





ADMINISTRATION HANDBOOK

INSTALL. CONFIGURE. MONITOR.

LEADING IN ENTERPRISE PRODUCT COSTING | WWW.FACTON.COM



IMPRINT

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1. INTRODUCTION

This document provides information for system administrators on how to administer the FACTON EPC 10.1 product. It describes all activities and actions necessary to run the system, including starting, running and stopping the FACTON software.

The reader should understand, at least at a basic level, the following technologies or products:

- Microsoft Windows Server technologies and administrative tools (e.g. Event Logs, Performance Counter, Event Tracing for Windows, Certificate Management)
- Microsoft SQL Server
- Claim-based authentication and security token services (e.g. ADFS)



2. SYSTEM OVERVIEW

This chapter describes the FACTON System components in detail.

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2.1. SYSTEM ARCHITECTURE

The software architecture of FACTON EPC is based on the advanced three-layer model (see figure <u>»Advanced</u> <u>Software Architecture«</u>). This architecture guarantees that all users can cooperate with each other in a single system having access to a shared database and a standardized cost layout. Access to the system is controlled on the basis of the user's tasks and privileges.



Figure 2.1: Advanced Software Architecture





The three-layer architecture consists of:

- One Database Server for secure storage of the essential calculation data,
- 1... n Application Server(s) for fast access to calculations and results,
- 1 ... n Client(s) that provide the user interface of the application whose tools are designed in line with standard office applications, such as MS Office, for user-friendliness and enhanced efficiency.
- One Web server that executes the MS Internet Information Services for client deployments via Click-Once.
- One Authentication Server that processes the authentication of users and hosts security token services.

All client computers are located in the customer's intranet. The authentication server, the application server and the database server are located either in the customers intranet, or on cloud services.

FACTON SERVICES

All FACTON services are HTTP/HTTPS services (see Table 1.1).

| Service (Computer) | Description | | |
|-----------------------------------|--|--|--|
| | A WCF (Windows Communication Foundation) service with two tasks | | |
| FACTON EPC Application Service | Providing metadata for the client on the client-server connection Enabling access to the FACTON database only for authenticated clients | | |
| | There are two endpoints ¹ : | | |
| | https:// <serverip:>:<serverport>/facton/server/mex (Metadata Exchange)</serverport></serverip:> | | |
| | https:// <serverip:>:<serverport>/facton/server/secured (Application Communication)</serverport></serverip:> | | |
| FACTON EPC Identity Broker | The FACTON Identity Broker is an intermediary service that connects an external identity provider with the FACTON Clients using one of the following protocols: | | |
| | OpenID Connect 1.0WS-Federation 1.2 | | |

Table 2.2: Overview of FACTON Services

¹All communication with a Windows Communication Foundation (WCF) service occurs through its endpoints. These endpoints contain four types of information: Protocol, machine name, port and endpoint path. This path is a virtual path that has no physical representation on the system.



FACTON CLIENT

The FACTON Client is the local FACTON installation on the users workstation. The configuration data transfer is carried out using the metadata exchange (system parameter ENDPOINT_MEX) endpoint. All other communication between the FACTON Client and the FACTON Application Service is carried out using the service endpoint (system parameter ENDPOINT_SERVICE).

Requests between the FACTON Client and the FACTON Application Service can take up to 20 minutes. Be sure that all physical components as well as software involved with network communication support those requests.

We suggest to set all relevant connection timeouts to at least 21 minutes.

FACTON EPC CLICKONCE WEBSITE

The FACTON ClickOnce website is based on one of the web servers that hosts the customer's website, which allows ClickOnce access to the client DLLs via a web link.

If a user clicks on a link on the corresponding page in Internet Explorer, the FACTON Client is automatically loaded onto the user's PC and launched.

2.2. AUTHENTICATION

FACTON users are authenticated via an external identity provider like e.g. ADFS. This identity provider is mandatory and must support one of the following standard protocols:

- OpenID Connect 1.0
- WS-Federation 1.2
- WS-Trust 1.3 with Windows Integrated Authentication (WIA)



OPENID CONNECT 1.0 AND WS-FEDERATION 1.2

The FACTON Identity Broker is required for the integration of an identity provider via OpenID Connect or WS-Federation. The FACTON Identity Broker is an intermediary service that connects an external identity provider with the FACTON Clients. It is responsible for creating a trust relationship with the external identity provider in order to use its identities to access the FACTON services.

The FACTON Identity Broker provides the following advantages over the direct connection of the FACTON client and the external identity provider via WS-Trust:

- All browser-based authentication methods of the external identity provider are supported
- Federation scenarios are supported
- Configuration changes of the external identity provider, e.g. certificate updates, are automatically detected and considered

Therefore this scenario is preferred over the authentication by WS-Trust with Windows Integrated Authentication. The following diagram shows the browser-based authentication flow supported by the FACTON Identity Broker:



Figure 2.1: Authentication flow by the FACTON Identity Broker



WS-TRUST 1.3

An external Security Token Service (STS), such as ADFS 2.0, authenticates a user of the FACTON system via Windows Integrated Authentication and issues a token. This token represents the user identity and is used in the subsequent communication between the FACTON client and the FACTON Application Service:



Figure 2.2: Authentication flow by the WS-Trust 1.3

The STS must have a token-signing certificate with a private key and must have access to the token-encrypting certificate (without the private key) to facilitate user authentication. The FACTON Application Service must have a token-encrypting certificate with a private key and must know the thumbprint of the token-signing certificate.



3. PREPARE THE INSTALLATION

This chapter describes in detail, the requirements and prerequisites for installing the FACTON Components.

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3.1. SYSTEM REQUIREMENTS

The following table shows an overview of the system components required to execute FACTON.

| FACTON Component | Operating System | Additional Software | | |
|--|--|--|--|--|
| FACTON Application Service | Microsoft Windows Server 2012 R2 | .NET Framework 4.6.2 | | |
| Certificates: SSL certificate for https communication. Token-encryption certificate and Token-signing certificate for authentication (only required for WS-Trust authentication). | | | | |
| FACTON Database Server | Any server supporting the required Microsoft SQL Server Version | Microsoft SQL Server 2012 SP3 | | |
| FACTON Client Deployment Site | Microsoft Windows Server 2012 R2 | Microsoft IIS Version 8.5 | | |
| FACTON Client | Windows 7 - 64 bit - SP 1 or higher | .NET Framework 4.6.2 Web Browser: Internet Explorer 9.0 | | |
| FACTON Identity Broker | Microsoft Windows Server 2012 R2 | .NET Framework 4.6.2 | | |
| Certificates: Token-signing certificate | | | | |
| Table 3.1: Overview of System Requirements | | | | |



CERTIFICATES

FACTON services need the following certificates, to support a secure communication between the FACTON Application Service, the FACTON Client and the external identity provider (e.g. ADFS 2.0):

SSL-CERTIFICATE

The FACTON Application Service and the FACTON Identity Broker use a SSL-Certificate to secure the communication with the FACTON clients.

Requirements

- Must contain a private key
- Has not expired
- Must include the server authentication enhanced key usage (EKU) extension
- The certificate revocation lists (CRLs) must be accessible for all the certificates in the chain from the SSL-Certificate to the root CA certificate
- The subject name of the SSL-Certificate must match the host part of the FACTON services URL.
- It must be signed by a trusted CA, because the SSL certificate must be trusted by client computers

TOKEN-SIGNING OR TOKEN-ENCRYPTING CERTIFICATE

The FACTON Identity Broker requires a token-signing certificate to sign the issued tokens. If you choose to use WS-Trust for authentication instead, the FACTON Application service requires a token-encrypting certificate to decrypt the token retrieved from the security token service (STS).

Requirements

- Must contain a private key
- Has not expired
- The certificate revocation lists (CRLs) must be accessible for all the certificates in the chain from the SSL certificate to the root CA certificate
- The FACTON Identity Broker or the FACTON Application Service account must have access to the private key of the certificate in the certificate store of the application server.

Depending on your security requirements, your certificates can be obtained by a public or a corporate CA. The FACTON services do not require that certificates be issued by a CA, so that self-signed certificates can be used in lab environments – but should not be used in production deployments.

Self-signed certificates can be created for free of charge using a wide variety of tools including OpenSSL, Microsoft Internet Information Services (IIS) or PowerShell cmdlet »New-SelfSignedCertificate«.



According to the current best practices, the recommended size for encryption keys is 2048-bit RSA and the recommended hashing algorithm is SHA-256.

The current version of the FACTON services do not support Cryptographic New Generation (CNG) Storage Providers (see https://social.technet.microsoft.com/wiki/contents/articles/962.how-to-determine-if-a-certificate-isusing-a-capi1-or-cng-key.aspx for determining which storage provider is used).

Though if you already have a CNG cert, and does not want to re-request a legacy cert from your provider, it's possible to import a CNG as a Legacy cert by using this command.



Note

Copy code text into a text editor to remove line breaks. Check for any other syntax issues and then copy it into the command prompt.

```
certutil.exe -csp "Microsoft Enhanced RSA and AES Cryptographic Provider" -user -importpfx "My" cng_certificate.pfx
```

You can use the following procedure to create a self-signed certificate that also creates and installs a private key:



Create a Certificate

- 1. Start a PowerShell Command Prompt as administrator.
- 2. Enter the appropriate New-SelfSignedCertificate syntax.

i) Note

Copy code text into a text editor to remove line breaks. Check for any other syntax issues and then copy it into the command prompt.

Example command

```
New-SelfSignedCertificate -certstorelocation`
    cert:\CurrentUser\My -dnsname appserver.domain.local `
    -NotAfter (Get-Date).AddYears(5) -KeySpec KeyExchange `
    -HashAlgorithm SHA256 `
    -FriendlyName "Identity Broker token-signing certificate"
```



Track certificate expiration dates to make sure that certificates are replaced before they expire.

3.2. PREREQUISITES

The following prerequisites must be met to install FACTON successfully.

PRE-INSTALLATION WORK ITEMS

The following tasks must be complete prior to starting the installation of FACTON:

- Enroll SSL certificate on all application servers,
- Enroll token-signing certificate on all application servers (only required for Identity Broker installation)
- Enroll token-encrypting certificate on all application servers (only required for WS-Trust),
- Install .NET Framework 4.6.2 on all application servers,
- Install and configuring IIS on the deployment server.
- Define and document all relevant system parameters



REGISTER SSL CERTIFICATE

Each environment (e.g. Productive, Development or QA) has a separate SSL certificate.



Installing an SSL Certificate

- 1. Start a Command Prompt as administrator (see Illustration »Example of the Installation of the SSL Certificate«).
- 2. Enter the following command:

```
netsh http add sslcert ipport=0.0.0.0:443 certhash=<thumbprint>
appid={52414C46-0000-2712-1983-AFFE00000110}
```

| G:4. | Administrator: Command Prompt 📃 🗖 | x |
|---|---|----------|
| C:\>netsh | http show sslcert | <u>^</u> |
| SSL Certi | ficate bindings: | |
| IP:po Certi Certi Uerif Usage Revoc URL R Ctl I Ctl I DS Ma Negot | rt : 0.0.0.0:443 ficate Hash : 7bc9d0f50cc4e0c1b1a0620fed21fdc7c2411416 cation ID : <52414c46-0000-2712-1983-affe00000110) ficate Store Name : <null> y Client Certificate Revocation : Enabled y Revocation Using Cached Client Certificate Only : Disabled Check : Enabled ation Freshness Time : 0 etrieval Timeout : 0 dentifier : <null> tore Name : <null> pper Usage : Disabled iate Client Certificate : Disabled</null></null></null> | |
| C:∖>netsh 7a9e93192 | http add sslcert ipport=0.0.0.0:443 certhash=2b0cb6c12500d39096e4c3 0644c9 appid={52414C46-0000-2712-1983-AFFE00000110}_ | 3008 |

Figure 3.1: Example of the Installation of the SSL Certificate



i

Note

If you copy the thumbprint a special char may be copied and printed as question mark in the command line (see Illustration »Registering the SSL Certificate«).

Remove the question mark otherwise the command will fail.



Figure 3.2: Registering the SSL Certificate



3.3. SYSTEM PARAMETERS

This chapter describes all required parameters of the FACTON components. The specific values for all relevant parameters should be defined before the configuration or installation is started.

| Parameter | Relevant for | Description |
|--|---|--|
| Application Service: SERVICE_ACCOUNT | Application Service | The name of the service account (e.g. »DOMAIN\ServiceUser«) of the Application Service. If no user name is set, the SYSTEM account will be used. Default: System |
| Application Service: SERVICE_PASSWORD | Application Service | The password of the specified Windows Service Account. |
| Application Service: APPLICATION_SERVICE_ROOT | Application Service | The root address for all service endpoints of the FACTON Application Service Example: https:// <dnshostname>/facton</dnshostname> |
| Application Service: ENDPOINT_SERVICE | Application Service | The service endpoint address of the FACTON Application Service. The setup generates this address based on the APPLICATION_SERVICE_ROOT parameter: <application_service_root>/server/secured</application_service_root> |
| | | This address is one of the required values for the configuration of the security token service (e.g. ADFS) in case of WS-Trust authentication. |
| ENDPOINT_MEX | Application Service, Cli- ent Deployment Site, | The application service MEX endpoint address. The setup generates this address based on the APPLICATION_SERVICE_ROOT parameter: |



| Parameter | Relevant for | Description |
|--------------------------------|---|--|
| | FACTON Client | <application_service_root>/server/mex</application_service_root> |
| SERVICE_CERT_THUMBPRINT | Application Service | The thumbprint of the service certificate in case of WS-Trust authentication. The security token service (e.g. ADFS) use this certificate as token-encrypting certificate. |
| SERVICE_CERT_ STORELOCATION | Application Service | The store location of the service certificate ("LocalMachine" or "CurrentUser"). If you use the System Account as SERVICE_ACCOUNT use "LocalMachine"; otherwise "Cur- rentUser". This parameter is only required for WS-Trust authentication. Default: LocalMachine |
| APPDATAPATH | Application Service, FACTON Client | The FACTON Application Service and the FACTON Client store additional data, e.g. machine specific settings or the column cache, in this directory. If no app data path is set, the service will be use the user app data path. <usersappdatapath> Example: C:\Users\<service_account>\AppData</service_account></usersappdatapath> |
| DB_SERVERNAME | Application Service, Configuration Update Cli- ent, Identity Broker | The name of the FACTON database server. |
| DB_DATABASENAME | Application Service, Configuration Update Cli- ent, Identity Broker | The name of the FACTON database. |
| DB_USERNAME | Application Service, | The username of the database connection. If no username is set, the application service will |



