines Treibers mit Netzwerkanbindung oder den Einsatz von zenon im Netzwerk. Wenn diese Datei nicht vorhanden ist, kann das Gerät nicht als Client fungieren oder funktionieren TCP/IP Treiberanbindungen nicht. |
| IMGDECOMP.dll | Nicht erforderlich für das Starten der Runtime, aber erforderlich für die Darstellung von Transparenz, wenn Alpha Blending im Betriebssystem nicht integriert ist. Eine Animation ist bei GIF Dateien unter Windows CE nicht möglich. |
| VBSCRIPT.dll + JSCRIPT.dll | Nicht erforderlich für das Starten der Runtime. Diese Datei wird benötigt für die PCE (Process Control Engine). |

Einige dieser Systemdateien werden mit der Installation von zenon für CE mit installiert und können z. B. mit dem **UpdateCE** Tool auf das CE Gerät übertragen werden. Alle diese Systemdateien sollten bereits vom Gerätehersteller in das Betriebssystem-Image des CE Geräts integriert werden.

Achtung

Für Hersteller von Windows CE Betriebssystemimages:

CE Versionen vor 6.0 benötigen die Datei **toolhelp.dll**. Damit die Datei am CE Gerät vorhanden und die Toolhelp im SDK auch verfügbar ist, aktivieren Sie im **Platform Manager** folgenden Eintrag:

Core OS -> Display Based Device ->Core OS Services -> Debugging Tools -> Toolhelp API. Hiermit ist die *Toolhelp.dll* im Image mit dabei.

Tipp: Verwenden Sie immer das aktuellste Service Pack des **Platform Builder**.

Hinweis: Die **toolhelp.dll** wird für Windows CE 6 nicht benötigt und soll mit CE 6 nicht verwendet werden.

15.3 Update Windows CE Runtime

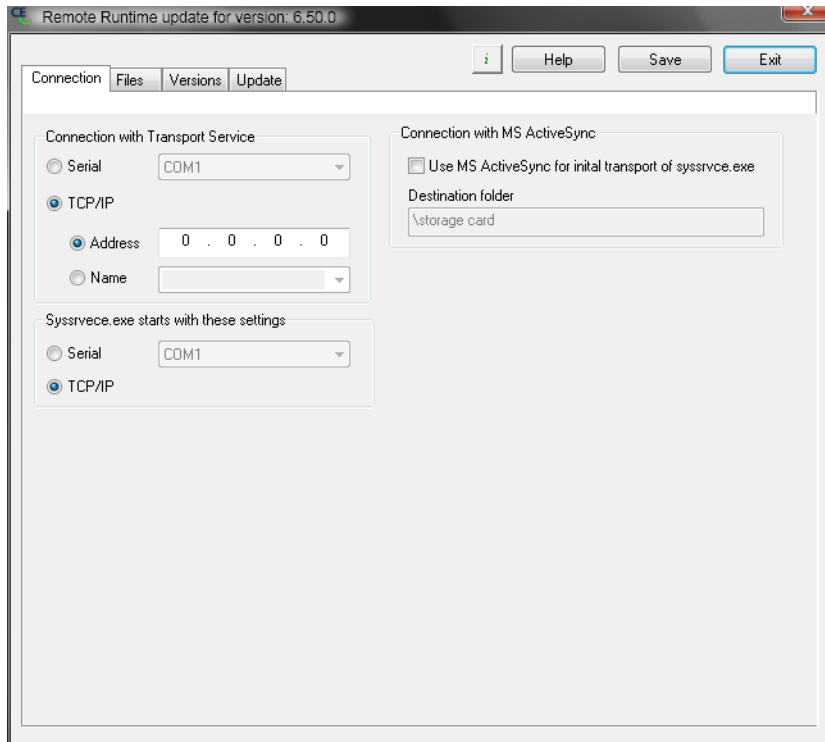
Um ein Update der Windows CE Runtime durchzuführen:

- ▶ Stellen Sie sicher, dass der zenon Transport Service (**SysSrvCE.exe**) auf dem CE Gerät läuft.
- ▶ Vergewissern Sie sich, dass sie keine Remote Verbindung mittels zenon Editor zum Gerät aufgebaut haben.
- ▶ Wählen Sie im zenon Menü **Extras** den Befehl **Update Windows CE Runtime**.
Der Dialog zur Übertragung von Runtime-Dateien öffnet sich.
- ▶ Konfigurieren Sie die Verbindung.
- ▶ Definieren Sie die zu übertragenden Dateien.
- ▶ Wählen Sie die Version aus.
- ▶ Starten Sie das Update.

Hinweis: Sollten Sie die Runtime zum ersten Mal übertragen/installieren, beachten Sie die Hinweise im Kapitel **Manuelle Installation und Runtime-Update**. (auf Seite 55)

VERBINDUNG KONFIGURIEREN

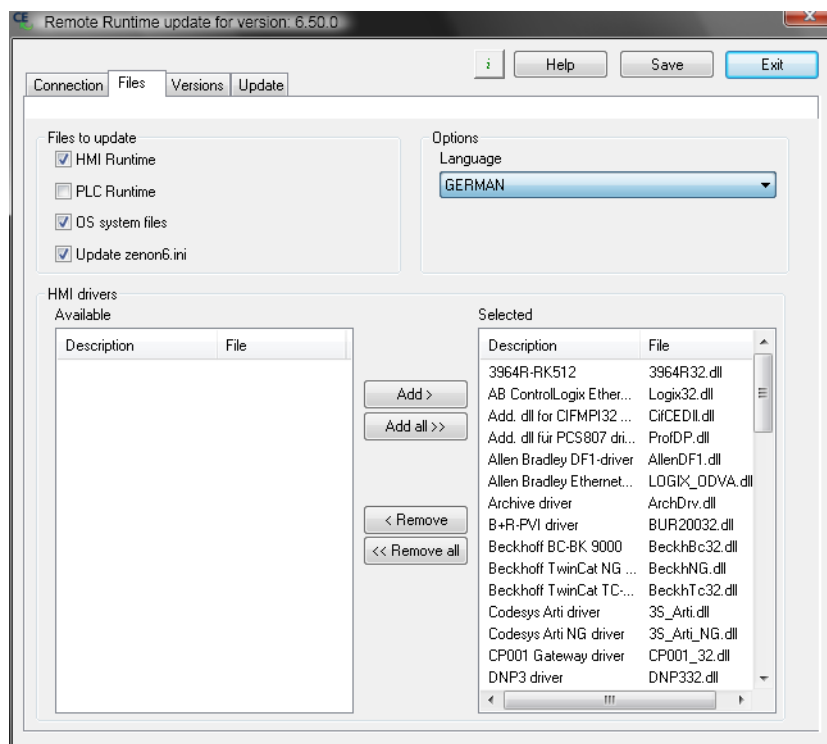
Die Verbindung zum Windows CE Gerät konfigurieren Sie in der Registerkarte **Connection**.



| Parameter | Beschreibung |
|---------------------------------------------------------------|----------------------------------------------------------------------------------------|
| Serial | Einstellung für serielle Verbindung zum Windows CE Gerät, Port muss ausgewählt werden. |
| TCP/IP | Einstellungen für TCP/IP Verbindung zum Windows CE Gerät. |
| Adress | IP-Adresse. |
| Name | Computernamen. |
| Sysrvce.exe starts with these settings | Einstellung für Start der sysrvce.exe . |
| Serial | <i>Aktiv:</i> serielle Verbindung wird gewählt, Port muss ausgewählt werden. |
| TCP/IP | <i>Aktiv:</i> TCP/IP Verbindung wird gewählt. |
| Connection with MS ActiveSync | Einstellungen zur Verbindung über MS ActiveSync |
| Use MS ActiveSync for initial transport of sysrvce.exe | <i>Aktiv:</i> sysrvce.exe wird beim ersten Transport über MS ActiveSync übertragen. |
| Destination folder | Zielordner. |

| Parameter | Beschreibung |
|-----------|--------------------------------------------------------------------------------------------------|
| Help | Öffnet die Online-Hilfe |
| Save | Speichert alle Änderungen. |
| Exit | Schließt das Update CE Tool und bietet zuvor das Speichern noch nicht gesicherter Änderungen an. |

ZU ÜBERTRAGENDE DATEIEN DEFINIEREN

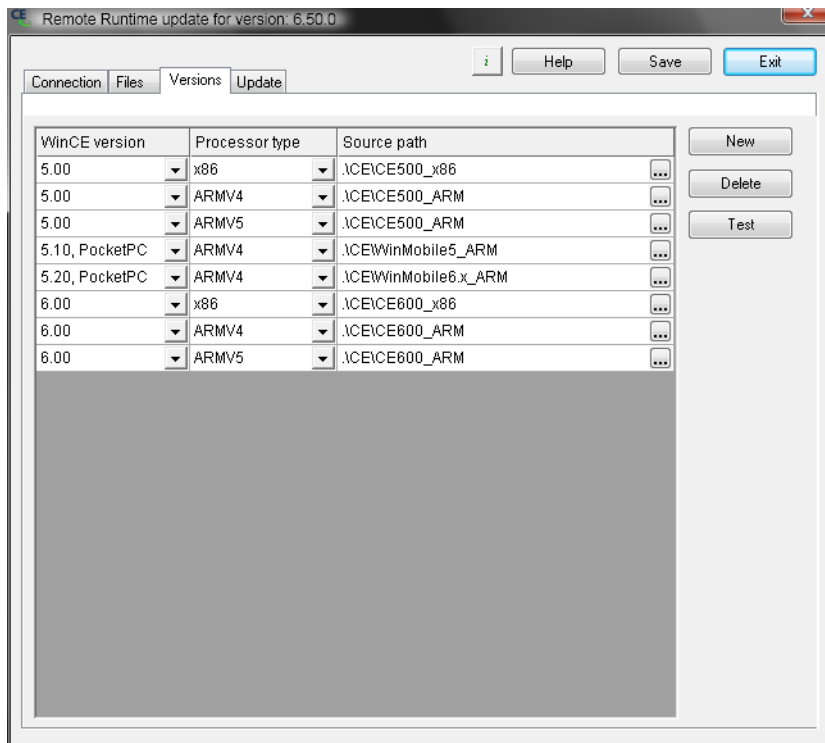


| Parameter | Beschreibung |
|-----------------|--------------------------------------------------------------------------------|
| Files to update | Dateien, die übertragen werden sollen. |
| HMI Runtime | Aktiv: Überträgt zenon Dateien zum Zielgerät. Default: <i>aktiv</i> |
| PLC Runtime | Aktiv: Überträgt zenon Logic Dateien zum Zielgerät. Default: <i>inaktiv</i> |
| OS system files | Aktiv: Überträgt nötige Dateien des Betriebssystems. Default: <i>aktiv</i> |

| Parameter | Beschreibung |
|--------------------------|----------------------------------------------------------------------------------------------------------|
| Update zenon6.ini | Überträgt die zenon6.ini zum Zielgerät. Damit werden auch die Lizenzinformationen am Zielgerät geändert. |
| Options | |
| Language | Gewünschte Sprache am Zielsystem. Default: <i>English</i> |
| HMI drivers | Auswahl der zu übertragenden HMI Treiber. |
| Available | Liste der zur Verfügung stehenden Treiber. |
| Selected | Liste der ausgewählten Treiber. |
| Add | Fügt markierte Treiber zur Liste der ausgewählten Treiber hinzu. |
| Add all | Fügt alle Treiber zur Liste der ausgewählten Treiber hinzu. |
| Remove | Löscht markierte Treiber aus der Liste der ausgewählten Treiber. |
| Remove all | Löscht alle Treiber aus der Liste der ausgewählten Treiber. |
| Help | Öffnet die Online-Hilfe |
| Save | Speichert alle Änderungen. |
| Exit | Schließt das Update CE Tool und bietet zuvor das Speichern noch nicht gesicherter Änderungen an. |

VERSION AUSWÄHLEN

Wählen Sie in der Registerkarte **Versions** die passende Version aus, falls sie nicht automatisch erkannt wurde.

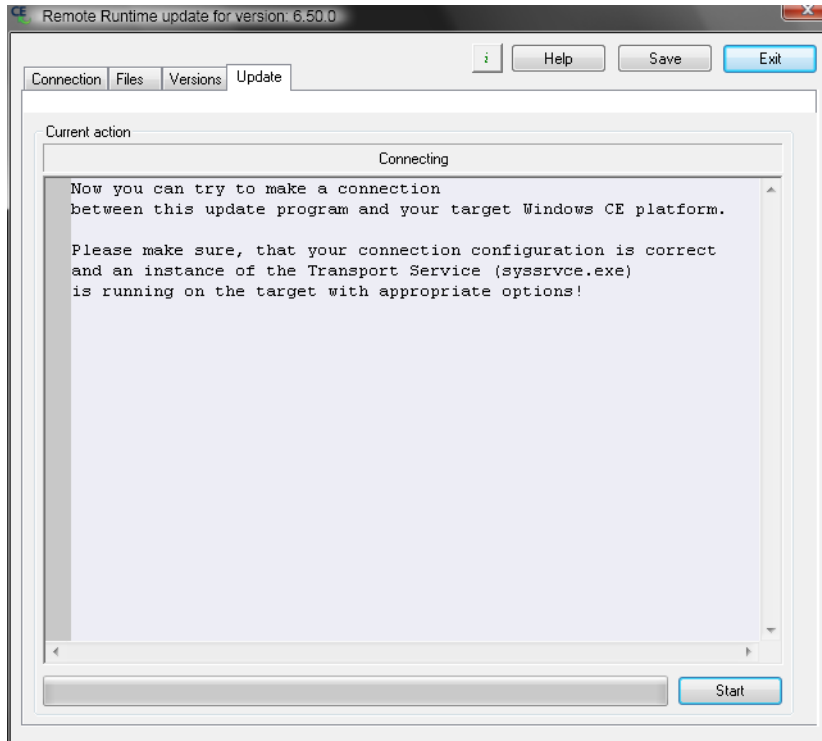


| Parameter | Beschreibung |
|-----------------------|---------------------------------------------------------------------------------------------------------------|
| WinCE version | Version des Windows CE Betriebssystems am Zielgerät. Klick auf Schaltfläche öffnet Dropdownliste zur Auswahl. |
| Processor type | Prozessor des Geräts. |
| Source path | Pfad zum Ordner, der die Dateien enthält. Klick auf Schaltfläche ... öffnet Dialog zur Auswahl des Ordners. |
| New | Fügt neuen, leeren Eintrag in Liste ein. |
| Delete | Löscht den ausgewählten Eintrag aus der Liste, |
| Test | Überprüft Einstellungen. |
| Help | Öffnet die Online-Hilfe |
| Save | Speichert alle Änderungen. |
| Exit | Schließt das Update CE Tool und bietet zuvor das Speichern noch nicht gesicherter Änderungen an. |