| Parameter | Relevant for | Description |
|--------------------------------------|--|---|
| | Configuration Update Cli- ent, Identity Broker | use Windows Integrated Security. This database user must be a member of the 'db_owner' database role. |
| DB_PASSWORD | Application Service, Configuration Update Cli- ent, Identity Broker | The password of the given database user. If no username is specified the password cannot be set. |
| STS_ENDPOINT_WSTRUST13 | Application Service | The WS-Trust 1.3 endpoint address of the STS (e.g. ADFS). This parameter is only required for WS-Trust authentication. Example: https:// <adfs-server- >/adfs/services/trust/13/windowstransport</adfs-server- |
| STS_ENDPOINT_MEX | Application Service | The MEX endpoint address of the STS (e.g. ADFS). This parameter is only required for WS- Trust authentication. Example: https:// <adfs-server>/adfs/services/trust/mex</adfs-server> |
| STS_SIGNING_CERT_ THUMBPRINT | Application Service | The thumbprint of the token-signing certificate of the STS (e.g. ADFS). This parameter is only required for WS-Trust authentication. |
| Identity Broker: ENDPOINT_SERVICE | Identity Broker, Applic- ation Service (Setup para- meter IDENTITYBROKER_ ENDPOINT) | The endpoint address of the Identity Broker. This parameter is only required in case of Iden- tity Broker authentication. Example: https:// <dnshostname>/facton/identitybroker</dnshostname> |



| Parameter | Relevant for | Description |
|---|---|--|
| IDENTITYBROKER_SIGNING_ CERT_THUMBPRINT | Identity Broker, Applic- ation Service | The token-signing certificate thumbprint of the Identity Broker. This is a parameter in the settings file (SETTINGS_FILE) of the Identity Broker and a setup parameter of the FACTON Application Service. This parameter is only required in case of Identity Broker authen-tication. |
| IDENTITYBROKER_SIGNING_ CERT_STORELOCATION | Identity Broker, Applic- ation Service | The store location of the Identity Broker token-signing certificate ("LocalMachine" or "Cur- rentUser"). This is a parameter in the settings file (SETTINGS_FILE) of the Identity Broker and a setup parameter of the FACTON Application Service. This parameter is only required in case of Identity Broker authentication. Default: CurrentUser |
| AUTHENTICATION_AUDIENCE | Identity Broker, Applic- ation Service | The audience for the token based authentication. It is used for Identity Broker authen- tication or in case of WS-Trust for Service API OAuth authentication. Example: https:// <dnshostname></dnshostname> |
| API_ENDPOINT_SERVICE | Application Service | The endpoint address of the service API. The setup generates this address based on the APPLICATION_SERVICE_ROOT parameter: <a href="mailto:service_root |
| API_OAUTH_ENDPOINT | Application Service | The OAuth endpoint address of the STS (e.g. ADFS) that authenticates an API user. This parameter is only required for WS-Trust authentication. Example: https:// <adfs-server>/adfs/oauth2/authorize</adfs-server> |
| API_OAUTH_ISSUERNAME | Application Service | The OAuth issuer name of the STS (e.g. ADFS) that authenticates an API user. This para- |



| Parameter | Relevant for | Description |
|---------------------------------------|------------------------|--|
| | | meter is only required for WS-Trust authentication. Example: https:// <adfs-server>/adfs/services/trust</adfs-server> |
| API_OAUTH_CERT_ THUMBPRINT | Application Service | The OAuth token-signing certificate thumbprint of the STS (e.g. ADFS) that authenticates an API user. This parameter is only required for WS-Trust authentication. |
| API_OAUTH_CERT_ STORELOCATION | Application Service | The store location of OAuth token-signing certificate. This parameter is only required for WS-Trust authentication. Default: LocalMachine |
| SYSTEM_ENVIRONMENT | Client Deployment Site | Defines one of the supported system environments: Dev, QA, Prod, System1, System2, Sys- tem3, |
| SYSTEM_ENVIRONMENT_ NAME | Client Deployment Site | Sets the name of the chosen system environment. This is visible to all users in the UI of the installed client. |
| AUTHENTICATION_ CALLBACK_PORT_FROM | FACTON Client | The minimal port number of the authentication callback channel reservation. If no port num- ber is set, the client will be use a free port number without reserving the port. This para- meter is only required in case of Identity Broker authentication and if the setup should reserve a port range. |
| AUTHENTICATION_ CALLBACK_PORT_TO | FACTON Client | The maximal port number of the authentication callback channel reservation. This para- meter is only required in case of Identity Broker authentication and if the setup should reserve a port range. |



| Parameter | Relevant for | Description |
|---------------------------------------|-----------------|--|
| AUTHENTICATION_ CALLBACK_USER | FACTON Client | The user or user group using of the authentication callback channel reservation. This para- meter is only required in case of Identity Broker authentication and if the setup should reserve a port range. |
| Identity Broker: SERVICE_ ACCOUNT | Identity Broker | The name of the service account (e.g. »DOMAIN\ServiceUser«) of the Identity Broker. If no user name is set, the SYSTEM account will be used. This parameter is only required in case of Identity Broker authentication. Default: System |
| Identity Broker: SERVICE_ PASSWORD | Identity Broker | The password of the specified Windows Service Account. This parameter is only required in case of Identity Broker authentication. |
| SETTINGS_FILE | Identity Broker | The file with additional settings for the specified component. This parameter is only required in case of Identity Broker authentication. There are example files in the »config« folder of the FACTON delivery. |

Table 3.1: Overview of System Parameters



3.4. CONFIGURE ADFS

The following chapter describes the configuration of the ADFS to use it as an STS for the FACTON Application Service in case of WS-Trust authentication.

Activate the WS-Trust 1.3 Endpoint

The FACTON Application Service needs an activated WS-Trust 1.3 endpoint which supports Windows Transport (e.g. "/adfs/services/trust/13/windowstransport").



Activate the WS-Trust 1.3 Endpoint

- 1. Open your ADFS Management Console.
- 2. Select the ADFS ► Service ► Endpoints folder.
- 3. Check whether the WS-Trust 1.3 Windows Transport Endpoint is activated. If not, enable it.

| \$ 1 | | | AD FS | | | _ 🗆 X |
|-------------------------------------|------------------|---------------|--|-------------------------|---------------------|---|
| ile <u>Action V</u> iew <u>W</u> in | dow <u>H</u> elp | | | | | _ 8 × |
| 🗢 🏟 🖄 📰 👔 🖬 | | | | | | , <u></u> |
| 📔 AD FS | Endpoints | | | | | Actions |
| ⊿ 🧮 Service | Easthlad | Prove Enabled | IIDI Path | Tune | Authentication Tune | Endpoints |
| Endpoints | No | No | /adfs/services/trust/2005/issuedtokensymmetrictripledes | WS-Irust 2005 | SAML Token (Sym | |
| Certificates | No | No | /adfs/services/trust/2005/issuedtokensymmetrictripledess | WS-Trust 2005 | SAML Token (Sym | View 🕨 |
| Claim Descriptions | No | No | /adfs/services/trust/2005/issuedtokenmixedsymmetrictripl | WS-Trust 2005 | SAML Token (Sym | New Window from Here |
| Trust Relationships | No | No | /adfs/services/trust/2005/issuedtokenmixedsymmetrictripl | WS-Trust 2005 | SAML Token (Sym | Refresh |
| Authentication Policies | Yes | No | /adfs/services/trust/13/kerberosmixed | WS-Trust 1.3 | Kerberos | G Keresh |
| | No | No | /adfs/services/trust/13/certificate | WS-Trust 1.3 | Certificate | 👔 Help |
| | Yes | Yes | /adfs/services/trust/13/certificatemixed | WS-Trust 1.3 | Certificate | /= df=/=== i=== /herest/12/colinal-counters |
| | No | No | /adfs/services/trust/13/certificatetransport | WS-Trust 1.3 | Certificate | /adfs/services/trust/13/windowstran |
| | No | No | /adfs/services/trust/13/usemame | WS-Trust 1.3 | Password | Enable on Proxy |
| | No | No | /adfs/services/trust/13/usemamebasictransport | WS-Trust 1.3 | Password | Disable |
| | Yes | Yes | /adfs/services/trust/13/usemamemixed | WS-Trust 1.3 | Password | III |
| | No | No | /adfs/services/trust/13/issuedtokenasymmetricbasic256 | WS-Trust 1.3 | SAML Token (Asym. | И Неір |
| | No | No | /adfs/services/trust/13/issuedtokenasymmetricbasic256sh | WS-Trust 1.3 | SAML Token (Asym. | |
| | Yes | Yes | /adfs/services/trust/13/issuedtokenmixedasymmetricbasic | WS-Trust 1.3 | SAML Token (Asym. | |
| | No | No | /adfs/services/trust/13/issuedtokenmixedasymmetricbasic | WS-Trust 1.3 | SAML Token (Asym. | |
| | Yes | Yes | /adfs/services/trust/13/issuedtokenmixedsymmetricbasic2 | WS-Trust 1.3 | SAML Token (Sym ≡ | |
| | No | No | /adfs/services/trust/13/issuedtokenmixedsymmetricbasic2 | WS-Trust 1.3 | SAML Token (Sym | |
| | No | No | /adfs/services/trust/13/issuedtokensymmetricbasic256 | WS-Trust 1.3 | SAML Token (Sym | |
| | No | No | /adfs/services/trust/13/issuedtokensymmetricbasic256sha | WS-Trust 1.3 | SAML Token (Sym | |
| | No | No | /adfs/services/trust/13/issuedtokensymmetrictripledes | WS-Trust 1.3 | SAML Token (Sym | |
| | No | No | /adfs/services/trust/13/issuedtokensymmetrictripledessha | WS-Trust 1.3 | SAML Token (Sym., | |
| | No | No | /adfs/services/trust/13/issuedtokenmixedsymmetrictripledes | WS-Trust 1.3 | SAML Token (Sym | |
| | No | No | /adfs/services/trust/13/issuedtokenmixedsymmetrictripled | WS-Trust 1.3 | SAML Token (Sym | |
| | No | No | /adfs/services/trust/13/windows | WS-Trust 1.3 | Windows | |
| | No | No | /adfs/services/trust/13/windowsmixed | WS-Trust 1.3 | Windows | |
| | Yes | No | /adfs/services/trust/13/windowstransport | WS-Trust 1.3 | Windows | |
| | Yes | No | /adfs/services/trusttcp/windows | WS-Trust 2005 | Local Windows | |
| | No | No | /adfs/services/trust/artifactresolution | SAML-ArtifactResolution | Anonymous 🗠 | |
| | < | | ш | | > | |
| | | | | | | |

Figure 3.1: Enable the WS-Trust 1.3 Windows transport endpoint





Activate the OAuth2 Endpoint

The FACTON Service API (e.g. used for content import) needs an activated OAuth2 endpoint. The OAuth endpoint itself is enabled by default. (If not, it can be enabled using the PowerShell cmdlet Enable-AdfsEndpoint.) It automatically supports all relying parties configured in the ADFS configuration manager and also supports federated scenarios. It is not required to configure WS-Federation or other protocols for the relying party in order to be able to use it with OAuth.

Register the FACTON Client

Note

In order for a client to authenticate the user via OAuth, the client needs to be registered via a so-called Client ID. This can currently not be done via the UI but only by the following PowerShell cmdlet:



Copy code text into a text editor to remove line breaks. Check for any other syntax issues and then copy it into the command prompt.

```
Add-ADFSClient -Name "Facton Client" -ClientId "ADE421F2-0882-44CC-B840-
4FFCC1447A00" -RedirectUri "https://<DnsHostName>/facton/api"
```

The RedirectUri have to be the same as the identifier in the relying party configuration.

Add a Relying Party Trust

The FACTON Application Service must registered as a Relying Party Trust in the ADFS.



Open the »Add Relying Party Trust Wizard«

- 1. Open your ADFS Management Console.
- 2. Select the ADFS > Trust Relationships > Relying Party Trusts folder.
- 3. Right-click on Relying Party Trust.
- 4. Click »Add Relying Party Trust...« and follow the instructions of the wizard.



| % | Add Relying Party Trust Wizard |
|---|---|
| Select Data Source | |
| Steps Welcome Select Data Source Specify Display Name Choose Profile Configure Certificate Configure URL Configure Identifiers Configure Multi-factor Authentication Now? Choose Issuance Authorization Rules Ready to Add Trust Finish | Select an option that this wizard will use to obtain data about this relying party: Ignot data about the relying party published online or on a local network. Use this option to import the necessary data and certificates from a relying party organization that publishes its federation metadata address (host name or URL): Ederation metadata address (host name or URL): Example: fs.contoso.com or https://www.contoso.com/app Impgt data about the relying party from a file Use this option to import the necessary data and certificates from a relying party organization that has evoluted its federation metadata to a file. Ensure that this file is from a trusted source. This wizard will not validate the source of the file. Pederation metadata file location: @ Enter data about the relying party manually Use this option to manually input the necessary data about this relying party organization. |
| | <u>Previous</u> <u>N</u> ext > Cancel |

Figure 3.2: Select »Enter data about the relying party manually«



| Ŷ | Add Relying Party Trust Wizard | X |
|---|---|---|
| Specify Display Name | | |
| Steps | Enter the display name and any optional notes for this relying party. | |
| Welcome | Display name: | |
| Select Data Source | FACTON Application Service | |
| Specify Display Name | Notes: | |
| Choose Profile | | ~ |
| Configure Certificate | | |
| Configure URL | | |
| Configure Identifiers | | |
| Configure Multi-factor Authentication Now? | | ~ |
| Choose Issuance Authorization Rules | | |
| Ready to Add Trust | | |
| Finish | | |
| | | |
| | < Previous Next > Cancel | |

Figure 3.3: Enter the display name and optionally some notes for the relying party



| \$ | Add Relying Party Trust Wizard |
|---|--|
| Choose Profile | |
| Steps | This wizard uses configuration profiles to aid in creating the relving party trust. Choose the appropriate |
| Welcome | configuration profile for this relying party trust. |
| Select Data Source | AD ES profile |
| Specify Display Name | This profile supports relying parties that are interoperable with new AD FS features, such as |
| Choose Profile | security token encryption and the SAMIL 2.0 protocol. |
| Configure Certificate | O AD FS 1.0 and 1.1 profile |
| Configure URL | This profile supports relying parties that are interoperable with AD FS 1.0 and 1.1. |
| Configure Identifiers | |
| Configure Multifactor Authentication Now? | |
| Choose Issuance Authorization Rules | |
| Ready to Add Trust | |
| Finish | |
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| | < <u>P</u> revious <u>N</u> ext > Cancel |

Figure 3.4: Select the ADFS Profile



| \$ | Add Relying Party Trust Wizard | X |
|---|--|---|
| Configure Certificate | | |
| Steps Welcome Select Data Source Specify Display Name Choose Profile Configure Certificate Configure URL Configure Identifiers Configure Multi-factor Authentication Now? Choose Issuance Authorization Rules Ready to Add Trust Finish | Specify an optional token encryption certificate. The token encryption certificate is used to encrypt the claims that are sent to it. To specify the certificate, click Browse Issuer: CN=app011*facton.dev Subject: CN=app011facton.dev Effective date: 8/12/2016 10:23:54 AM Wew Browse New Remove | |

Figure 3.5: Specify the token-encrypting certificate (without the private key) of the FACTON Application Service



| \$ | Add Relying Party Trust Wizard |
|--|--|
| Configure URL | |
| Steps Welcome Select Data Source Specify Display Name Choose Profile Configure Certificate Configure URL Configure Identifiers Configure Multi-factor Authentication Now? Choose Issuance Authorization Rules Ready to Add Trust Finish | AD FS supports the WS-Trust, WS-Federation and SAML 2.0 WebSSO protocols for relying parties. If WS-Federation, SAML, or both are used by the relying party, select the check boxes for them and specify the URLs to use. Support for the WS-Trust protocol is always enabled for a relying party. |

Figure 3.6: WS-Trust will always be supported

Add the following identifiers to the relying party configuration:

■ URI of the **FACTON Application Service** (system parameter: ENDPOINT_SERVICE)

| Example: https:// <dnshostname>/facton/server/secured</dnshostname> | |
|---|--|
| URI of the FACTON Service API (system parameter: API_ENDPOINT_SERVICE) | |

Example:

https://<DnsHostName>/facton/api



| Steps Relyin Welcome Relyin Select Data Source Relyin Specify Display Name [| ng parties may be identified by one or more unique identifier strings. Specify the identifiers f trust. Ing party trust identifier: | or this relying |
|--|--|--------------------------------|
| Steps Relyin party is Welcome Select Data Source Specify Display Name I | ng parties may be identified by one or more unique identifier strings. Specify the identifiers fo trust. Ing party trust identifier: | or this relying |
| Choose Profile Exam Configure Certificate Configure URL Configure Identifiers Configure Multifactor | ple: https://fs.contoso.com/adfs/services/trust ng party trust identifiers: //appfacton.dev/facton/server/secured //appfacton.dev/facton/api/v1 | A <u>d</u> d <u>R</u> emove |
| Authentication Now? Choose Issuance Authorization Rules Ready to Add Trust Finish | | |

Figure 3.7: Enter the FACTON Application Service endpoint addresses



| \$ | Add Relying Party Trust Wizard | ۲ |
|--|---|---|
| | | |
| Steps Welcome Select Data Source Specify Display Name Choose Profile | Configure multi-factor authentication settings for this relying party trust. Multi-factor authentication is required if there is a match for any of the specified requirements. Multi-factor Authentication Global Settings Requirements Users/Groups Not configured | |
| Configure Certificate Configure URL Configure Identifiers Configure Multifactor Authentication Now? | Device Not configured Location Not configured | |
| Choose Issuance Authorization Rules Ready to Add Trust Finish | I do not want to configure multi-factor authentication settings for this relying party trust at this time. Configure multi-factor authentication settings for this relying party trust. You can also configure multi-factor authentication settings for this relying party trust by navigating to the Authentication Policies node. For more information, see <u>Configuring Authentication Policies</u>. | |
| | < <u>P</u> revious <u>N</u> ext > Cancel | |

Figure 3.8: Disable the multi-factor authentication for the relying party trust (only on ADFS 2012 R2)



Set the issuance authorization rules to »Permit all users to access this relying party« or change issuance authorization rules according to your corporate security policy.

| \$ | Add Relying Party Trust Wizard |
|---|--|
| Choose Issuance Autho | prization Rules |
| Steps Welcome Select Data Source Specify Display Name Choose Profile | Issuance authorization rules determine whether a user is permitted to receive claims for the relying party. Choose one of the following options for the initial behavior of this relying party's issuance authorization rules. Permit <u>all</u> users to access this relying party The issuance authorization rules will be configured to permit all users to access this relying party. The relying party service or application may still deny the user access. |
| Configure Certificate Configure URL Configure Identifiers | Deny all users access to this relying party The issuance authorization rules will be configured to deny all users access to this relying party. You must later add issuance authorization rules to enable any users to access this relying party. |
| Configure Multi-factor Authentication Now? Choose Issuance Authorization Rules | You can change the issuance authorization rules for this relying party trust by selecting the relying party trust and clicking Edit Claim Rules in the Actions pane. |
| Ready to Add Trust Finish | |
| | < <u>P</u> revious <u>N</u> ext > Cancel |

Figure 3.9: Set the issuance authorization rules



| \$ | Add Relying Party Trust Wizard |
|--|--|
| Finish | |
| Steps Welcome Select Data Source Specify Display Name Choose Profile Configure Certificate Configure URL Configure Identifiers Configure Multi-factor Authentication Now? Choose Issuance Authorization Rules Ready to Add Trust Finish | The relying party trust was successfully added to the AD FS configuration database. You can modify this relying party trust by using the Properties dialog box in the AD FS Management snap-in. Open the Edit Claim Rules dialog for this relying party trust when the wizard closes |
| | Qose |

Figure 3.10: Close the wizard



Configure the Relying Party Trust

Now you can edit the Claim Rules of the new Relying Party Trust. To configure the Relying Party Trust later, open the context menu on your Relying Party Trust and select "Edit Claim Rules...".

| 💱 Edit Claim Rules for FACTON Application Service 📃 🗕 🗖 🗙 | | | | | |
|--|-------------------------------|-------------|-----------|-------|--|
| Issuance Transform Rules Issuance Authorization Rules Delegation Authorization Rules | | | | | |
| The following transform rules specify the claims that will be sent to the relying party. | | | | | |
| Order | Order Rule Name Issued Claims | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | * | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| <u>A</u> dd R | ule <u>E</u> dit Rule | Remove Rule |] | | |
| | | | | | |
| | | | | | |
| | | (| OK Cancel | Apply | |

Figure 3.11: Claim rules of a replying party trust


| \$ | Add Transform Claim Rule Wizard |
|--|---|
| Select Rule Template | |
| Steps | Select the template for the claim rule that you want to create from the following list. The description provides details about each claim rule template. |
| Configure Claim Rule | Qaim rule template: ✓ Send Claims Using a Custom Rule ✓ Claim rule template description: ✓ Using a custom rule, you can create rules that can't be created with a rule template. Custom rules are written in the AD ES claim rule language. Capabilities that require custom rules include: • Sending claims from a SQL attribute store • • Sending claims from a custom attribute store • • Sending claims of more a custom attribute store • • Sending claims only when 2 or more incoming claim value matches a complex pattern • • Sending claims only when 2 or more incoming claim value • • Sending claims only when 2 or more incoming claim value • • Sending claims for use only in later rules • • Creating claims for use only in later rules • |

Figure 3.12: Select »Send Claims Using a Custom Rule«

₽

Add Claim Rules

To add the domain to the identity claim define the following rule:

```
c:[Type == "http://schemas.xmlsoap.org/ws/2005/05/identity/claims/name"]
=> issue(claim = c);
```



| \$ | Add Transform Claim Rule Wizard |
|---|--|
| Configure Rule | |
| Steps Choose Rule Type Configure Claim Rule | You can configure a custom claim nule, such as a nule that requires multiple incoming claims or that extracts claims from a SQL attribute store. To configure a custom nule, type one or more optional conditions and an issuance statement using the AD FS claim nule language. Qaim rule name: Domain qualified name Rule template: Send Claims Using a Custom Rule Custom nule: (IType == "http://schemas.xmlsoap.org/ws/2005/05/identity/claims/name") => issue(claim = c); (|
| | < <u>P</u> revious Finish Cancel |

Figure 3.13: Add the domain to the identity claim

Add Claim Rules

Add the special group »Everyone« to the claims with the following rule:

=> issue(Type = "http://schemas.xmlsoap.org/claims/Group", Value= "Everyone");



i

Note

For other locales the locale-specific group name, e.g. »Jeder« for german, have to be used in this claim rule.

| Edit Rule - Add everyone group | X |
|--|---|
| You can configure a custom claim rule, such as a rule that requires multiple incoming claims or that extracts claims from a SQL attribute store. To configure a custom rule, type one or more optional conditions and an issuance statement using the AD FS claim rule language. | |
| Qaim rule name: | |
| Add everyone group | |
| Rule template: Send Claims Using a Custom Rule | |
| Custom rule: | _ |
| <pre>=> issue(Type = "http://schemas.xmlsoap.org/claims/Group", Value = "Everyone"); </pre> | × |
| | |
| OK Cancel | |

Figure 3.14: Add the special group »Everyone«





You can get the required thumbprint of the token-signing certificate from the ADFS Certificates View:

Figure 3.15: ADFS certificates view



3.5. APPLICATION DIRECTORY

FACTON Application Service stores additional data within its application directory:

- <APPDATAPATH>\Local\FACTON
- <APPDATAPATH>\Roaming\FACTON

The location depends on your installation:

Running as System Service:

If the FACTON Application Service runs as a system service the directory is located in:

<SystemBasePath>\System32\config\systemprofile\AppData

Example: C:\Windows\System32\config\systemprofile\AppData

Running as a Special User:

If the FACTON Application Service runs as a special user the directory is located in:

```
<UsersAppDataPath>
```

Example: C:\Users\FACTONEPCServiceAccount\AppData

Specifying your own AppData-Directory:

The locations outlined above are Windows default paths. You can also change the location during installation. The application service uses this directory when running as a system service as well as when running as a special user.

Example: C:\FACTONEPC\AppData



4. INSTALL OR UNINSTALL FACTON

This chapter describes the installation and the uninstallation process of the FACTON Components. You can install or uninstall FACTON in to ways - via attended mode or via unattended mode. These two methods of installing or uninstalling FACTON are described in more detail in the subsections below.

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4.1. INSTALL FACTON VIA ATTENDED MODE

This chapter describes the installation process of the FACTON Components using attended mode. This installation process shows a screen, which navigates through the setup - step by step. As you navigate through this mode you enter all of the required values to set up the program.





IMPORTANT

Upgrading and downgrading is not supported in this version.

If you want to install an older or newer version, you have to uninstall the installed version first and then launch the setup for the version you wish to install.

See section <u>»Uninstall FACTON«</u>



4.1.1 Install the FACTON Application Service

This chapter describes the installation process of the FACTON Application Service via attended mode.

Install the Application Service via Attended Mode

 Double-click on the setup file (e.g. »FACTON_Application_Service_10.1.0.26653.exe«), to start the installation. The setup starts a wizard and analyzes the current state of the FACTON Component. The wizard shows the executable setup actions. Click on the »Install...« setup action.

| FACTON EPC Application Service 10 | _ × v10.1.0.26653 |
|--|--------------------------|
| Setup Action Please choose your setup action. | |
| Install Install 'FACTON EPC Application Service 10' on this computer. | |
| | |
| | |
| | |
| | |
| | Cancel |

Figure 4.1: Choosing a setup action





Note

If the wizard shows the action **Uninstall**, the current version of the FACTON Component is already installed and could be uninstalled.

See section <u>»Uninstall FACTON«</u> for more information.

If the current version of the Component already installed, it is not possible to install an older or newer version. In this case the wizard shows a setup error with a corresponding message to uninstall the older or newer version first.



2. Please read the terms of the license agreement carefully. Activate the **»I accept the terms ...«** checkbox to accept the terms of the license agreement. Click on **Next**, to continue the installation.

| ense Agi ase read t | reement he following License Agreement. You must accept the terms of this agreement before continuing with the installat |
|------------------------|---|
| | |
| | FACTON End User License Agreement |
| | This End User License Agreement is between FACTON GmbH , a German corporation with its principal place of business at Rudolf-Breitscheid-Str. 187, 14482 Potsdam (hereinafter "FACTON"), and the legal entity that has entered into this Agreement as Licensee (hereinafter "Licensee"). |
| | FACTON provides Licensed Programs under several different Brands. Licensee may order licenses for any Licensed Programs by accepting these General Terms. Each party acts exclusively in its own name and on its own behalf with respect to the rights and obligations pursuant to this Agreement. |
| | GENERAL TERMS |
| | The parties agree as follows: |
| l accept th | e terms in the license agreement. |



3. Enter the installation folder path where you would like to store the FACTON Component files. Click on **Next**, to continue the installation.

| FACTON EPC Application Service 10 | _ × v10.1.0.26653 |
|--|--------------------------|
| Installation Location Specify the path for your installation. | |
| C:\Program Files\FACTON\FACTON EPC Application Service\ | |
| | |
| | |
| | |
| | |
| Back Next | Cancel |



4. Configure the service account to be used to run the FACTON Application Service. Click on **Next**, to continue the installation.

| FACTON EPC Application Service 10 | – × v10.1.0.26653 |
|--|--------------------------|
| FACTON Application Service Configuration Configure the account to be used for running the FACTON Application Service. | |
| © User Account User Name: | |
| Domain\FactonService | |
| Password: ********** | |
| | |
| Back Next | Cancel |
| Figure 4.4: Service account configuration | |



Enter the address of the application service root. The endpoints of the application service and the service api will be derived based on the defined root address. Select one of the supported authentidation modes: WS-Trust 1.3 for authentication via WS-Trust 1.3 with Windows Integrated Authentication (WIA) or Identity Broker for authentication via OpenID Connect or WS-Federation using the FACTON Identity Broker.

Click on **Next**, to continue to the installation.

| FACTON EPC Application Service 10 | | | _ × v10.1.0.26653 |
|--|------|------|--------------------------|
| FACTON Application Service Endpoints Configure the endpoints of the FACTON Application Service. | | | |
| https://app.domain.local/facton | | | _ |
| Service Endnoint | | | |
| https://app.domain.local/facton/server/secured | | | _ |
| Service Endpoint MEX: | | | |
| https://app.domain.local/facton/server/mex | | | |
| Service API Endpoint: | | | |
| https://app.domain.local/facton/api | | | |
| Authentication Mode: | | | |
| Identity Broker | | | ~ |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | Back | Next | Cancel |
| | | | |
| Figure 4.5: Configure of the service endpoints | | | |

6. In case of **WS-Trust 1.3** authentication mode, select the location of the service certificate in the **»Ser-vice Certificate Store Location«** combobox. This service certificate is used by the security token service (e.g. ADFS) to encrypt the token that is sent to the FACTON Application Service. Enter the thumbprint of the service certificate.