UPDATE STARTEN

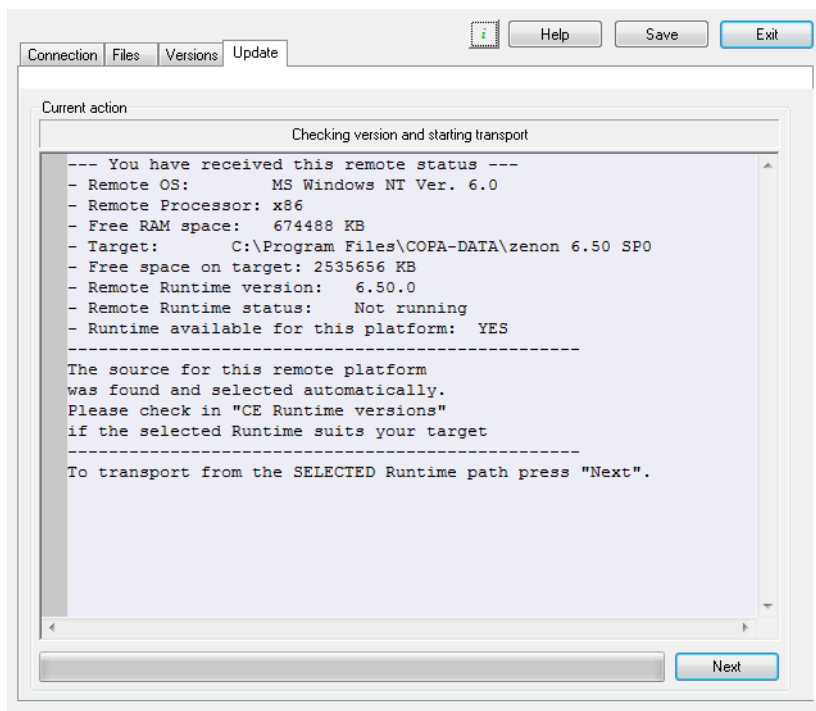
Um die Verbindung herzustellen:

1. Klicken Sie in der Registerkarte **Update** auf die Schaltfläche **Start**.



Die Daten für die Übertragung werden überprüft und in einem Fenster angezeigt.

2. Starten Sie mit einem Klick auf die Schaltfläche **Next** die Übertragung zum Zielgerät.



Falls die Übertragung aufgrund fehlender Dateien nicht gestartet werden kann, erhalten Sie eine Fehlermeldung mit der Liste der fehlenden Dateien:



Falls Sie die Fehlermeldung **The current update was not completed** erhalten, wurde die Installation unterbrochen oder nicht korrekt beendet.



Info

Soll zenVNCSrv.exe per Update ersetzt werden, wird dieser beendet und nach dem Update wieder gestartet. Dazu muss die Datei **zenVNCSrvCE.exe** in der

UpdateCE.ini im Abschnitt **[SOURCES_FILES_GENERAL]** folgende Einträge enthalten (per Default vorhanden):

- ▶ zenVNCSrvCE.exe
- ▶ zenVNCCfgCE.exe

15.4 Manuelle Installation und Runtime-Update

Installation und Update sind auch ohne Remote-Transport und ActiveSync möglich. Dazu werden die erforderlichen Dateien manuell auf eine Speicherkarte für das CE Gerät kopiert. Dafür müssen Sie CE Version und Prozessortyp des CE Geräts kennen.

Folgende Dateien müssen zwingend aus dem jeweiligen Ordner für die richtige Plattform auf die für das CE Gerät bestimmte Speicherkarte kopiert werden:

- ▶ **zenonRCE.exe** (Runtime)
- ▶ **LogCliLibCE.dll** (Diagnose-DLL)
- ▶ **zenon6.ini** (Konfigurationsdatei)
- ▶ **Cd_tooCE.dll** (Hilfs-DLL)
- ▶ **ZenNetSrvCE.dll** (Netzwerk)
- ▶ **CDHelper.dll** (Hilfs-DLL)
- ▶ Eine der folgenden Sprach-DLLs: **RChineCE.dll**, **RCzechCE.dll**, **REngliCE.dll**, **RFrancCE.dll**, **RGermaCE.dll**, **RIталиCE.dll**, **RRussiCE.dll**, **RSpaniCE.dll** (Die ausgewählte Sprache wird in der Datei **zenon6.ini** festgelegt.)
- ▶ **sysssrvce.exe** (Transportservice und Diagnosis Server)
- ▶ **atl90.dll** (Systemdatei, ev. im Betriebssystem enthalten)
- ▶ **mfc90u.dll** (Systemdatei, ev. im Betriebssystem enthalten)
- ▶ **msvcr90.dll** (Systemdatei, ev. im Betriebssystem enthalten)

Weitere Dateien, wie zum Beispiel die Treiber oder die Remotedesktop-Software (**zenVNCCfgCE.exe** und **zenVNCSrvCE.exe**), sind optional.

15.5 Pocket PCs (PDA - Handheld PC)

Pocket PCs werden ab Version 7 nicht mehr unterstützt.

15.6 Fehlerbehandlung

Mögliche Fehler:

| Fehler | Mögliche Lösung |
|---------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------|
| Verbindungsfehler bei Update über COM. | Geöffneter Windows Explorer verzögert die Zugriffszeit. Explorer schließen behebt das Problem. |
| Transportservice funktioniert nicht. | Version des Transportservice überprüfen. Mindestens: Version 5.21 SP3 oder höher oder der Version 5.50 SP1 oder höher. |
| Runtime Update Programm kann keine Verbindung aufbauen. | Beenden Sie offene Verbindungen des Editors zum CE Transportservice. |

16 zenon Logic Runtime für Windows CE

Die Installation der zenon Logic Runtime (PLC Runtime) auf einem Windows CE System läuft ähnlich ab wie die Installation der Runtime für Windows CE (auf Seite 45).

Voraussetzung: Lauffähiger Transportservice unter CE.

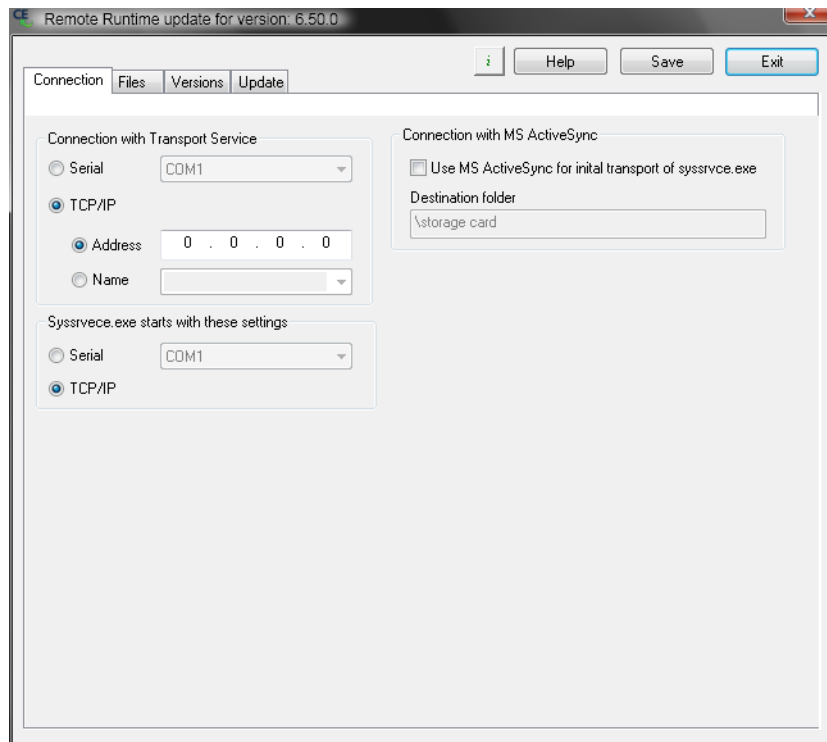
Die zenon Logic Runtime für Windows CE setzt sich aus folgenden Komponenten zusammen:

- ▶ zenon Logic Runtime
- ▶ Sprach DLL
- ▶ zenon Logic IO Treiber
- ▶ zenon6.ini

INSTALLATION

- ▶ Wählen Sie im zenon Menü **Extras/Update Windows CE Runtime**.
Der Dialog zur Übertragung von Runtime-Dateien öffnet sich.
- ▶ Aktivieren Sie im Fenster Files die Checkbox PLC Runtime, um die für zenon Logic nötigen Dateien in das CE Ausführungsverzeichnis zu kopieren.

- Wechseln Sie zur Registerkarte Connection.



- Definieren Sie die Verbindung zum Windows CE Gerät. Geben Sie die IP-Adresse oder den seriellen Port an.
- Falls auch die zenon6.ini übertragen werden soll, wählen Sie Update zenon6.ini aus. Damit werden auch die Lizenzinformationen am Zielgerät geändert.
- Wählen Sie im Fenster CE Runtime Versions die passende Version aus, falls sie nicht automatisch erkannt wurde.

UPDATE

Funktioniert wie im Kapitel Update Windows CE Runtime (auf Seite 48) beschrieben.

Achtung: In der Registerkarte Files muss die Option PLC Runtime aktiviert werden!



Info

Unter Windows CE 6.0 werden die MFC-Dateien immer übertragen

17 zenon Web Server

Um den **zenon Web Server** oder **zenon Web Server Pro** zu installieren:

1. Aktivieren Sie die WWW-Dienste auf dem Rechner.
Der Ordner `C:\inetpub\wwwroot` muss existieren.
2. Starten Sie das zenon Installationsmedium. Der Startbildschirm wird angezeigt.
Falls Sie Autostart von Medien deaktiviert haben, führen Sie die Datei **start.exe** auf dem Installationsmedium aus.
3. Wählen Sie zenon Web Server aus.
Entsprechend der Version des Betriebssystems wird automatisch die 32-Bit oder 64-Bit Version des zenon Web Servers installiert.
4. Folgen Sie der Installationsroutine.
5. Starten Sie den Computer neu.

Die Setup-Dateien für den Web Client finden Sie nach der Installation in Unterverzeichnissen des zenon Web Server-Installationspfades (xxx steht für die jeweilige Version von zenon), z. B.: `C:/Programme (x86)/COPA-DATA/zenonWebserver/zenon/controlversions/Versionxxx/zenon_Webclient_Setup_GERMAN.EXE`
oder

`C:/inetpub/wwwroot/zenon/controlversions/Versionxxx/zenon_Webclient_Setup_GERMAN.EXE`

Es werden auch die Beispiel-Webseiten (`index*.html` und `init*.html`) mitinstalliert. Diese sind im Unterverzeichnis zenon des zenon Web Server-Installationspfades zu finden, z. B.:

`C:/Programme/zenonWebserver/zenon/index.htm`

oder

`C:/inetpub/wwwroot/zenon/index.html`



Info

Der Dienst für den **zenon Web Server** wird nur in der lizenzierten Version automatisch gestartet. Im Demo-Modus muss der zenon Web Server manuell über die zenon Web Server-Konsole in den Systemeigenschaften gestartet werden.

WEITERFÜHRENDE INFORMATIONEN

Details zum zenon Web Server lesen Sie im Handbuch zenon Web Server und Web Server Pro, zur Lizenzierung im Handbuch Lizenzierung.

18 zenon Web Client

Der zenon Web Client besteht vor allem aus einem ActiveX Control, das Informationen in einem Browser darstellt. Die Darstellung erfolgt dabei 1:1 wie in einem **zenon Runtime Client**. Die Verbindung zum **Runtime Server** erfolgt über den **zenon Web Server** mittels TCP/IP Kommunikation.

Die Setup-Dateien für den zenon Web Client finden Sie nach der Installation in Unterverzeichnissen des zenon Web Server-Installationspfades (xxx steht für die jeweilige Version von zenon), z. b.:

%Programfiles%/COPA-DATA/zenon Web

Server/zenon/controlversions/Versionxxx/zenon_Webclient_Setup_GERMAN.EXE

oder

C:/inetpub/wwwroot/zenon/controlversions/Versionxxx/zenon_Webclient_Setup_GERMAN.EXE

Alle zenon Logic Web Client-Setups sind digital signiert und können problemlos auch im Internet zum Download bereit gestellt werden.

Mit dem COPA-DATA Web Client wird auch der **zenon Web Client Starter** installiert. Dieser ermöglicht das Öffnen des zenon Web Client aus einem beliebigen Browser.



Info

Der zenon Web Client sendet Error- und LOG-Dateien. Der für die Auswertung dieser Dateien notwendige Diagnosis Server wird bei einer Installation des zenon Web Client mitinstalliert.

19 Updates (Build Setups)

UPDATE (BUILD SETUP)

Ein Update wird über die bestehende Installation installiert und ersetzt nur geänderte Dateien durch neue Versionen. Alle Projekte und individuellen Einstellungen bleiben erhalten. Build Setups sind nie zu 100% qualitätsgesichert. Es werden nur die enthaltenen Fehlerbehebungen getestet. Sollten durch eine Fehlerbehebung unerwünschte Nebeneffekte auftreten, können diese unter Umständen bei den Tests nicht auffallen. COPA-DATA empfiehlt daher immer den Einsatz von Service Packs. Diese durchlaufen immer den kompletten Qualitätssicherungsprozess.

Hinweise:

- Build Setups können nur lokal installiert werden. Eine Installation auf Netzwerkpfeaden (UNC) ist nicht möglich.

- ▶ zenon Web Client: Um ein Update für den zenon Web Client zu installieren, muss der zenon Web Client zuvor deinstalliert werden.

WECHSEL ZU NEUER VERSION

Wenn Sie eine neue Version von zenon installieren möchten, starten Sie die Installationsroutine. Bei der Installation wird die neue Version parallel zur bisherigen Version installiert. Alle Ihre Projekte und individuellen Einstellungen bleiben erhalten. Projekte werden bei der Installation nicht in die neue Version konvertiert. Erst beim ersten Öffnen im Editor erfolgt die Konvertierung des jeweiligen Projektes in die neue Version. Eine Dialogbox weist auf den Vorgang hin. Die bisherige Version wird automatisch gesichert. Möchten Sie nur die jeweils aktuellste Version verwenden, deinstallieren Sie die Vorgängerversion über die entsprechende Routine der Windows Systemsteuerung.

Achtung

Wenn eine Installation den Wechsel des SQL Servers mit sich bringt (z. B. von zenon 7.00 auf zenon 7.10 oder höher, muss vor der Installation eine Sicherung aller Projekte oder des Arbeitsplatzes erfolgen. Diese Sicherung wird nach der Installation wieder eingespielt. Details zur Vorgehensweise siehe auch Abschnitt **Mehrbenutzer-Projekte/Update mit Wechsel des SQL Servers**.

Möchten Sie mehrere Versionen von zenon parallel betreiben, so managen Sie diese über das **Startup Tool**. Es kann immer nur jeweils eine Version gestartet werden. Welche Version gestartet wird, legen Sie im **Startup Tool** fest, das beim Start alle nötigen Einstellungen automatisch vornimmt. Details dazu lesen Sie im Kapitel **Startup Tool**.

Info

Neue Versionen bringen immer strukturelle Änderungen mit sich. Bei der Installation bleiben die Projekte und Einstellungen erhalten. Beim ersten Öffnen im Editor werden Projekte in die neue Version konvertiert, gleichzeitig wird eine automatische Sicherungskopie der alten Version erstellt.

Konvertierte Projekte können in Vorgängerversionen nicht mehr bearbeitet werden. Ab Version 6.2 kann der Editor Projekte für unterschiedliche Runtime-Versionen erzeugen.

Wichtige Hinweise zur Konvertierung von Projekten finden Sie im Revisionstext. Dieser wird auf dem Installationsmedium ausgeliefert und steht Ihnen auch online zur Verfügung.

MEHRBENUTZER-PROJEKTE

Um den Wechsel zu einer neuen zenon Version in Mehrbenutzer-Projekten ohne Datenverlust zu gewährleisten:

1. Auf allen Clients alle ausgecheckten Elemente einchecken -> *Änderungen übernehmen*. Es darf nichts mehr ausgecheckt sein. Dies gilt für alle Projekte.
2. Am Server-Rechner die neue zenon Version installieren.
3. Alle Server-Projekte in die neue Version konvertieren: Dazu alle Projekte auf dem Server-Rechner im Editor einmal laden.
4. Die neuen zenon Version auf den Client-Rechnern installieren.
5. Projekte auf Clients laden und neu auschecken.