INNOVATIVE COST MANAGEMENT

Click on Next, to continue the installation.

| FACTON EPC Application Service 10 | | | _ × v10.1.0.26653 |
|--|------|------|--------------------------|
| FACTON Application Service Certificate Set the certificate of the FACTON Application Service. | | | |
| User Account Store | | | • |
| Service Certificate Thumbprint: | | | |
| d0d75993f91b56c51887b14261e4ef603c1e7896 | | | |
| | | | |
| | Back | Next | Cancel |
| Figure 4.6: Setting the service certificates | | | |



7. Enter the metadata (MEX) and the WS-Trust 1.3 endpoint addresses of the Security Token Service. Enter the thumbprint of the token-signing certificate of the Security Token Service. Click on **Next**, to continue the installation.

| FACTON EPC Application Service 9 | _ X v9.1.0.17277 |
|---|----------------------------|
| Security Token Service Configuration Specify the Security Token Service configuration for the authentication used by the FACTON Application Service. STS WS-Trust 1.3 Endpoint: https://adfs.domain.local/adfs/services/trust/13/windowstransport STS Endpoint MEX: | |
| Token-Signing Certificate Thumbprint: 1b a7 a3 f6 86 74 d7 88 99 37 37 1d 62 cf 5f 17 9d bf 13 c2 | |
| | |
| | |
| | |
| Back Next | Cancel |
| Figure 4.7: STS authentication settings | |



8. In case of **Identity Broker** authentication mode, enter the endpoint address of the FACTON Identity Broker.

Define the signing certificate by select its location in the **Signing Certificate Store Location** combobox and enter its thumbprint.

Enter the Authentication Audience of the Identity Broker. Click on **Next**, to continue the installation.

| v10.1.0.26653 |
|---------------|
| |
| |
| |
| |
| |
| |
| Cancel |
| |



9. Enter the database server and the database name.

Select the type of account and enter the login information, which should be used from the FACTON Application Service to log in to the database server.

| FACTON EPC Application Service 10 | _ × 0.1.0.26653 |
|--|---------------------------|
| FACTON Database Connection Configuration Select the FACTON database connection used by the FACTON Application Service. Database Server Name: | |
| dbserver.domain.local | |
| - Database Name: FACTON | |
| Windows Authentication O SQL Server Authentication Login: | |
| facton | |
| Password: | |
| ***** | |
| | |
| | |
| | |
| Back Next C | ancel |
| Figure 4.9: FACTON database connection | |



Note

With Windows Authentication the configured service account is used to connect to the database.



10. To define a custom application data directory activate the **»Set a special Directory...**« checkbox and enter the directory of the Application Service Data. Use environment variables to set a machine- or user-specific path for the data directory, e.g. "c:\FACTON\%COMPUTERNAME%". Click on **Next** to continue to the installation.

| FACTON EPC Application Service 10 | – × v10.1.0.26653 |
|--|--------------------------|
| FACTON Data Directory Configuration Set the directory that will be used as data directory for the FACTON Application Service. | |
| Set a custom directory for the application data: If a custom directory is not set, the application data will be stored in the windows application data directory of the stored data directory of the stored data directory data data directory of the stored data data data data data data data da | he service user. |
| | |
| | |
| | |
| | |
| Back Next | Cancel |
| Figure 4.10: Setting an custom data directory | |



- FACTON INNOVATIVE COST MANAGEMENT
- 11. This step is only necessary for authentication via **WS-Trust 1.3**. In this case select the authentication type and enter the required configuration parameters, which have be used to login to the Service API. The OAuth certificate is the token-signing certificate of the STS that is used for authentication with OAuth.

Click on **Next** to continue the installation.

| FACTON EPC Application Service 9 | _ × v9.1.0.17277 |
|--|-------------------------|
| | |
| FACTON Service API Authentication | |
| Specify the authentication settings of the FACTON Service API. | |
| | |
| OAuth Endpoint: | |
| https://app.domain.local/adfs/oauth2/authorize | |
| OAuth Issuer Name: | |
| https://app.domain.local/adfs/services/trust | |
| OAuth Certificate Store Location: | |
| User Account Store | - |
| OAuth Certificate Thumbprint: | |
| 7b bc a4 56 78 74 dc 86 49 32 27 1a cc ce 34 19 90 de 12 ca | |
| Authentication Audience: | |
| https://app.domain.local | |
| O Windows Authentication | |
| You can use Windows Authentication for the Service API under the following assumptions: (1) You require authentication only on a user name basis, not for user groups. (2) Your server name is fully qualified. (3) The FACTON Application Service runs under the 'System Account'. | |
| | |
| Back Next | Cancel |
| Figure 4.11: Service API authentication settings | |



12. A summary page opens and displays the previously installed prerequisites (in gray) and the current component you wish to install (in black). Click on the **Install** button to start the installation process.

| FACTON EPC Application Service 10 | | | _ × v10.1.0.26653 |
|---|------|---------|--------------------------|
| Summary The setup is ready to install the following components. | | | |
| Microsoft .NET Framework 4.5.2 [is already installed] | | | v4.5.51209.34209 |
| FACTON EPC Application Service 10 [will be installed] | | | v10.1.0.26653 |
| | | | |
| Figure 4.12: Summary of the installation components | Back | Install | Cancel |



13. The setup starts the installation and shows the progress of the installation.

| FACTON EPC Application Service 10 | – × v10.1.0.26653 |
|---|--------------------------|
| Installing Please wait while the setup installs the selected components. | |
| Installing (99%) | |
| | |
| | |
| | |
| | Cancel |
| Figure 4.13: Installing the Application Service | |



14. If the installation process is successfully finished, a page with information about the installed components opens.

Click on the **Finish** button to finish the installation process and close the wizard.

| | FACTON EPC Application Service 10 | v10.1.0.2665 | × |
|----------------------|--|--------------|----------|
| Setup C All reque | Completed Isted components have been successfully installed. | | |
| (!) | Microsoft .NET Framework 4.5.2 The setup package 'Microsoft .NET Framework 4.5.2' was not changed. | | |
| • | FACTON EPC Application Service 10 The setup package 'FACTON EPC Application Service 10' was successfully installed. | | |
| | | | I |
| | | | I |
| | | | I |
| Log file p | path: C:\Users\cloudadm\AppData\Local\Temp\FACTON_EPC_Application_Service_10_20180904155817.log | | 1 |
| | | | |
| | | Finish | |
| Figure 4. | 14: Overview about the installed components | | |



15. If the installation process has canceled or failed, the setup wizard opens a page which shows one or more error messages about the unfinished installation.

| | FACTON EPC Application Service 9 | v9.1.0.1727 | × 7 |
|------------|---|-------------|---------------|
| Setup F | ailed due to the installation process occurred. | | |
| 8 | FACTON EPC Application Service 9 Failed to grant 'logon as service' rights to user. (-2147023564 domain/User) | | |
| 8 | FACTON EPC Application Service 9 > Could not add reservation for url 'https://win-2012-r2:443/facton/api/v1' | | |
| | | | l |
| | | | l |
| | | | l |
| L | | | |
| Log file p | ath: C:\Users\ADMINI~1\AppData\Local\Temp\FACTON_EPC_Application_Service_9_20170816080524.log | | |
| | | Close | |
| Figure 4. | 15: Errors occurring during the installation | | |

Note

1

Click on the floppy disk button to store the log file of the failed installation. That information are useful in support of FACTON.



4.1.2 Install the FACTON Identity Broker

This chapter describes the installation process of the FACTON Identity Broker via attended mode.



Install the Identity Broker via Attended Mode

1. Double-click on the setup file (e.g. »FACTON_Identity_Broker_1.0.0.17311.exe«) to start the installation. The setup starts a wizard and analyzes the current state of the FACTON Component.

| FACTON Identity Broker 1 | v1.0.0.17311 |
|--------------------------|--------------|
| Initializing Setup | |
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| | Cancel |



2. A wizard page opens and shows the executable setup actions. Click on the **»Install...«** setup action.

| FACTON Identity Broker 1 | _ × v1.0.0.17311 |
|---|----------------------------|
| Setup Action Please choose your setup action. | |
| Install Install 'FACTON Identity Broker 1' on this computer. | |
| | |
| | |
| | |
| | |
| | Cancel |





Note

If the wizard shows the action **Uninstall**, the current version of the FACTON Component is already installed and could be uninstalled.

See section <u>»Uninstall FACTON«</u> for more information.

If the current version of the Component already installed, it is not possible to install an older or newer version. In this case the wizard shows a setup error with a corresponding message to uninstall the older or newer version first.



3. Please read the terms of the license agreement carefully. Activate the **»l accept the terms ...«** checkbox to accept the terms of the license agreement. Click on **Next**, to continue the installation.

| | | _ × |
|-------------------------|--|--------------|
| | FACTON Identity Broker 1 | v1.0.0.17311 |
| License / Please rea | Agreement d the following License Agreement. You must accept the terms of this agreement before continuing with the i | nstallation. |
| ▼ I accep | FACTON End User License Agreement is between FACTON GmbH, a German corporation with its principal place of business at Rudolf-Breitscheid-Str. 187, 14482 Potsdam (hereinafter "FACTON"), and the legal entity that has entered into this Agreement as Licensee (hereinafter "Licensee"). FACTON provides Licensed Programs under several different Brands. Licensee may order licenses for any Licensed Programs by accepting these General Terms. Each party acts exclusively in its own name and on its own behalf with respect to the rights and obligations pursuant to this Agreement. GENERAL TERMS | |
| | Back Next | Cancel |
| Figure 4.3 | : FACTON license agreement acceptance | |



4. Enter the installation folder path where you would like to store the FACTON Component files. Click on **Next**, to continue the installation.

| FACTON Identity Broker 1 | | | _ × v1.0.0.17311 |
|---|------|-------|-------------------------|
| Installation Location | | | |
| Specify the path for your installation. | | | |
| C:\Program Files\FACTON\FACTON Identity Broker\ | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | Back | Nevt | Cancel |
| | DUCK | TYCAL | concer |
| Figure 4.4: Specifying an installation location | | | |



5. Configure the service account to be used to run the FACTON Identity Broker. Click on **Next**, to continue the installation.

| FACTON Identity Broker 1 | – × v1.0.0.17311 |
|---|----------------------------|
| FACTON Identity Broker Service Configuration Configure the account to be used for running the FACTON Identity Broker Service. O System Account O User Account User Name: domain\FactonIBUser | |
| Password: | |
| | |
| Back Figure 4.5: Service account configuration | Next Cancel |



6. Enter the endpoint address of the FACTON Identity Broker. Click on **Next**, to continue the installation.

| FACTON Identity Broker 1 | | – × v1.0.0.17311 |
|---|-----------|----------------------------|
| FACTON Identity Broker Endpoint Specify the endpoint of the FACTON Identity Broker. Service Endpoint: | | |
| https://app.domain.local/facton/identitybroker | | |
| | | |
| | | |
| | Back Novt | Cancel |
| Figure 4.6: Configure the Identity Broker endpoint | раск Next | Cancei |



7. Choose or set a file which contains additional settings of the FACTON Identity Broker. Click on **Next**, to continue the installation.

| FACTON Identity Broker 1 | _ × v1.0.0.17311 |
|---|-------------------------|
| FACTON Identity Broker Settings Set the file which contains the additional settings of the FACTON Identity Broker. | |
| D:\Data\AppSettings.json | - |
| | |
| | |
| | |
| | |
| Back Next Figure 4.7: Settings file selection | Cancel |



8. Activate the **»Set the database configuration...«** checkbox to use the FACTON Identity Broker with load balancing. Enter the database server and the database name. Select the database authentication and enter the login information which should be used for the database connection.

Click on **Next**, to continue the installation.

| FACTON Identity Broker 1 | | | _ × v1.0.0.17311 |
|--|-------|------|----------------------------|
| FACTON Database Connection Configuration Select the FACTON database connection used by the FACTON Identity Bro Set the database configuration for load balancing: Database Server Name: | oker. | | |
| Database Name: Windows Authentication SQL Server Authentication Login: | | | |
| Password: | | | |
| | | | |
| | Back | Next | Cancel |

Figure 4.8: FACTON database connection



Note

In case of Windows Authentication the configured service account is used to connect to the database.



 A summary page opens and displays the previously installed prerequisites (in gray) and the current component you wish to install (in black). Click on the Install button to start the installation process.

| FACTON Identity Broker 1 | | | _ × v1.0.0.17311 |
|---|------|---------|----------------------------|
| Summary The setup is ready to install the following components. | | | |
| Microsoft .NET Framework 4.6.2 [is already installed] | | | v4.6.1590.0 |
| FACTON Identity Broker 1 [will be installed] | | | v1.0.0.17311 |
| | | | |
| | Back | Install | Cancel |



10. The setup starts the installation and shows the progress of the installation.

| FACTON Identity Broker 1 | – × v1.0.0.17311 |
|---|----------------------------|
| Installing Please wait while the setup installs the selected components. Installing (93%) | |
| Figure 4.10: Installing the Identity Broker | Cancel |



11. If the installation process successfully finished, a setup page with information about the installed components opens.

Click on the **Finish** button to complete the installation process and close the wizard.

| FACTON Identity | Broker 1 | | v1.0.0.17311 | × |
|--|---|---------------------------------|--------------|---|
| Setup Completed All requested components have bee | n successfully installed. | | | |
| Microsoft .NET Frame The setup package 'Micr | work 4.6.2 osoft .NET Framework 4.6.2' was not | changed. | Â | |
| FACTON Identity Bro The setup package 'FACT | ker 1 'ON Identity Broker 1' was successfu | lly installed. | | |
| | | | | |
| | | | | |
| | | | | |
| | | | , , | |
| Log file path: C:\Users\ADMINI~I\ | AppData\Local\Temp\FACTON_Iden | ity_Broker_1_20170815060318.log | | |
| | | | Finish | |
| Figure 4.11: Overview about the | installed components | | | _ |

4. INSTALL OR UNINSTALL FACTON | 4.1. INSTALL FACTON VIA



12. If the installation process has canceled or failed, the wizard opens a setup page which shows one or more error messages about the unfinished installation.

| FACTON Identity Broker 1 | – × v1.0.0.17311 |
|---|----------------------------|
| | |
| Setup Canceled The setup was canceled by the user. | |
| Setup Error The setup was canceled by the user. No components were installed. | |
| Log file path: C:\Users\ADMINI~1\AppData\Local\Temp\FACTON_Identity_Broker_1_20170821062850.log | H |
| | Close |

Figure 4.12: Errors occurring during the installation

Note

i)

Click on the floppy disk button to save the log file of the failed installation. That information are useful in support of FACTON.


4.1.3 Install the FACTON Client Deployment Site

This chapter describes the installation process for the FACTON Client Deployment Site via attended mode.

The client deployment site contains the ClickOnce installation files of the FACTON Client. These files must be installed under a path, which is accessible by the IIS.





Install the Client Deployment Site via Attended Mode

1. Double-click on the **»FACTON_Offline_Client_Website_9.1.0.17277.exe**« setup file, to start the installation.

The setup starts a wizard and analyzes the current state of the FACTON Component.

| FACTON EPC Client Website 9 | – × v9.1.0.17277 |
|------------------------------------|----------------------------|
| Initializing Setup | |
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| | Cancel |
| Figure 4.1: Initializing the setup | |



2. An install page opens and shows the executable setup actions. Click on the **»Install...«** setup action.

| FACTON EPC Client Website 9 | _ × v9.1.0.17277 |
|--|----------------------------|
| Setup Action Please choose your setup action. | |
| Install Install 'FACTON EPC Client Website 9' on this computer. | |
| | |
| | |
| | |
| | |
| | Cancel |
| Figure 4.2: Choosing a setup action | |





Note

If the wizard shows the action **Uninstall**, the current version of the FACTON Component is already installed and could be uninstalled.