UPDATE MIT WECHSEL DES SQL SERVERS

Wenn eine Installation den Wechsel des SQL Servers mit sich bringt (z. B. von zenon 7.00 auf zenon 9.3), sind weitere Schritte nötig. Diese Schritte werden durchgeführt:

- ▶ nachdem alle Projekte eingecheckt wurden
- ▶ bevor die neue Version installiert wird

Ablauf beim Wechsel des SQL Servers:

1. Checken Sie auf allen Clients alle ausgecheckten Elemente ein -> *Änderungen übernehmen*.
2. Öffnen Sie am Mehrbenutzer-Server den Editor in der Ausgangsversion.
3. Erstellen Sie Sicherungen aller Projekte, die Sie mit der neuen Version bearbeiten oder öffnen möchten:
 - ▶ entweder als einzelne Projektsicherungen
 - ▶ oder als Sicherung des kompletten Arbeitsplatzes
4. Installieren Sie die neue Version auf dem Server.
5. Konvertieren Sie alle Server-Projekte in die neue Version indem Sie die zuvor erstellten Projektsicherungen im Editor einmal laden.
6. Installieren Sie das Update auf jedem Client.
7. Übertragen Sie die Projekte vom Mehrbenutzer-Server aus auf die Clients. Beachten Sie dabei den neuen Namen der SQL Instanz.

Die Projekte sind damit konvertiert, synchronisiert und einsatzbereit.

Achtung: Stellen Sie sicher, dass die Einstellungen der Firewall den Datenverkehr vom Mehrbenutzer-Server zu den Clients und umgekehrt zulässt.

KOMPATIBILITÄT

Der zenon Editor kann in jeder neuen Version Projekte aus den vorangegangenen Versionen öffnen. Diese können in der neuen Version weiter bearbeitet werden. Sollten Anpassungen durch den Benutzer

nötig sein, finden Sie Hinweise dazu im jeweiligen Revisionstext und im Handbuch **Projektkonvertierung**. Beim Öffnen eines Projekts mit niedrigerer Versionsnummer in einer höheren Editor-Version:

- ▶ wird das Projekt automatisch konvertiert
- ▶ wird automatisch eine Sicherung des Projekts angelegt

Achtung

Konvertierte Projekte können in einem Editor mit niedrigerer Versionsnummer nicht mehr geöffnet werden. Die beim Konvertieren erstellte Projektsicherung kann aber weiterhin geöffnet und bearbeitet werden.

Verzichten Sie auch auf die Übertragung von Projekten aus neueren in ältere Versionen per XML-Import. Dies kann zu unerwünschten Ergebnissen führen. Vor allem Treiber können sich anderes verhalten, als erwartet.

KOMPATIBILITÄT ZWISCHEN EDITOR UND RUNTIME

Mit dem zenon Editor können Runtime-Dateien für unterschiedliche Runtime-Versionen erstellt werden. Die Version der Runtime muss damit nicht mit der Version des Editors übereinstimmen. Diese Abwärtskompatibilität eignet sich besonders für den Einsatz gemischter Systeme. Zum Beispiel: Ein Projekt, das mit dem Editor für Version 8.00 projiziert wird, kann auch mit einer Runtime 6.20 SP4 gestartet werden.

Achtung

Werden in einem Projekt mit einem Editor der höheren Version Eigenschaften projiziert, die in der niedrigeren Version nicht verfügbar sind, stehen diese dort nicht zur Verfügung. Das kann in der Runtime zu unerwünschten Ergebnissen führen. Überprüfen Sie beim Erzeugen der Runtime-Dateien für ältere Versionen geänderte Projektkonfigurationen, insbesondere die Konfiguration der Treiber.

RUNTIME-DATEIEN ERSTELLEN

Um im Editor Runtime-Dateien für niedrigere Versionen zu erstellen:

1. Markieren Sie das Projekt im Projektbaum.
2. Navigieren Sie in den Projekteigenschaften zum Abschnitt **Allgemein**.
3. Öffnen Sie die Dropdownliste der Eigenschaft **Runtime-Dateien erzeugen für**.
4. Wählen Sie die gewünschte Version aus der Dropdownliste.

Achtung: Um die Konsistenz der Runtime-Dateien zu gewährleisten, müssen nach jeder Änderung dieser Eigenschaft alle Runtime-Dateien neu erzeugt werden. Auch die Konfigurationen aller Treiber werden konvertiert. Einstellungen, die es in der entsprechenden Version nicht gibt, werden auf Default gesetzt.

FEHLER BEIM ERZEUGEN DER RUNTIME-DATEIEN UND MICROSOFT OFFICE 365

In einer bestimmten Konstellation kann beim Erzeugen der Runtime-Dateien ein Fehler auftreten:

- ▶ Sie erzeugen Runtime-Dateien auf einem Rechner mit:
 - ▶ Betriebssystem Windows 10 und
 - ▶ Office 365.
- ▶ Das Erzeugen der Runtime-Dateien schlägt fehl und wird mit einer Fehlermeldung beendet.

Ursache ist das Laden einer falschen Version einer Programmbibliothek durch VBA.

Lösung:

1. Navigieren Sie zum Ordner: *%AppData%\Microsoft\FORMS*.
2. Löschen Sie die Datei **zenone32.box**.
3. Diese Datei wird von zenon automatisch neu erstellt.

Das Erzeugen der Runtime-Dateien ist wieder möglich.

XML

In XML exportierte Daten stehen auch für den Import in höhere Editor-Versionen zur Verfügung.

Ausnahme: Werden Daten aus dem RGM über die Exportfunktion in der Runtime direkt als XML-Datei gespeichert, können diese nicht wieder importiert werden.

20 FAQ

Fehler bei der Installation treten vor allem auf, wenn das Ersetzen oder Erstellen von Dateien durch Virenschanner oder bereits vorhandene Installationen verhindert wird. Hier finden Sie die häufigsten Ursachen für Installationsfehler und deren Lösung.

ZENON

| Problem | Lösung |
|-------------------------------------------------------------------------------------------------------|------------------------------------------------------------------|
| Installation wird abgebrochen. Typische Fehlermeldung: Error 1304. Error writing to file... | Virenschanner deaktivieren, nicht benötigte Programme schließen. |
| Demo-Projekte wurden installiert, werden aber nicht angezeigt. Neue Projekte | Überprüfen Sie den Rechnernamen. Dieser: |

| Problem | Lösung |
|---------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------|
| können nicht angelegt werden. | <ul style="list-style-type: none"> ▶ darf maximal 15 Zeichen lang sein ▶ muss den Konventionen der NetBIOS Computernamens entsprechen |
| Fehlermeldung, dass ein Dienst nicht gestartet werden konnte. | <ul style="list-style-type: none"> ▶ starten Sie erst den Rechner neu ▶ starten Sie dann das zenon Setup neu |

SQL SERVER

ALLGEMEIN

| Problem | Lösung |
|------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Die Installation schlägt fehl, da das Passwort nicht den Anforderungen entspricht. | Wird über die lokale Windows Sicherheitsrichtlinie die minimale Kennwortlänge von Default 8 auf einen Wert <i>größer als 10</i> eingestellt, dann schlägt die Installation des SQL Servers fehl, da das zenon SQL Passwort aus 10 Zeichen besteht. |

21 Technische Unterstützung

BASIC SUPPORT

Falls Sie Unterstützung bei der Installation benötigen, helfen Ihnen unsere Mitarbeiter im Technischen Consulting gerne.

Anwender mit Basic-Support erreichen die Hotline unter der E-Mail-Adresse support@copadata.com.

ADVANCED UND PREMIUM SUPPORT

Wenn Sie einen Wartungsvertrag Advanced oder Premium besitzen, nutzen Sie die dort angegebene Telefonnummer oder E-Mailadresse. Falls Sie Ihren kostenlosen Wartungsvertrag Basic auf Advanced oder Premium erweitern möchten, beraten Sie unsere Vertriebsmitarbeiter (sales@copadata.com) gerne.