See section <u>»Uninstall FACTON«</u> for more information.

If the current version of the Component already installed, it is not possible to install an older or newer version. In this case the wizard shows a setup error with a corresponding message to uninstall the older or newer version first.



3. Please read the terms of the license agreement carefully. Activate the **»I accept the terms** ... **«** checkbox to accept the terms

Activate the **»I accept the terms ...** checkbox to accept the terms of the license agreement. Click on **Next**, to continue the installation.

| FACTON EPC Client Website 9 | | – × v9.1.0.17277 |
|--|---|--------------------------------|
| License Agreement Please read the following License Agreement. You must accept the terr | ns of this agreement before continu | uing with the installation. |
| FACTON End User License Agreem | nent | |
| This End User License Agreement is between FAC its principal place of business at Rudolf-Breitsche "FACTON"), and the legal entity that has ent (hereinafter "Licensee"). | C TON GmbH, a German corporati id-Str. 187, 14482 Potsdam (her tered into this Agreement as Li | on with einafter icensee |
| FACTON provides Licensed Programs under seve licenses for any Licensed Programs by accepting exclusively in its own name and on its own behalf pursuant to this Agreement. | ral different Brands. Licensee ma g these General Terms. Each pa with respect to the rights and obli | y order rty acts gations |
| GENERAL TERMS | | |
| The parties agree as follows: | | ~ |
| ✓ I accept the terms in the license agreement. | | |
| | Back Nex | t Cancel |
| Figure 4.3: FACTON license agreement acceptance | | |



4. Enter the installation folder path, where you wish to store the FACTON Component files. Click on **Next** to continue the installation.

| FACTON EPC Client Website 9 | | | – × v9.1.0.17277 |
|--|------|------|----------------------------|
| Installation Location Specify the path for your installation. | | | |
| C:\Program Files\FACION\FACION EPC Client Website\ | | | |
| | | | |
| | | | |
| | | | |
| | Back | Mart | Const |
| Figure 4.4: Specifying an installation location | Back | Next | Cancel |



5. Enter the metadata (MEX) address of the FACTON Application Service. Click on **Next** to continue the installation.

| FACTON EPC Client Website 9 | | | v9.1.0.17277 |
|--|------|------|--------------|
| FACTON Application Service Connection Specify the MEX Endpoint Address of the FACTON Application Service. FACTON Application Service Endpoint MEX: | | | |
| https://app.domain.local/facton/server/mex e.g. "https:// <servername>:<port>/facton/server/mex</port></servername> | | | |
| | | | |
| | | | |
| | | | |
| | Back | Next | Cancel |



6. Select the system environment type and enter a name of the system environment. The name is displayed in the status bar of the client.

| FACTON EPC Client Website 9 | | | _ X v9.1.0.17277 |
|---|---------|------|----------------------------|
| System Environment Settings Select the System Environment and specify a name for the FACTON instal | lation. | | |
| FACTON System Environment: | | | |
| QA | | | • |
| FACTON System Environment Name: | | | _ |
| QA lest System | | | |
| | | | |
| | Back | Next | Cancel |
| Figure 4.6: Initializing the setup | | | |



 A summary page opens and displays the previously installed prerequisites (in gray) and the current component you wish to install (in bold).
 Click on the Install button to start the installation process.

| FACTON EPC Client Website 9 | | | _ × ∨9.1.0.17277 |
|--|------|---------|----------------------------|
| Summary The setup is ready to install the following components. | | | |
| Microsoft .NET Framework 4 Client Profile [is already installed] | | | v4.0.30319.1 |
| FACTON EPC Client Website 9 [will be installed] | | | v9.1.0.17277 |
| | | | |
| Figure 4.7: Summary of the installation components | Back | Install | Cancel |



8. The setup starts the installation and shows the progress of the installation.

| FACTON EPC Client Website 9 | – × v9.1.0.17277 |
|---|----------------------------|
| Installing Please wait while the setup installs the selected components. | |
| Installing (98%) | |
| | |
| | |
| | |
| | |
| Figure 4.8: Installing the Client Deployment Site | Cancel |



9. If the installation process finishes successfully, a page with information about the installed components opens.

Click on the **Finish** button to finish the installation process and close the wizard.





10. If the installation process fails a page opens and displays an error message.

| FACTON EPC Client Website 9 | v9.1.0.17277 | × |
|--|--------------|----------|
| Setup Failed An error due to the installation process occurred. | | |
| S FACTON EPC Client Website 9 Invalid Drive: X:\ | | |
| Log file path: C:\Users\rast\AppData\Local\Temp\FACTON_EPC_Client_Website_9_20170825134951.log | | |
| | Close |] |
| Figure 4.10: Errors occurring during the installation | | |

igure 4.10. Enois occurring during the instance

Note

1

Click on the floppy disk button to store the log file of the failed installation. That information are useful in support of FACTON.



4.1.4 Install the FACTON Configuration Update Client

This chapter describes the installation process of the FACTON Configuration Update Client via attended mode.



Install the Configuration Update Client via Attended Mode

1. Double-click on the »FACTON_ConfigurationUpdate_Client_9.1.0.17277.exe« setup file, to start the installation. The setup starts a wizard and analyzes the current state of the FACTON Component.

| FACTON EPC Configuration Update 9 | – × v9.1.0.17277 |
|------------------------------------|----------------------------|
| Initializing Setup | |
| | |
| | |
| | |
| | |
| | |
| Figure 4.1: Initializing the setup | Cancel |



2. An install page opens and shows the executable setup actions. Click on the **»Install...«** setup action.

| FACTON EPC Configuration Update 9 | – × v9.1.0.17277 |
|--|----------------------------|
| Setup Action Please choose your setup action. | |
| Install Install 'FACTON EPC Configuration Update 9' on this computer. | |
| | |
| | |
| | |
| | |
| | Cancel |
| Figure 4.2: Choosing a setup action | |





Note

If the wizard shows the action **Uninstall**, the current version of the FACTON Component is already installed and could be uninstalled.

See section <u>»Uninstall FACTON«</u> for more information.

If the current version of the Component already installed, it is not possible to install an older or newer version. In this case the wizard shows a setup error with a corresponding message to uninstall the older or newer version first.



3. Please read the terms of the license agreement carefully. Activate the **»I accept the terms** ... **«** checkbox to accept the te

Activate the **»I accept the terms ...** checkbox to accept the terms of the license agreement. Click on **Next** to continue the installation.

| FACTO | DN EPC Configuration Update 9 | _ × v9.1.0.17277 |
|--|--|----------------------------|
| License Agreeme Please read the follo | ent owing License Agreement. You must accept the terms of this agreement before continuing with the i | nstallation. |
| F | ACTON End User License Agreement | |
| Ti its "I | his End User License Agreement is between FACTON GmbH , a German corporation with s principal place of business at Rudolf-Breitscheid-Str. 187, 14482 Potsdam (hereinafter FACTON"), and the legal entity that has entered into this Agreement as Licensee lereinafter "Licensee"). | |
| F. lic ex P | ACTON provides Licensed Programs under several different Brands. Licensee may order censes for any Licensed Programs by accepting these General Terms. Each party acts xclusively in its own name and on its own behalf with respect to the rights and obligations ursuant to this Agreement. | |
| | GENERAL TERMS | |
| т | he parties agree as follows: | ~ |
| ✓ I accept the term | is in the license agreement. | |
| | Back Next | Cancel |
| Figure 4.3: FACTO | DN license agreement acceptance | |



4. Enter the installation folder path where you wish to store the FACTON Component files. Click on **Next** to continue the installation.

| FACTON EPC Configuration Update 9 | | | – × v9.1.0.17277 |
|--|------|------|----------------------------|
| Installation Location Specify the path for your installation. | | | |
| C:\Program Files\FACTON\FACTON EPC Configuration Update\ | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| Figure 4.4: Specifying an installation location | Back | Next | Cancel |



5. Enter the name of the SQL Database Server and the name of the FACTON Database. Select the database authentication type and enter the login information, which should be used to log in to the FACTON SQL database.

Click on **Next** to continue the installation.

| FACTON EPC Configuration Update 9 | | | v 9.1.0.17277 |
|---|---------|------|----------------------|
| FACTON Database Connection Configuration Select the SQL Server, database and login information of the FACTON dat | tabase. | | |
| Database Server Name: | | | |
| dbserver | | | |
| FACTON | | | _ |
| Windows Authentication SQL Server Authentication Login: Password: | | | |
| | Back | Next | Cancel |
| Figure 4.5: FACTON database connection | | | |



 A summary page opens and displays the previously installed prerequisites (in gray) and the current component you wish to install (in bold). Click on the Install button to start the installation process.

| FACTON EPC Configuration Update 9 | v9.1.0.1727 | × 7 |
|--|------------------|---------------|
| Summary The setup is ready to install the following components. | | |
| Microsoft .NET Framework 4.5.2 [is already installed] | v4.5.51209.34209 | |
| FACTON EPC Configuration Update 9 [will be installed] | v9.1.0.17277 | |
| | | |
| Back Install | Cancel | |



7. The setup starts the installation and shows the progress of the installation.

| FACTON EPC Configuration Update 9 | – × v9.1.0.17277 |
|---|----------------------------|
| Installing Please wait while the setup installs the selected components. Installing (91%) | |
| | |
| | |
| | |
| Figure 4.7: Installing the Application Service | Cancel |



8. If the installation process finishes successfully, a page with information about the installed components opens.

Click on the **Finish** button to finish the installation process and close the wizard.



righte 4.0. Overview about the installed components



9. If the installation process fails, a page opens and displays an error message.

| FACTON EPC Configuration Update 9 | _ X v9.1.0.17277 |
|--|----------------------------|
| Setup Failed An error due to the installation process occurred. | |
| S FACTON EPC Configuration Update 9 Invalid Drive: X(| |
| Log file path: C:\Users\rast\AppData\Local\Temp\FACTON_EPC_Configuration_Update_9_20170825140227.log | |
| | Close |

Note

i)

Click on the floppy disk button to store the log file of the failed installation. That information are useful in support of FACTON.



4.1.5 Install the FACTON Client

(i) Note

You can use this setup as an alternative to the »FACTON Client Deployment Site« setup.

In scenarios where an installation of the FACTON client by ClickOnce is not supported, the client can be installed using this setup.

This chapter describes the installation process of the **FACTON Client** via attended mode.



Install the Client via Attended Mode

1. Double-click on the **»FACTON_Offline_Client_9.1.0.17277.exe«** setup file to start the installation. The setup starts a wizard and analyzes the current state of the FACTON Component.

| FACTON EPC Client 9 | – × v9.1.0.17277 |
|---------------------|----------------------------|
| Initializing Setup | |
| | |
| | |
| | |
| | |
| | Cancel |

Figure 4.1: Initializing the setup



2. An install page opens and shows the executable setup actions. Click on the **»Install...«** setup action.

| FACTON EPC Client 9 | – × v9.1.0.17277 |
|--|----------------------------|
| Setup Action Please choose your setup action. | |
| Install Install 'FACTON EPC Client 9' on this computer. | |
| | |
| | |
| | |
| | |
| | Cancel |

Figure 4.2: Choosing a setup action





Note

If the wizard shows the action **Uninstall**, the current version of the FACTON Component is already installed and could be uninstalled. See section <u>»Uninstall</u><u>FACTON«</u>.

If the current version of the FACTON Component already installed, it is not possible to install an older or newer version. In this case the wizard shows a setup error with a corresponding message to uninstall the older or newer version first.



3. Please read the terms of the license agreement carefully.

Activate the **»I accept the terms ...** checkbox to accept the terms of the license agreement. Click on **Next** to continue the installation.

| | FACTON EPC Client 9 | _ × v9.1.0.17277 |
|----------------------|---|----------------------------|
| License Please re | Agreement ad the following License Agreement. You must accept the terms of this agreement before continuing with the | installation. |
| | FACTON End User License Agreement | Ê |
| | This End User License Agreement is between FACTON GmbH , a German corporation with its principal place of business at Rudolf-Breitscheid-Str. 187, 14482 Potsdam (hereinafter "FACTON"), and the legal entity that has entered into this Agreement as Licensee (hereinafter "Licensee"). | |
| | FACTON provides Licensed Programs under several different Brands. Licensee may order licenses for any Licensed Programs by accepting these General Terms. Each party acts exclusively in its own name and on its own behalf with respect to the rights and obligations pursuant to this Agreement. | |
| | GENERAL TERMS | |
| | The parties agree as follows: | ~ |
| ✓ I acce | pt the terms in the license agreement. | |
| | Back Next | Cancel |

Figure 4.3: FACTON license agreement acceptance



4. Enter the installation folder path where you wish to store the FACTON Component files. Click on **Next** to continue the installation.

| FACTON EPC Client 9 | | | _ × ∨9.1.0.17277 |
|--|------|------|----------------------------|
| Installation Location Specify the path for your installation. | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | Back | Next | Cancel |

Figure 4.4: Specifying an installation location



5. Enter the metadata (MEX) address of the FACTON Application Service. Click on **Next** to continue the installation.

| FACTON EPC Client 9 | | | _ × ∨9.1.0.17277 |
|---|------|------|----------------------------|
| FACTON Application Service Connection Specify the MEX Endpoint Address of the FACTON Application Service. FACTON Application Service Endpoint MEX: https://app.domain.local/facton/server/mex e.g. "https:// <servername>:<port>/factor/server/mex"</port></servername> | | | |
| | Back | Next | Cancel |

Figure 4.5: Specifying the Application Service MEX endpoint



6. To define a custom application data directory activate the **»Set a custom directory...«** checkbox and enter the directory of the FACTON Client Data. Use environment variables to set machine- or user-specific path for the data directory, e.g. "c:\FACTON\%USERNAME%". Click on **Next** to continue the installation.

| FACTON EPC Client 9 | | | – × v9.1.0.17277 |
|--|--------------------------------|------------------------|----------------------------|
| FACTON Data Directory Configuration Set the directory that will be used as data directory for the FACTON Clier Set a custom directory for the application data: If a custom directory is not set, the application data will be stored in the Client. | nt. e application data dire | ectory of the user who | starts the FACTON |
| | | | |
| | | | |
| | Back | Next | Cancel |

Figure 4.6: Setting an custom data directory

7. Check the **»Use additional authentication...**« checkbox to configure extra authentication settings for Identity Broker authentication. The setup will reserve the URLs "https://-localhost:<port>/facton/authenticationcallback/" in the specified port range for the given user or user group. If the option is not set, the FACTON Client will use a random port without URL reservation. Click on **Next** to continue the installation.

| FACTON EPC Client 9 | | | – × v9.1.0.17277 |
|--|--|------------------------------------|------------------------------|
| FACTON Client Authentication Settings Configure additional settings for Identity Broker authentication. Use additional authentication callback channel options Port Range: User / Group: | | | |
| If additional authentication callback channel options are set, the setup wauthenticationcallback/* in the specified port range for the given user or random port without reservation. | will reserve the urls ' r user group. If no o | http://localhost: <port>/fa</port> | cton/ client will use a |
| | Back | Next | Cancel |

Figure 4.7: Configure additional Identity Broker authentication settings

INNOVATIVE COST MANAGEMENT



8. A summary page opens and displays the previously installed prerequisites (in gray) and the current component you wish to install (in black). Click on the **Install** button to start the installation process.

| FACTON EPC Client 9 | | | – × v9.1.0.17277 |
|---|------|---------|----------------------------|
| Summary The setup is ready to install the following components. | | | |
| Microsoft .NET Framework 4.5.2 [is already installed] | | | v4.5.51209.34209 |
| FACTON EPC Client 9 [will be installed] | | | v9.1.0.17277 |
| | | | |
| | Back | Install | Cancel |

Figure 4.8: Summary of the installation components



9. The setup starts the installation and shows the progress of the installation.

| FACTON EPC Client 9 | _ × ∨9.1.0.17277 |
|---|----------------------------|
| Installing Please wait while the setup installs the selected components. Installing (92%) | |
| | |
| | |
| | |
| | Cancel |

Figure 4.9: Installing the FACTON Client



10. If the installation process finishes successfully, a page with information about the installed components opens.

Click on the **Finish** button to finish the installation process and close the wizard.



Figure 4.10: Overview about the installed components



11. If the installation process was canceled or failed, the setup wizard opens a page which shows one or more error messages about the unfinished installation.

| | _ × |
|--|--------------|
| FACTON EPC Client 9 | v9.1.0.17277 |
| | |
| Setup Failed An error due to the installation process occurred. | |
| S FACTON EPC Client 9 Invalid Drive: X:\ | |
| Log file path: C:\Users\ADMINI~1\AppData\Local\Temp\FACTON_EPC_Client_9_20170821052952.log | |
| | |
| | Close |
| | |

Figure 4.11: Errors occurring during the installation

Note

1

Click on the floppy disk button to store the log file of the failed installation. That information are useful in support of FACTON.



4.2. INSTALL FACTON VIA UNATTENDED MODE

An unattended or silent setup is an installation without user interaction. The installation process does not show any messages or windows. The silent setup obtains all of the necessary information at the start of the installation.

Install or Uninstall FACTON in Unattended Mode

- 1. Start a Command Prompt as administrator.
- 2. Start the FACTON setup with the command line parameter -silent.
-

If the installation fails the FACTON setup will return an error code.

Installing FACTON in Unattended Mode

To install a FACTON setup »FACTON_Setup.exe« in unattended mode, you need to use the following command line arguments:

| Parameter | Description |
|--------------------|---|
| -silent | Uses the silent mode for installation. |
| -log "Install.log" | Writes a log during the installation in the file "Install.log". |
| PARAMETER="Value" | Sets the setup properties for the installation. The parameter names must be uppercase and unique. |

Table 4.1: FACTON Setup Command Line Parameters

Install FACTON Setup in Unattended Mode

- 1. Open a command prompt as an administrator.
- 2. Navigate to the folder which contains the setup file »FACTON_Setup.exe«.
- Execute the following command line to start the silent installation with the necessary parameters (e.g. »PARAMETER1« and »PARAMETER2«):



Note

Copy code text into a text editor to remove line breaks. Check for any other syntax issues and then copy it into the command prompt.

"FACTON_Setup.exe" -silent -log "Install.log" PARAMETER1="Value1" PARAMETER2="Value2"


4.2.1 Install the FACTON Application Service

This chapter describes the setup parameters and the installation process of the FACTON Application Service via unattended mode.



Note

If a setup parameter is marked as »optional«, the parameter is not necessary for the installation and the setup uses a default value if no other value is given.

| Parameter | Description |
|---|---|
| FACTON_LICENSE_ACCEPTED (yes no) | Sets the flag to »yes« to accept the FACTON License Terms. It is not possible to install any FACTON component without accepting the License Terms. |
| INSTALLPATH (optional) | Sets the target installation path of the setup. The default path is »%ProgramFiles%\FACTON\FACTON EPC Applic- ation Service« (e.g. »C:\Program Files\FACTON\FACTON EPC Applic- ation Service«). |
| SERVICE_ACCOUNT (optional) | Sets the name of the service account (e.g. »DOMAIN\ServiceUser«) of the application service. If no user name is set, the SYSTEM account will be used. |
| SERVICE_PASSWORD (optional) | Sets the password of the specified application service account. |
| APPLICATION_SERVICE_ROOT | The root address for all service endpoints of the FACTON Applic- ation Service. Example: https:// <dnshostname>/facton</dnshostname> |
| SERVICE_CERT_THUMBPRINT (optional) | Sets the thumbprint of the service certificate in case of WS-Trust 1.3 authentication. The security token service (e.g. ADFS) uses this cer- tificate as token-encrypting certificate. |
| SERVICE_CERT_ STORELOCATION (optional) | Sets the store location of the service certificate (»LocalMachine« or »CurrentUser«). The default is »LocalMachine«. If you use the System Account as SERVICE_ACCOUNT use "LocalMachine"; otherwise "CurrentUser". This parameter is only required for WS-Trust authentication. |
| APPDATAPATH (optional) | Sets the app data path of the service. If no app data path is set, the service will use the user app data path. |
| DB_SERVERNAME | Sets the name of the database server. |



| Parameter | Description |
|---|---|
| DB_DATABASENAME | Sets the database name. |
| DB_USERNAME (optional) | Sets the username of the database connection. If no username is set, the application service will use Windows Integrated Security. |
| DB_PASSWORD (optional) | Sets the password of the given database username. |
| STS_ENDPOINT_WSTRUST13 (optional) | Sets the WS-Trust 1.3 endpoint address of the STS (e.g. ADFS). It is only required for WS-Trust authentication. |
| STS_ENDPOINT_MEX (optional) | Sets the MEX endpoint address of the STS (e.g. ADFS). It is only required for WS-Trust authentication. |
| STS_SIGNING_CERT_ THUMBPRINT (optional) | Sets the thumbprint of the token-signing certificate of the STS (e.g. ADFS). It is only required for WS-Trust authentication. |
| IDENTITYBROKER_ENDPOINT (optional) | Sets the endpoint address of the FACTON Identity Broker. This para- meter is only required in case of Identity Broker authentication. |
| IDENTITYBROKER_SIGNING_ CERT_THUMBPRINT (optional) | Sets the token-signing certificate thumbprint of the FACTON Identity Broker. This parameter is only required in case of Identity Broker authentication. |
| IDENTITYBROKER_SIGNING_ CERT_STORELOCATION (optional) | Sets the token-signing certificate store location of the FACTON Iden- tity Broker ('LocalMachine' or 'CurrentUser'). This parameter is only required in case of Identity Broker authentication. |
| AUTHENTICATION_AUDIENCE (optional) | Sets the audience for token based authentication. This settings is used for Identity Broker authentication or in case of WS-Trust for Service API OAuth authentication. |
| API_OAUTH_ENDPOINT (optional) | Sets the OAuth endpoint address of the STS (e.g. ADFS) that authen- ticates an API user. If no address set, the service API will be use win- dows authentication. It is only required in case of WS-Trust authentication. |
| API_OAUTH_ISSUERNAME (optional) | Sets the OAuth issuer name of the STS (e.g. ADFS) that authenticates an API user. This setting will be ignored, if the service API uses win- dows authentication. It is only required in case of WS-Trust authen- tication. |
| API_OAUTH_CERT_ THUMBPRINT (optional) | Sets the OAuth token-signing certificate thumbprint of the STS (e.g. ADFS) that authenticates an API user. This setting will be ignored if the service API uses windows authentication. It is only required in case of WS-Trust authentication. |



| Parameter | Description |
|---|--|
| API_OAUTH_CERT_ STORELOCATION (optional) | Sets the store location of the OAuth token-signing certificate (»LocalMachine« or »CurrentUser«). The default is »LocalMachine«. This setting will be ignored if the service API uses Windows authen- tication. It is only required in case of WS-Trust authentication. |

Table 4.1: FACTON Application Service setup parameters

Examples



Install the Application Service

- 1. Start a Command Prompt as administrator.
- 2. Navigate to the folder which contains the application service setup file.
- 3. Start the installation with the required command line parameters:



Note

Copy code text into a text editor to remove line breaks. Check for any other syntax issues and then copy it into the command prompt.

| Example command |
|---|
| "FACTON_Application_Service_9.1.0.17277.exe" -silent ` |
| -log "Install.log" FACTON_LICENSE_ACCEPTED="yes" ` |
| SERVICE_ACCOUNT="domain\FactonApp" SERVICE_PASSWORD="******" |
| APPLICATION_SERVICE_ROOT="https://app.domain.local/facton" ` |
| DB_SERVERNAME="dbserver" DB_DATABASENAME="FactonDB" ` |
| IDENTITYBROKER_ENDPOINT= |
| "https://app.domain.local/facton/identitybroker" ` |
| IDENTITYBROKER_SIGNING_CERT_THUMBPRINT= |
| "1b a7 a3 f6 86 74 d7 88 99 37 37 1d 62 cf 5f 17 9d bf 13 c2" |
| |



4.2.2 Install the FACTON Identity Broker

This chapter describes the setup parameters and the installation process of the FACTON Identity Broker via unattended mode.



Note

If a setup parameter is marked as »optional«, the parameter is not necessary for the installation and the setup uses a default value if no other value is given.

| Parameter | Description |
|--------------------------------------|--|
| FACTON_LICENSE_ ACCEPTED (yes no) | Sets the flag to "yes" to accept the FACTON License Terms. It is not possible to install any FACTON component without accepting the License Terms. |
| INSTALLPATH (optional) | Sets the target path of the setup. The default path is '%ProgramFiles%/FACTON/FACTON Identity Broker/' |
| SERVICE_ACCOUNT (optional) | Sets the name of the service account (e.g. »DOMAIN\ServiceUser«) of the Identity Broker. If no user name is set, the SYSTEM account will be used. |
| SERVICE_PASSWORD (optional) | Sets the password of the specified Identity Broker account. |
| ENDPOINT_SERVICE (optional) | Sets the Identity Broker endpoint address. The default address is 'https:// [DnsHostName]/facton/identitybroker'. |
| DB_SERVERNAME (optional) | Sets the name of the database server. The database settings are necessary to use the Identity Broker with load balancing. |
| DB_DATABASENAME (optional) | Sets the database name. |
| DB_USERNAME (optional) | Sets the username of the database connection. If no username is set, the application service will use Windows Integrated Security. |
| DB_PASSWORD (optional) | Sets the password of the given database username. |
| SETTINGS_FILE | Sets the file 'appsettings.json' to configure the Identity Broker. |

Table 4.1: FACTON Identity Broker setup parameters



Examples

▰

Install the Identity Broker

- 1. Start a Command Prompt as administrator.
- 2. Navigate to the folder which contains the Identity Broker setup file.
- 3. Start the installation with the required command line parameters:

i) Note

Copy code text into a text editor to remove line breaks. Check for any other syntax issues and then copy it into the command prompt.

Example command:

"FACTON_Identity_Broker_1.0.0.17311.exe" -silent -log "Install.log" FACTON_LICENSE_ACCEPTED="yes" SERVICE_ACCOUNT="domain\FactonApp" SERVICE_PASSWORD="*******" ENDPOINT_SERVICE-E="https://app.domain.local/facton/identitybroker" DB_SERVERNAME-E="dbserver" DB_DATABASENAME="FactonDB" SETTINGS_ FILE="d:\appSettings.json"

4.2.3 Install the FACTON Client Deployment Site

This chapter describes the setup parameters and the installation process of the **FACTON Client Deployment Site** via unattended mode. The client deployment site contains the ClickOnce Installation files for the FACTON Client. These files must be installed under a path which is accessible for the IIS.

i

Note

If a setup parameter is marked as »optional«, the parameter is not necessary for the installation and the setup uses a default value if no other value is given.



| Parameter | Description |
|--------------------------------------|---|
| FACTON_LICENSE_ ACCEPTED (yes no) | Sets the flag to "yes" to accept the FACTON License Terms. It is not possible to install any FACTON component without accepting the License Terms. |
| INSTALLPATH (optional) | Sets the target path of the setup. The default path is '%ProgramFiles% /FACTON/FACTON EPC Client Website/'. |
| SERVICE_ENDPOINT_ MEX | Sets the MEX endpoint address of the FACTON application service. |
| SYSTEM_ ENVIRONMENT (optional) | Sets one of the supported system environments: Dev, QA, Prod, System1, System2, System3, If no system environment is set, the setup will use the default system envir- onment. |

Table 4.1: FACTON Client Deployment site setup parameters

Examples

Install the Client Deployment Site

- 1. Start a Command Prompt as administrator.
- 2. Navigate to the folder which contains the client deployment site setup file.
- 3. Start the installation with the required command line parameters:

Example command:

"FACTON_Offline_Client_Website_9.1.0.17277.exe" -silent -log "Install.log" SERVICE_ENDPOINT_MEX-X="https://app.domain.local/facton/server/mex" SYSTEM_ENVIRONMENT-T="QA"



4.2.4 Install the FACTON Configuration Update Client

This chapter describes the setup parameters and the installation process of the **FACTON Configuration Update Client** via unattended mode.



Note

If a setup parameter is marked as »optional«, the parameter is not necessary for the installation and the setup uses a default value if no other value is given.

| Parameter | Description |
|--------------------------------------|--|
| FACTON_LICENSE_ ACCEPTED (yes no) | Sets the flag to "yes" to accept the FACTON License Terms. It is not possible to install any FACTON component without accepting the License Terms. |
| INSTALLPATH (optional) | Sets the target installation path of the setup. The default path is "%ProgramFiles%\FACTON\FACTON EPC Configuration Update' |
| DB_SERVERNAME | Sets the name of the database server which hosts the FACTON database. |
| DB_DATABASENAME | Sets the name of the FACTON database. |
| DB_USERNAME (optional) | Sets the username of the database connection. If no username is set, the cli- ent will use Windows Integrated Security. |
| DB_PASSWORD (optional) | Sets the password of the given database username. |

Table 4.1: FACTON Configuration Update Client setup parameters



Examples

ੰ∏

Install the Client Deployment Site

- 1. Start a Command Prompt as administrator.
- 2. Navigate to the folder which contains the client setup file.
- 3. Start the installation with the required command line parameters:

Example command:

```
"FACTON_ConfigurationUpdate_Client_9.1.0.17277.exe" -silent -log
"Install.log" DB SERVERNAME="dbserver" DB_DATABASENAME="FactonDB">
```

4.2.5 Install the FACTON Client

Note

(i)

You can use this setup as an alternative to the »FACTON Client Deployment Site« setup.