22 Lizenzinformationen zu Open Source Software

COPA-DATA Produkte verwenden folgende Open Source Software.

Hinweis: Diese Informationen stehen nur in englischer Sprache zur Verfügung.

22.1 zenon Open Source licences for several features

- ▶ The SNMP driver (SNMPNG32.exe) uses OpenSSL and NetSNMP.
- ▶ The DNP3 driver, the IEC 60870 driver, the OPC UA driver, the Message Control and the Web Server Client are using the OpenSSL 1.1.1 Long Term Support with the Open SSL License.
- ▶ The LicenseManager uses the JSON and the zlib Library.
- ▶ The OPC UA Process Gateway (AccessOPCUA.dll) and the OPC UA driver (OPCUA32.exe) use OpenSSL.
- ▶ The Message Control uses MIMEEmail and OpenSSL (zenon32.dll).
- ▶ The HTML Web Engine –Web Application uses ANTLRv3, Bootstrap, jQuery UI, jQuery, Json.NET, NLog, Owin, jQuery.SVG, WebGrease.
- ▶ The HTML Web Engine – Deployment Tool uses Extended WPF Toolkit, Newtonsoft.Json, NLog, WPF Application Framework (WAF).
- ▶ The HTML Web Engine – Compiler uses Newtonsoft.Json, Nlog.Windows.Forms, NLog.
- ▶ The JavaScript library jQuery 3.3.1 uses the MIT License.
- ▶ The Everywhere Essentials QR Code Generator Wizard uses QrCode.Net.
- ▶ The Message Control VoiceOverIP Extension (MsgCtrlVoip.dll) uses libSRTP, Speex, PortAudio, Alaw/ULaw Converter, GSM Codec 06.10 and iLBC Codec.
- ▶ The 3D Configuration Tool uses DWF Toolkit License, the MIT License (MIT), the SharpDX - Alexandre Mutel License.
- ▶ The 3D Integration uses the zlib Library.
- ▶ The 3D Integration uses the Intel® Threading Building Blocks (Intel® TBB) (Version 2018, 0, 2017, 0919) under the Apache 2.0 License.
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- ▶ As framework for .NET the Newtonsoft.Json 11.0.2 software uses the MIT License (MIT).
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- ▶ The Predictive Analytics and the Analyzer Management Studio use Math.Net Numerics 4.4.0 with the MIT/X11 License.
- ▶ The Add-In Framework uses the SharpDevelop 5.1.0 with the MIT License, the Mono.AddIns 1.3 with the MIT License, the Mono.Cecil 0.9.6.4 with the MIT/X11 License, the WPF Application Framework (WAF) 3.2.0 with the Microsoft Public License (MS-PL).
- ▶ The zenon Analyzer Management Studio uses the Castel.Core 4.2.1 with Apache License.
- ▶ The *.ini-file handling is using a ini-parser with the MIT License (MIT).
- ▶ The Drag&Drop functionality is using package with the BSD 3-Clause License.
- ▶ The Toggle Switch Control Library is using the Microsoft Public License (MsPL).
- ▶ Process Gateway uses cpprestsdk (cpprestsdk.v120.winxp.msvcstl.dyn.rt-dyn 2.9.1; cpprestsdk.v120.winphonesl.msvcstl.dyn.rt-dyn 2.9.1; cpprestsdk.v120.windesktop.msvcstl.dyn.rt-dyn 2.9.1; cpprestsdk.v120.winphone.msvcstl.dyn.rt-dyn 2.9.1; cpprestsdk.v120.winapp.msvcstl.dyn.rt-dyn 2.9.1; cpprestsdk.v140.winapp.msvcstl.dyn.rt-dyn 2.9.1; cpprestsdk.v140.windesktop.msvcstl.dyn.rt-dyn 2.9.1; cpprestsdk 2.9.1.1) with the MIT License.
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- ▶ The Chromium Embedded Framework (CEF), which is a framework for embedding Chromium-based browsers in other applications, uses the Chromium Embedded Framework (CEF) License.

- ▶ The zenon Analyzer and the zenon Supervisor uses the mosquitto 1.4.12 MQTT Broker with the Eclipse Public License - v 1.0.
- ▶ The zenon Supervisor uses the phao MQTT C client 1.2.1 with the Eclipse Public License - v 1.0
- ▶ The Web Server - Client Modul uses System.Configuration.ConfigurationManager 4.4.1 with the MIT License (MIT).
- ▶ The Command Line Parser 2.3 uses the MIT License (MIT).
- ▶ The Web Server - Client Modul uses Microsoft.Extensions.Primitives 2.1.1 with the Apache License 2.0.
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- ▶ The Web Server - Client Modul uses Microsoft.Extensions.Logging 2.1.1 with the Apache License 2.0.
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- ▶ The Web Server - Client Modul uses Microsoft.Extensions.FileProviders.Physical 2.1.1 with the Apache License 2.0.
- ▶ The Web Server - Client Modul uses Microsoft.Extensions.FileProviders.Abstractions 2.1.1 with the Apache License 2.0.
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- ▶ The Mono.Posix.NETStandard 1.0.0, which is a component that is used to figure out, if an application is running as Administrator under linux, uses the MIT and BSD License (for Mono distribution).
- ▶ The zenon Supervisor uses the libzip 1.5.1 library with the 3-clause BSD license.
- ▶ The zenon Supervisor uses the Angular 7.1.3 User Interface Framework with the MIT License (Copyright (c) 2010-2019 Google LLC. <http://angular.io/license>).
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22.1.1 Alaw/Ulaw Converter

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22.1.2 ANTLRv3

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22.1.7 Castle.Core 4.2.1

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22.1.14 GSM Codec 06.10

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22.1.16 IdentityModel2 3.0.0

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22.1.18 ini Parser

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22.1.21jQuery 3.3.1

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22.1.26 MIMEMail

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22.1.27 Mono.AddIns 1.3

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22.1.28 Mono.Cecil 0.9.6.4

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22.1.32 NLog.Extensions.Logging 1.0.1

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22.1.44 popper.js 1.14.3

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Based on the Open Source API proposed by Ross Bencina

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22.1.51 Toggle Switch Control Library

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zlib.h -- interface of the 'zlib' general purpose compression library version 1.2.11, January 15th, 2017

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Version 1.1

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 - ▶ Gong-wpf-dragdrop Library (auf Seite 197)
 - ▶ Jasper Library (auf Seite 198)
 - ▶ JPEG Library (auf Seite 199)
 - ▶ Libpng Library (auf Seite 206)
 - ▶ Math.NET Numerics Library (auf Seite 208)
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 - ▶ SQLite Library (auf Seite 210)
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DOCUMENTATION ROADMAP

This file contains the following sections:

| Section | Description |
|-------------------|-----------------------------------------------------|
| OVERVIEW | General description of JPEG and the IJG software. |
| LEGAL ISSUES | Copyright, lack of warranty, terms of distribution. |
| REFERENCES | Where to learn more about JPEG. |
| ARCHIVE LOCATIONS | Where to find newer versions of this software. |
| RELATED SOFTWARE | Other stuff you should get. |
| FILE FORMAT WARS | Software *not* to get. |
| TO DO | Plans for future IJG releases. |

Other documentation files in the distribution are:

User documentation:

| Documentation | Description |
|---------------|------------------------------------------------------------------------|
| install.doc | How to configure and install the IJG software. |
| usage.doc | Usage instructions for cjpeg, djpeg, jpegtran, rdjpgcom, and wrjpgcom. |
| *.1 | Unix-style man pages for programs (same info as usage.doc). |
| wizard.doc | Advanced usage instructions for JPEG wizards only. |
| change.log | Version to version change highlights. |

Programmer and internal documentation:

| Documentation | Description |
|----------------|----------------------------------------------------------|
| libjpeg.doc | How to use the JPEG library in your own programs. |
| example.c | Sample code for calling the JPEG library. |
| structure.doc | Overview of the JPEG library's internal structure. |
| filelist.doc | Road map of IJG files. |
| coderrules.doc | Coding style rules - please read if you contribute code. |

Please read at least the files install.doc and usage.doc. Useful information can also be found in the JPEG FAQ (Frequently Asked Questions) article. See ARCHIVE LOCATIONS below to find out where to obtain the FAQ article.

If you want to understand how the JPEG code works, we suggest reading one or more of the REFERENCES, then looking at the documentation files (in roughly the order listed) before diving into the code.

OVERVIEW

This package contains C software to implement JPEG image compression and decompression. JPEG (pronounced "jay-peg") is a standardized compression method for full-color and gray-scale images. JPEG is intended for compressing "real-world" scenes; line drawings, cartoons and other non-realistic images are not its strong suit. JPEG is lossy, meaning that the output image is not exactly identical to the input image. Hence you must not use JPEG if you have to have identical output bits. However, on typical photographic images, very good compression levels can be obtained with no visible change, and remarkably high compression levels are possible if you can tolerate a low-quality image. For more details, see the references, or just experiment with various compression settings.

This software implements JPEG baseline, extended-sequential, and progressive compression processes. Provision is made for supporting all variants of these processes, although some uncommon parameter settings aren't implemented yet. For legal reasons, we are not

distributing code for the arithmetic-coding variants of JPEG; see LEGAL ISSUES. We have made no provision for supporting the hierarchical or lossless processes defined in the standard.

We provide a set of library routines for reading and writing JPEG image files, plus two sample applications "cjpeg" and "djpeg", which use the library to perform conversion between JPEG and some other popular image file formats. The library is intended to be reused in other applications.

In order to support file conversion and viewing software, we have included considerable functionality beyond the bare JPEG coding/decoding capability; for example, the color quantization modules are not strictly part of JPEG decoding, but they are essential for output to colormapped file formats or colormapped displays. These extra functions can be compiled out of the library if not required for a particular application. We have also included "jpegtran", a utility for lossless transcoding between different JPEG processes, and "rdjpgcom" and "wrjpgcom", two simple applications for inserting and extracting textual comments in JFIF files.

The emphasis in designing this software has been on achieving portability and flexibility, while also making it fast enough to be useful. In particular, the software is not intended to be read as a tutorial on JPEG. (See the REFERENCES section for introductory material.) Rather, it is intended to be reliable, portable, industrial-strength code. We do not claim to have achieved that goal in every aspect of the software, but we strive for it.

We welcome the use of this software as a component of commercial products.

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ansi2knr.c is NOT covered by the above copyright and conditions, but instead by the usual distribution terms of the Free Software Foundation; principally, that you must include source code if you redistribute it. (See the file ansi2knr.c for full details.) However, since ansi2knr.c is not needed as part of any program generated from the IJG code, this does not limit you more than the foregoing paragraphs do.

The Unix configuration script "configure" was produced with GNU Autoconf. It is copyright by the Free Software Foundation but is freely distributable. The same holds for its supporting scripts (config.guess, config.sub, ltconfig, ltmain.sh). Another support script, install-sh, is copyright by M.I.T. but is also freely distributable.

It appears that the arithmetic coding option of the JPEG spec is covered by patents owned by IBM, AT&T, and Mitsubishi. Hence arithmetic coding cannot legally be used without obtaining one or more licenses. For this reason, support for arithmetic coding has been removed from the free JPEG software. (Since arithmetic coding provides only a marginal gain over the unpatented Huffman mode, it is unlikely that very many implementations will support it.) So far as we are aware, there are no patent restrictions on the remaining code.

The IJG distribution formerly included code to read and write GIF files. To avoid entanglement with the Unisys LZW patent, GIF reading support has been removed altogether, and the GIF writer has been simplified to produce "uncompressed GIFs". This technique does not use the LZW algorithm; the resulting GIF files are larger than usual, but are readable by all standard GIF decoders.

We are required to state that "The Graphics Interchange Format(c) is the Copyright property of CompuServe Incorporated. GIF(sm) is a Service Mark property of CompuServe Incorporated."

REFERENCES

We highly recommend reading one or more of these references before trying to understand the innards of the JPEG software.

The best short technical introduction to the JPEG compression algorithm is:

Wallace, Gregory K. "The JPEG Still Picture Compression Standard",
Communications of the ACM, April 1991 (vol. 34 no. 4), pp. 30-44.

(Adjacent articles in that issue discuss MPEG motion picture compression, applications of JPEG, and related topics.) If you don't have the CACM issue handy, a PostScript file containing a revised version of Wallace's article is available at <ftp://ftp.uu.net/graphics/jpeg/wallace.ps.gz>. The file (actually a preprint for an article that appeared in IEEE Trans. Consumer Electronics) omits the sample images that appeared in CACM, but it includes corrections and some added material. Note: the Wallace article is copyright ACM and IEEE, and it may not be used for commercial purposes.

A somewhat less technical, more leisurely introduction to JPEG can be found in "The Data Compression Book" by Mark Nelson and Jean-loup Gailly, published by M&T Books (New York), 2nd ed. 1996, ISBN 1-55851-434-1. This book provides good explanations and example C code for a multitude of compression methods including JPEG. It is an excellent source if you are comfortable reading C code but don't know much about data compression in general. The book's JPEG sample code is far from industrial-strength, but when you are ready to look at a full implementation, you've got one here...

The best full description of JPEG is the textbook "JPEG Still Image Data Compression Standard" by William B. Pennebaker and Joan L. Mitchell, published by Van Nostrand Reinhold, 1993, ISBN 0-442-01272-1. Price US\$59.95, 638 pp. The book includes the complete text of the ISO JPEG standards (DIS 10918-1 and draft DIS 10918-2). This is by far the most complete exposition of JPEG in existence, and we highly recommend it.

The JPEG standard itself is not available electronically; you must order a paper copy through ISO or ITU. (Unless you feel a need to own a certified official copy, we recommend buying the Pennebaker and Mitchell book instead; it's much cheaper and includes a great deal of useful explanatory material.) In the USA, copies of the standard may be ordered from ANSI Sales at (212) 642-4900, or from Global Engineering Documents at (800) 854-7179. (ANSI doesn't take credit card orders, but Global does.) It's not cheap: as of 1992, ANSI was charging \$95 for Part 1 and \$47 for Part 2, plus 7% shipping/handling. The standard is divided into two parts, Part 1 being the actual specification, while Part 2 covers compliance testing methods. Part 1 is titled "Digital Compression and Coding of Continuous-tone Still Images, Part 1: Requirements and guidelines" and has document numbers ISO/IEC IS 10918-1, ITU-T T.81. Part 2 is titled "Digital Compression and Coding of Continuous-tone Still Images, Part 2: Compliance testing" and has document numbers ISO/IEC IS 10918-2, ITU-T T.83.

Some extensions to the original JPEG standard are defined in JPEG Part 3, a newer ISO standard numbered ISO/IEC IS 10918-3 and ITU-T T.84. IJG currently does not support any Part 3 extensions.

The JPEG standard does not specify all details of an interchangeable file format. For the omitted details we follow the "JFIF" conventions, revision 1.02. A copy of the JFIF spec is available from:

Literature Department

C-Cube Microsystems, Inc.