In scenarios where an installation of the FACTON client by ClickOnce is not supported, the client can be installed using this setup.

This chapter describes the setup parameters and the installation process of the **FACTON Client** via unattended mode.

Note

(i)

If a setup parameter is marked as »optional«, the parameter is not necessary for the installation and the setup uses a default value if no other value is given.



| Parameter | Description |
|--|---|
| FACTON_LICENSE_ ACCEPTED (yes no) | Sets the flag to "yes" to accept the FACTON License Terms. It is not possible to install any FACTON component without accepting the License Terms. |
| INSTALLPATH (optional) | Sets the target path of the setup. The default path is '%ProgramFiles%/FACTON/FACTON EPC Client/' |
| SERVICE_ENDPOINT_ MEX | Sets the MEX endpoint address of the FACTON application service. |
| APPDATAPATH (optional) | Sets the app data path of the client. If no app data path is set, the client will be used the user app data path. System Environment Variables are supported (e.g. c:\FactonData\%USERNAME%). |
| AUTHENTICATION_ CALLBACK_PORT_ FROM (optional) | Sets the minimal port number of the FACTON authentication callback chan- nel reservation. If no port number is set, the client will be use a free port num- ber without reserving the port. This parameter is only relevant in case of Identity Broker authentication. |
| AUTHENTICATION_ CALLBACK_PORT_TO (optional) | Sets the maximal port number of the FACTON authentication callback chan- nel reservation. This setting will be ignored, if no minimal port number given. This parameter is only relevant in case of Identity Broker authentication |
| AUTHENTICATION_ CALLBACK_USER (optional) | Sets the user or user group using of the FACTON authentication callback channel reservation. This setting will be ignored, if no minimal and maximal port numbers given. This parameter is only relevant in case of Identity Broker authentication |

Table 4.1: FACTON Client setup parameters

Examples

P

Install the Client

- 1. Start a Command Prompt as administrator.
- 2. Navigate to the folder which contains the client setup file.
- 3. Start the installation with the required command line parameters:

Example command:

"FACTON_Offline_Client_9.1.0.17277.exe" -silent -log "Install.log" SERVICE_ENDPOINT_MEX="https://app.domain.local/facton/server/mex">



4.3. POST INSTALLATION SETTINGS

The default configuration of the FACTON Application Service should be adapted to the specific environment. To optimize the configuration, some system settings could be configured in a special file »SystemSettings.ini«. This configuration is read in, while the service starts.

The current best practice configuration will be delivered based on the current FACTON version, data volume and environment configuration. The SystemSettings.ini must be stored in the Roaming folder of the FACTON Application Directory:

<APPDATAPATH>\Roaming\FACTON\SystemSettings.ini

Execute the following steps to finalize the installation of the FACTON Application Service.



Make Post Installation Settings

1. Start & Stop the application service once to create the folder structure in the application data directory.



Only if it is a first time installation, or if the data directory has been changed.

2. Copy the latest SystemSettings.ini into the Roaming directory:

<APPDATAPATH>\Roaming\FACTON

3. Copy the backup of the persisted columns to the Local directory:

<APPDATAPATH>\Local\FACTON\ColumnCaching

Only if the data directory has been changed!

- 4. If FACTON application service runs as a user account give access rights to the private key of the FACTON service certificate to that user if the certificate is stored in the LocalMachine store:
 - a. Open the Local Machine Certificate store.
 - b. Right click on one FACTON certificate ► All Tasks ► Manage Private Keys ... (see figure <u>»Post</u> Installation Settings I« & »Post Installation Settings II«)
 - c. Add the user account and allow read access <u>»Post Installation Settings III«</u>.



| Console1 - [Cons | ole Root\Certificat | tes (Local Computer) | \Personal\Certificates] | - 🗆 X |
|---|---------------------|----------------------|--|-------------|
| File Action View Fa | vorites Window H | lelp | | _ & × |
| 🧢 🕪 🛛 🖬 🤞 🗐 | 👗 🛄 📑 🚺 🖬 | lawad Da | | Emination F |
| Console Root ⊿ G Certificates (Local Cor | FACTON Server | Open | ot Certification Authority | 12/31/2039 |
| Personal Personal Certificates | | All Tasks > | Open | |
| Frusted Koot Certification Enterprise Trust Intermediate Certification | | Cut Copy | Request Certificate with New Renew Certificate with New K | Key |
| Intermediate Certification Trusted Publishers Untrusted Certification | | Delete | Manage Private Keys | |
| Third-Party Root C Trusted People | | Properties | Advanced Operations | - · |
| Client Authenticati Client Authenticati Remote Desktop Smart Card Trusted Trusted Devices | | i cip | | |
| < III > | < | Ш | | > |
| | | | | |

Figure 4.1: Post Installation Settings I



| Permissions for FACTOR | N Server pri | vate keys 🗙 |
|-------------------------------------|--------------|----------------|
| Security | | |
| Group or user names: | | |
| SYSTEM | | |
| & Administrators (DOMAIN\Admin | iistrators) | |
| | | |
| | | |
| | | |
| L L | A <u>d</u> d | <u>R</u> emove |
| Permissions for SYSTEM | Allow | Deny |
| Full control | ✓ | |
| Read Special permissions | | |
| | | |
| | | |
| For special permissions or advanced | settings, | Advanced |
| click Advanced. | | |
| | | |
| ОК | Cancel | Apply |

Figure 4.2: Post Installation Settings II



| Permissions for FACTO | N Server private keys 🗙 |
|---|--------------------------------|
| Security Group or user names: SYSTEM Administrators (DOMAIN\Adm FactonApp (DOMAIN\Factor) | inistratore) App) |
| Permissions for FactonApp Full control Read Special permissions | Add <u>R</u> emove |
| For special permissions or advance click Advanced. | ed settings, Ad <u>v</u> anced |
| ОК | Cancel <u>A</u> pply |

Figure 4.3: Post Installation Settings III

4.3.1 Checking Readiness of Services

After installation is finished and application service has been started, check whether application service is ready to use.

FACTON Application Service

FACTON uses an in-memory approach. Therefore the application services loads data from database to the servers main memory from time to time, thereby enabling FACTON to work faster. This functionality is called »Prefetching«. If you start the server first time, FACTON preloads the data. This functionality is called »Initial Prefetching«.

Initial prefetching is done automatically by the application service during startup. During initial prefetching, the service is not available and thus no connection can be established. Subsequent prefetchings operate during runtime and do not have an impact on performance. The application service stays available during that time.



Depending on the amount of master data and the amount of calculations, prefetching can take up to one hour.

Check Whether Prefetching is Still Running

- 1. Open Performance Monitor.
- 2. Left-Click on Add to open the Add Counters dialog.
- 3. Load FACTON EPC.
- 4. Select the counter »Active prefetching actions«.
- 5. Select the instance »facton.infrastructure.distribution.serverhost.wcfwindowsservice«.
- 6. Click on Add.

(i) Note

If prefetching is active, the counter has the value **one**.

If prefetching is complete, the counter has the value zero.

The FACTON Application Server is ready to use once prefetching is complete.

i

Note

If the FACTON Application Service is running as a user account, the user must be a member of the »Performance Log Users« group, to get access to this counter.

4.3.2 Start the Application Service

After the completed installation, start the Application Service.



Start the Application Service

- 1. Open the Windows Services Console or App respectively.
- 2. Search for the »FACTON Application Service« in the list (see figure <u>»Navigation Pane in the Service</u> <u>App«</u>).
- 3. Click on the link »Start the service« or use the context menu and choose Start to start the service.



| Eile Action View Help | |
|--|--------|
| | |
| Services (Local) | |
| Services (Local) | |
| FACTON Application Service Name Description | ^ |
| 🔍 DNS Client The DNS Client service (dnscach. | |
| Start the service Start the se | |
| 🔍 Extensible Authentication P The Extensible Authentication Pr. | |
| Description: FACTON Application Service This service provides the function | |
| This service provides the functionality 🔍 Function Discovery Provide The FDPHOST service hosts the | |
| of the FACTON Application Service. 🛛 🌼 Function Discovery Resourc Publishes this computer and res. | |
| 🔍 Group Policy Client The service is responsible for ap | |
| 🔍 Health Key and Certificate Provides X.509 certificate and ke. | |
| 🔍 Human Interface Device Ser Activates and maintains the use . | |
| 🔍 Hyper-V Data Exchange Ser 🛛 Provides a mechanism to exchan | |
| 🧠 Hyper-V Guest Service Inter Provides an interface for the Hyp | \sim |
| < III | > |
| Extended Standard / | |
| | |

Figure 4.1: Navigation Pane in the Service App

Note

(i)

Because of the special startup behavior of the Application Service (see chapter <u>»Check-ing Readiness of Services«</u>) an error message may appear. This message means that the startup process needs more time than expected (see figure <u>»Error Message I«</u>).

Until the initial prefetching is completed you will see »Starting« in the Services Overview.







| 9 | | Services | | | _ □ > | ĸ |
|--|----------------------------|--------------------------------|-------------------|----------|--------------|-------------------------|
| <u>F</u> ile <u>A</u> ction <u>V</u> iew | <u>H</u> elp | | | | | |
| (+ +) 🖬 🗐 🖸 | à 🔒 🛛 🖬 🕨 🔲 🛙 | > | | | | |
| 🎑 Services (Local) | Services (Local) | | | | | |
| | FACTON Application Service | Name 📩 | Description | Status | Startup Type | ^ |
| | | 🔍 DNS Client | The DNS Client | Running | Automatic (| |
| | Description: | 🧠 Encrypting File System (EFS) | Provides the cor | | Manual (Tri | |
| | This service provides | 鵒 Extensible Authentication P | The Extensible A | | Manual | |
| | Application Service. | FACTON Application Service | This service pro | Starting | Automatic | |
| Application service | | 鵒 Function Discovery Provide | The FDPHOST s | | Manual | |
| | | 鵒 Function Discovery Resourc | Publishes this c | | Manual | |
| | | 🤍 Group Policy Client | The service is rs | Running | Automatic (| |
| | | 🧠 Health Key and Certificate | Provides X.509 a | | Manual | |
| | | 🧠 Human Interface Device Ser | Activates and m | | Manual (Tri | |
| | | 🧠 Hyper-V Data Exchange Ser | Provides a mech | Running | Manual (Tri | |
| | | 鵒 Hyper-V Guest Service Inter | Provides an inte | | Manual (Tri | $\overline{\mathbf{v}}$ |
| | | < l | Ш | | > | |
| | Extended Standard | | | | | |
| | | | | | | |

Figure 4.3: Error Massage II

4.3.3 Stop the Application Service



Stop the Application Service

- 1. Open the Windows Services Console or App respectively.
- 2. Search for the »FACTON Application Service« in the list (see figure <u>»Navigation Pane in the Service</u> <u>App«</u>).
- 3. Click on the link »Stop the service« or use the context menu and choose Stop to stop the service.





Figure 4.1: Navigation Pane in the Service App

4.4. UNINSTALL FACTON

This chapter describes the uninstallation process of the FACTON Components. You can uninstall FACTON in two ways - via attended mode or via unattended mode.



IMPORTANT

Upgrading and downgrading is not supported in this version.

If you want to install an older or newer version, you have to uninstall the installed version first.



4.4.1 Uninstall via Attended Mode

- Uninstall FACTON via Attended Mode
 - Use the »Programs and Features« via Windows to uninstall your installed FACTON Components (see »Windows Programs and Features«).

| ñ. | Programs and Features | | _ 0 | X |
|--|--|-----------------------|-----------------------------|------|
| | nel | ٽ × | Search Programs and Feature | s 🔎 |
| Control Panel Home View installed updates | Uninstall or change a program To uninstall a program, select it from the list and then click Uninstall, | Change, or Repair. | | |
| 011 | Organize 🔻 Uninstall | | | - 🕜 |
| | Name | Publisher | Installed | On 🛆 |
| | Active Directory Authentication Library for SQL Server | Microsoft Corporation | 7/3/2018 | |
| | Browser for SQL Server 2017 | Microsoft Corporation | 8/17/201 | 8 = |
| | FACTON EPC Application Service 10 | FACTON GmbH | 8/30/201 | 3 |
| | FACTON EPC Client Website 10 | FACTON GmbH | 8/30/201 | в |
| | FACTON EPC Configuration Update 10 | FACTON GmbH | 8/30/201 | 3 |
| | FACTON Identity Broker 1.2 | FACTON GmbH | 8/30/201 | 3 |
| | Microsoft .NET Framework 4.5 Multi-Targeting Pack | Microsoft Corporation | 7/3/2018 | |
| | Microsoft .NET Framework 4.5.1 Multi-Targeting Pack | Microsoft Corporation | 7/3/2018 | |
| | Microsoft .NET Framework 4.5.1 Multi-Targeting Pack (ENU) | Microsoft Corporation | 7/3/2018 | |
| | Microsoft .NET Framework 4.5.1 SDK | Microsoft Corporation | 7/3/2018 | |
| | Microsoft .NET Framework 4.5.2 Multi-Targeting Pack | Microsoft Corporation | 7/3/2018 | |
| | E Microsoft .NET Framework 4.5.2 Multi-Targeting Pack (ENU) | Microsoft Corporation | 7/3/2018 | |
| | Microsoft Azure Storage Explorer version 0.8.8 | Microsoft Corporation | 5/2/2017 | ~ |
| | < III | | | > |
| | FACTON GmbH Product version: 10.1.0.26653 Size: 164 MB | | | |

Figure 4.1: Windows Programs and Features

S Alternative:

1. Double-click on the setup file (e.g. »FACTON_Application_Service_10.1.0.26635.exe«) to start the uninstallation.

The setup analyzes the current state of the FACTON

Component and an uninstall page opens and shows the executable setup actions.

Click on the **»Uninstall...«** setup action. The uninstallation process starts.



| FACTON EPC Application Service 10 | _ × v10.1.0.26653 |
|--|--------------------------|
| Setup Action Please choose your setup action. | |
| Uninstall Uninstall 'FACTON EPC Application Service 10' from this computer. | |
| | |
| | |
| | |
| | |
| | Cancel |

Figure 4.2: Choosing a setup action



2. A summary page opens and displays the previously installed prerequisites (in gray) and the current component you wish to uninstall (in red). Click on the **Uninstall** button to start the uninstallation process.

| FACTON EPC Application Service 10 | – × v10.1.0.26653 |
|---|--------------------------|
| Summary The setup is ready to remove the following components. | |
| Microsoft .NET Framework 4.5.2 [is already installed] | v4.5.51209.34209 |
| FACTON EPC Application Service 10 [will be removed] | v10.1.0.26653 |
| | |
| Back Uninstall | Cancel |



3. The setup starts the uninstallation. If the uninstallation process is successfully finished, a page with information about the uninstalled components opens.