1778 McCarthy Blvd.

Milpitas, CA 95035

phone (408) 944-6300, fax (408) 944-6314

A PostScript version of this document is available by FTP at <ftp://ftp.uu.net/graphics/jpeg/jfif.ps.gz>. There is also a plain text version at <ftp://ftp.uu.net/graphics/jpeg/jfif.txt.gz>, but it is missing the figures. The TIFF 6.0 file format specification can be obtained by FTP from <ftp://ftp.sgi.com/graphics/tiff/TIFF6.ps.gz>. The JPEG incorporation scheme found in the TIFF 6.0 spec of 3-June-92 has a number of serious problems. IJG does not recommend use of the TIFF 6.0 design (TIFF Compression tag 6). Instead, we recommend the JPEG design proposed by TIFF Technical Note #2 Straton3dPartySoftware-(Compression tag 7). Copies of this Note can be obtained from <ftp.sgi.com> or from <ftp://ftp.uu.net/graphics/jpeg/>. It is expected that the next revision of the TIFF spec will replace the 6.0 JPEG design with the Note's design. Although IJG's own code does not support TIFF/JPEG, the free libtiff library uses our library to implement TIFF/JPEG per the Note. libtiff is available from <ftp://ftp.sgi.com/graphics/tiff/>.

ARCHIVE LOCATIONS

The "official" archive site for this software is <ftp.uu.net> (Internet address 192.48.96.9). The most recent released version can always be found there in directory [graphics/jpeg](ftp://ftp.uu.net/graphics/jpeg/). This particular version will be archived as <ftp://ftp.uu.net/graphics/jpeg/jpegsrc.v6b.tar.gz>. If you don't have direct Internet access, UUNET's archives are also available via UUCP; contact help@uunet.uu.net for information on retrieving files that way.

Numerous Internet sites maintain copies of the UUNET files. However, only <ftp.uu.net> is guaranteed to have the latest official version.

You can also obtain this software in DOS-compatible "zip" archive format from the SimTel archives (<ftp://ftp.simtel.net/pub/simtelnet/msdos/graphics/>), or on CompuServe in the Graphics Support forum (GO CIS:GRAPHSUP), library 12 "JPEG Tools". Again, these versions may sometimes lag behind the <ftp.uu.net> release.

The JPEG FAQ (Frequently Asked Questions) article is a useful source of general information about JPEG. It is updated constantly and therefore is not included in this distribution. The FAQ is posted every two weeks to Usenet newsgroups comp.graphics.misc, news.answers, and other groups. It is available on the World Wide Web at <http://www.faqs.org/faqs/jpeg-faq/> and other news.answers archive sites, including the official [news.answersarchive](mailto:news.answersarchive@rtfm.mit.edu) at rtfm.mit.edu:

<ftp://rtfm.mit.edu/pub/usenet/news.answers/jpeg-faq/>. If you don't have Web or FTP access, send e-mail to mail-server@rtfm.mit.edu with body

send usenet/news.answers/jpeg-faq/part1

`send usenet/news.answers/jpeg-faq/part2`

RELATED SOFTWARE

Numerous viewing and image manipulation programs now support JPEG. (Quite a few of them use this library to do so.) The JPEG FAQ described above lists some of the more popular free and shareware viewers, and tells where to obtain them on Internet.

If you are on a Unix machine, we highly recommend Jef Poskanzer's free PBMPLUS software, which provides many useful operations on PPM-format image files. In particular, it can convert PPM images to and from a wide range of other formats, thus making cjpeg/djpeg considerably more useful. The latest version is distributed by the NetPBM group, and is available from numerous sites, notably <ftp://wuarchive.wustl.edu/graphics/graphics/packages/NetPBM/>.

Unfortunately PBMPLUS/NETPBM is not nearly as portable as the IJG software is; you are likely to have difficulty making it work on any non-Unix machine.

A different free JPEG implementation, written by the PVRG group at Stanford, is available from <ftp://havefun.stanford.edu/pub/jpeg/>. This program is designed for research and experimentation rather than production use; it is slower, harder to use, and less portable than the IJG code, but it is easier to read and modify. Also, the PVRG code supports lossless JPEG, which we do not. (On the other hand, it doesn't do progressive JPEG.)

FILE FORMAT WARS

Some JPEG programs produce files that are not compatible with our library. The root of the problem is that the ISO JPEG committee failed to specify a concrete file format. Some vendors "filled in the blanks" on their own, creating proprietary formats that no one else could read. (For example, none of the early commercial JPEG implementations for the Macintosh were able to exchange compressed files.)

The file format we have adopted is called JFIF (see REFERENCES). This format has been agreed to by a number of major commercial JPEG vendors, and it has become the de facto standard. JFIF is a minimal or "low end" representation. We recommend the use of TIFF/JPEG (TIFF revision 6.0 as modified by TIFF Technical Note #2) for "high end" applications that need to record a lot of additional data about an image. TIFF/JPEG is fairly new and not yet widely supported, unfortunately.

The upcoming JPEG Part 3 standard defines a file format called SPIFF. SPIFF is interoperable with JFIF, in the sense that most JFIF decoders should be able to read the most common variant of SPIFF. SPIFF has some technical advantages over JFIF, but its major claim to fame is simply that it is an official standard rather than an informal one. At this point it is unclear whether SPIFF will supersede JFIF or whether JFIF will remain the de-facto standard. IJG intends to support SPIFF once the standard is frozen, but we have not decided whether it should become our default output format or not. (In any case, our decoder will remain capable of reading JFIF indefinitely.)

Various proprietary file formats incorporating JPEG compression also exist. We have little or no sympathy for the existence of these formats. Indeed, one of the original reasons for developing

this free software was to help force convergence on common, open format standards for JPEG files. Don't use a proprietary file format!

TO DO

The major thrust for v7 will probably be improvement of visual quality. The current method for scaling the quantization tables is known not to be very good at low Q values. We also intend to investigate block boundary smoothing, "poor man's variable quantization", and other means of improving quality-vs-file-size performance without sacrificing compatibility.

In future versions, we are considering supporting some of the upcoming JPEG Part 3 extensions --- principally, variable quantization and the SPIFF file format.

As always, speeding things up is of great interest.

Please send bug reports, offers of help, etc. to jpeg-info@uunet.uu.net.

22.3.5 Libpng Library

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A "png_get_copyright" function is available, for convenient use in "about" boxes and the like:
`printf("%s",png_get_copyright(NULL));`

Also, the PNG logo (in PNG format, of course) is supplied in the files "pngbar.png" and "pngbar.jpg" (88x31) and "pngnow.png" (98x31).

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Glenn Randers-Pehrson

glennrp at users.sourceforge.net

December 14, 2007

22.3.6 Math.NET Numerics Library

The Math.NET Numerics Library uses the License MIT/X11.

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22.3.7 MNG Library

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Parts of this software have been adapted from the libpng package. Although this library supports all features from the PNG specification (as MNG descends from it) it does not require the libpng package. It does require the zlib library and optionally the IJG jpeg library, and/or the "little-cms" library by Marti Maria (depending on the inclusion of support for JNG and Full-Color-Management respectively).

This library's function is primarily to read and display MNG animations. It is not meant as a full-featured image-editing component! It does however offer creation and editing functionality at the chunk level (future modifications may include some more support for creation and or editing).

22.3.8 PCap Library

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22.3.9 SQLite Library

2001 September 15

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This header file defines the interface that the SQLite library presents to client programs. If a C-function, structure, datatype, or constant definition does not appear in this file, then it is not a published API of SQLite, is subject to change without notice, and should not be referenced by programs that use SQLite.

Some of the definitions that are in this file are marked as "experimental". Experimental interfaces are normally new features recently added to SQLite. We do not anticipate changes to experimental interfaces but reserve the right to make minor changes if experience from use "in the wild" suggest such changes are prudent.

The official C-language API documentation for SQLite is derived from comments in this file. This file is the authoritative source on how SQLite interfaces are supposed to operate.

The name of this file under configuration management is "sqlite.h.in".

The makefile makes some minor changes to this file (such as inserting the version number) and changes its name to "sqlite3.h" as part of the build process.

22.3.10 Tiff Library

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22.3.11 Tinyxml Library

www.sourceforge.net/projects/tinyxml

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22.3.12 Zlib Library

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zlib.h -- interface of the 'zlib' general purpose compression library version 1.2.11, January 15th, 2017

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