Click on the Finish button to finish the uninstallation process and close the wizard.

| FACTON EI | PC Application Service 10 | _ × v10.1.0.26653 |
|---|--|--------------------------|
| Setup Completed All requested components | s have been successfully removed. | |
| Microsoft .NI The setup pack | ET Framework 4.5.2 cage 'Microsoft .NET Framework 4.5.2' was not changed. | ^ |
| FACTON EPC The setup pack | C Application Service 10 cage 'FACTON EPC Application Service 10' was successfully removed. | |
| | | |
| | | _ |
| | | |
| | | |
| Log file path: C:\Users\clo | budadm\AppData\Local\Temp\FACTON_EPC_Application_Service_10_20180904134140 | J.log 🔚 |
| | | Finish |
| Figure 4.4: Overview ab | out the uninstalled components | |

4. If the installation process fails, an error message opens in a new page.



4.4.2 Uninstall via Unattended Mode

This chapter describes the uninstallation process of the FACTON Components using the unattended mode.

Uninstalling FACTON via Unattended Mode

To uninstall a FACTON component (e.g. »FACTON_Setup.exe«) via unattended mode, you need to use the following command line arguments:

FACTON Setup Command Line Parameters

| Parameter | Description |
|----------------------|---|
| -silent | Uses the unattended mode for uninstalling. |
| -uninstall | Uses the uninstalling mode of the setup. |
| -log "Uninstall.log" | Writes a log during the uninstalling in the file "Uninstall.log". |

Uninstall Setup »FACTON_Setup.exe«

- 1. Start a Command Prompt as administrator.
- 2. Navigate to the folder which contains the setup file "FACTON_Setup.exe".
- 3. Enter the following command to start the silent uninstalling:

"FACTON Setup.exe" -silent -uninstall -log "Uninstall.log"

Uninstall the Application Service

- 1. Start a Command Prompt as administrator.
- 2. Open the folder which contains the application service setup file.
- 3. Start the uninstallation with the required command line parameters:

Example command:

"FACTON_Application_Service_9.1.0.17277.exe" -silent -uninstall -log "Uninstall.log"

Uninstall the Client

P

- 1. Start a Command Prompt as administrator.
- 2. Open the folder which contains the client setup file.

P



3. Start the uninstallation with the required command line parameters:

```
Example command:
"FACTON_Offline_Client_9.1.0.17277.exe" -silent -uninstall -log
"Uninstall.log"
```

Uninstall the Client Deployment Site

- 1. Start a Command Prompt as administrator.
- 2. Open the folder which contains the client deployment site setup file.
- 3. Start the uninstallation with the required command line parameters:

```
Example command:
"FACTON_Offline_Client_Website_9.1.0.17277.exe" -silent -uninstall -
log "Uninstall.log"
```

Uninstall the Configuration Update Client

- 1. Start a Command Prompt as administrator.
- 2. Open the folder which contains the client setup file.
- 3. Start the uninstallation with the required command line parameters:

Example command:

```
"FACTON_ConfigurationUpdate_Client_9.1.0.17277.exe" -silent -unin-
stall -log "Uninstall.log"
```



5. MAINTAINING THE SYSTEM

This chapter describes frequent tasks, that need to be executed in order to maintain the system. This includes maintaining the column store, changing passwords or replacing server certificates.

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5.1. COLUMN STORE

The column store adds a second cache to the Application Service. It contains property values that would take some time to calculate and therefore speeds up reading those values. It also acts like database indexes and speeds up queries.

It contains only calculated data. This calculation needs time. To prevent full column calculation after each service start, the column store creates persistent data on the hard disk.

The persistent files of the column store are located in:

<APPDATAPATH>\Local\FACTON\ColumnCaching\<Base Folder>

The column cache base folder name depends on the SystemID which is stored in the database.

The process of column creation and saving is automatically started by the application service.

IMPORTANT

A

These files should also be included in the backup plan of each system.

Ensure that database version and column cache files correspond when restoring a backup. You can use column cache files that are older than the database backup. The system updates the entire column cache in that case (just as it does on restarting application service).

If column files are newer than the database backup, then the FACTON Application Service deletes them!





IMPORTANT

The column store is created when the system is running. After first installing application service, there is no column store at all. All directories and files are created during runtime.

5.2. REPLACING A SSL CERTIFICATE

\wedge

IMPORTANT

Replacing an SSL certificate requires a maintenance window.

The following preconditions must be fulfilled:

- New SSL certificate is enrolled
- Thumbprint of the new certificate is known



Replacing an SSL Certificate

- 1. In the Server Manager, stop the Application Service.
- 2. Open a **cmd** as administrator.
- 3. Execute the command to unregister the certificate:

netsh http delete sslcert ipport=0.0.0.0:443

(see figure »Command line to unregister the certificate«).

4. Register the new certificate with the command:

i) Note

Copy code text into a text editor to remove line breaks. Check for any other syntax issues and then copy it into the command prompt.

netsh http add sslcert ipport=0.0.0.0:443 certhash=<new thum bprint>
appid={52414C46-0000-2712-1983-AFFE00000110}

(see figure »Command line to register the new certificate«).

5. Restart the FACTON Application Services.





Figure 5.1: Command line to unregister the certificate



Figure 5.2: Command line to register the new certificate



5.3. PREFETCHING

General Information

Prefetching is a process that fills up caches with frequently used data. The whole system works without prefetching, but for performance reasons it is recommended to use it.

Each prefetching can contain multiple queries. They are separated by ". The required prefetching queries depend on the current Cost# configuration and queries (custom queries and system internal queries).

IMPORTANT

Do not change the queries unless you have professional knowledge of the Cost# configuration.

When Prefetching is running.

Prefetching is executed during service startup. The application service is ready after all prefetching operations are complete.

Prefetching is executed when a new client starts and a successful publishing operation was completed since the last prefetching. It updates all caches to ensure that new clients also perform optimally.

Prefetching also occurs at regular intervals. By default it runs every 5 min. It ensures that updating caches is always fast.

5.4. CHANGING SYSTEMSETTINGS.INI

This file defines settings to fit the FACTON Application Service to your environment and your custom configuration.

Location of the SystemSettings.ini file

The SystemSettings.ini is located in the Roaming-folder of the FACTON application directory:

<FACTON-AppData>\Roaming\FACTON



Understanding the SystemSettings.ini file

The following variables are defined in the SystemSettings.ini - see the table below.

| Variable | Customer maintainable |
|--|--------------------------|
| MemoryThresholds=98,70,35,25 | yes |
| NumberOfGenerationsPerCache=6,4 | no |
| NumberOfPooledGenerations=2 | no |
| NumberOfPooledGenerations-BaseStatesSnapshotIndex=7 | no |
| NumberOfPooledGenerations-ContextualStatesSnapshotIndex=7 | no |
| NumberOfPooledGenerations-PublicStatesSnapshotIndex=3 | no |
| NumberOfPooledGenerations-SpaceSnapshotIndex=3 | no |
| CacheHitRatio-PropertyValues=9 | no |
| CacheHitRatio-PropertySemantics=9 | no |
| CacheHitRatio-PropertyColumns=95 | no |
| CacheHitRatio-PublicStates=70 | no |
| CacheHitRatio-PublicStatesSnapshotIndex=70 | no |
| HashInitializeCount=1000000 | no |
| CommandTimeout=0 | no |
| MaxShownFinishedQueries=500 | no |
| CacheMonitoringInterval=600 | no |
| ColumnSetRecreationThreshold=900000 | no |
| QueryTimeout=360000 | yes |
| MaxQueryableEntities=100000 | yes |
| ColumnCachingMaxSize=10000000000 | yes |
| currentlanguage=1033 | no |
| SpaceBasedIncomingReferencesBlackList=facccccc-2bf6-4e36-84e7-70710baa0101 | no |
| ServerPrefetchingInterval=300 | no |
| MaxConcurrentPrefetchingOperations=1 | no |



| Variable | Customer maintainable |
|--|--------------------------|
| DatabaseValidation=false | no |
| PublishingTicketTimeout=600 | no |
| Table 5.1: Variables in SystemSettings.ini | |

Note

i

Only settings the customer should maintain are described in the following sections.

ColumnCachingMaxSize

The setting defines the maximum size the column store can consume on the hard drive to persist columns. The size should be around 100GB. On exceeding this limit the Application service automatically removes old files. The unit is Byte. The default setting (10000000000) means 93GB.

MemoryThresholds

This variable contains four boundaries which influence the caching system and its behavior. The unit is Percent as Integer.

The second number (70) defines the maximum memory which is used for caching. So the Application service is allowed to increases its memory consumption up to 70% of the overall physical memory are used.

The other parameters influence the internal caching strategies. Those settings must not be changed.

QueryTimeout

This defines the maximum execution time (in milliseconds) of a query on the server. If this limit is reached, the system stops (cancels) the query.

MaxQueryableEntities

Defines the maximum amount of elements allowed to be filtered without columns. Also defines the maximum resulting set of a query.

The setting limits the load of the application service. Queries that handle too many elements without using columns cause too much load. Exceeding this threshold rejects the query. More filter criteria have to be set in this case.





IMPORTANT

Restart the FACTON Applications Service after changing the »SystemSettings.ini« file.

5.5. DATABASE PURGING

Purging allows you to permanently delete data from the system. You may purge any data that are deleted and unchanged since a configurable cut-off date with a few exceptions for system data and some master data.

So, deleting in FACTON only means marking for deletion. Purging then removes the data physically from the database. Purging is an explicit administrative step and needs a process.

Purging is currently not supported for the SC and DC solutions.

Purging Process

The purging process deletes data from the database, which also effects that some data outside of the database become invalid. This includes columns, as well as the users' unpublished data, so some preparation is required.

Follow these steps every time a new purging operation is scheduled.

The process itself consists of three phases:

- »Phase 1: Preparation«
- »Phase 2: Actual Purging«
- »Phase 3: Verification«



Phase 1: Preparation

Necessary steps to prepare a purging run and to collect data to verify the result of a purging run.



Figure 5.1: Purging Process - Phase 1: Preparation

Define purging cut-off date

Choose for a cut-off date. This will typically be defined as specific date. All elements that have been deleted before are potential candidates for purging and may then be purged from database. For example, 2011-01-01 has been defined as cut-off date. This will be interpreted as 2011-01-01 00:00:00+0 (UTC). So, all deleted elements before this moment will be purged. You can also define a specific date including time as UTC value.

Verification

During the verification you get an overview about the elements that will be purged. You have also the chance to retain some elements from purging.

To get the purging candidates, use the following FQL queries. If there are any elements, that you don't want to purge, you can restore those elements using the default restore functionality directly. If you have restored some elements you have to publish your changes and run the verification query again.

When you are done verifying the purging candidates, please export the query result which will be required later to verify the purge result.



// calculations

SELECT Label, _Id, _SpaceId
FROM TYPE calculation, LIFECYCLE DELETED
WHERE _EntityModificationTime < ``<PurgingCutOffDate>"
ORDER BY Label

// versions

SELECT Label, _VersionInfo._Id as VersionId, _VersionNumber, _SpaceId
FROM TYPE calculation, HISTORY VERSIONED, LIFECYCLE DELETED
WHERE _VersionInfo._EntityModificationTime < ``<PurgingCutOffDate>"
ORDER BY SpaceId, Label

// master data resources

SELECT Label, _Id, _SpaceId
FROM TYPE resource, SPACE resourceMasterdata, LIFECYCLE DELETED
WHERE _EntityModificationTime < ``<PurgingCutOffDate>"
ORDER BY Label

(i)

Simply replace < PurgingCutOffDate> with your defined cut-off date.

Define Maintenance Window

Note

Set the time when the purging operation is supposed to run. During this operation, no normal productive usage is possible.

By the purging time, all users must have published local changes. Unpublished changes will be lost after the purging is done.



Prepare Column Store

To avoid losing persisted columns after purging, which may require a complete recalculation, a base line should be created.

To achieve this, set the purging cut-off date as system setting with the name »PurgingCutOffDate« at all application servers (e.g. »PurgingCutOffDate=2011-01-01«).

After setting the cut-off date, restart the services. You may do this one by one at any time during production.

Observe the »Active prefetching actions« and »Active column generations« performance counter (see <u>»Ap</u>-plication Server Health Monitoring«). Wait for both to be »0 (zero)«. Shut down application service afterwards.

Phase 2: Actual Purging

The execution of purging itself.



Figure 5.2: Purging Process - Phase 2: Actual Purging

Stop Application Services

Before you can execute the purging, you have stop all application services.

Create Database Backup

You should make a full database backup, otherwise purged data will be unrecoverable. This backup could be used to restore it fully in case of any other unexpected error.



Enable Purging

Enable purging for one application service by specifying the system setting **RunPurging=true**. Be sure that also the purging cut-off date is defined in the settings as described above.

Purging must run only on one server. Enable purging on multiple servers can lead to unexpected behavior.

Run purging

Start the service with enabled purging.

Wait until purging has finished. You can check this at the performance counter »Active Purging Operations« (see <u>»Application Server Health Monitoring«</u>) which has a value of »1« during purging and a value of »0 (zero)« after purging. You can also use the ETW events »PurgingStarted« and »PurgingFinished«.

Stop application service when purging has finished.

Purging will generate two result files (CSV) containing the purged and not purged data. These files will be stored under »<Facton.ApplicationDataDirectory>\Local\FACTON« and can be used to validate the result of the purging run. If no application directory has been defined during setup, the files will be stored in local application directory of that user which executes the application service.

Disable purging

After stopping the application service, which has executed the purging operation, disable the purging by setting **RunPurging=false** in the system setting or by removing the line entirely. Also remove the entry »PurgingCutOffDate« from System-settings file.



Phase 3: Verification

The verification of the purge result.



Figure 5.3: Purging Process - Phase 3: Verification

During the verification phase, the result of the purging operation will be verified by comparing the purging candidates with the result of the purge operation.

The candidates are contained in the csv-files that you have exported during preparation step. You should have three files:

- calculation candidates
- version candidates
- master data resource candidates

The result of the purge operation has been stored to your application directory. There should be a »Purge_Result-Snapshot_x.csv« and a »Purge_Result_Verbose-Snapshot_x.csv«.

- »Purge_Result_Verbose-Snapshot_x.csv« contains information about all data that were considered for purging.
- »Purge_Result-Snapshot_x.csv« contains information about all calculations, versions and master data resources that were considered for purging.

Snapshot_x refers to a technical version from the database which is directly derived from the configured purging cut-off date.

To validate the result, use the »Verify-Purge-Result« script, which is part of the FACTON delivery. Run this script and enter the candidate files and one of the purge result files as arguments.

```
Verify-Purge-Result.ps1 -calculationCandidates <Path> -versionCandidates
<Path>
```

-resourceCandidates <Path> -purgeResult <Path>

If the verification is successful, you get the message »Purging was successful«, otherwise you get an error message.

In case of the successful verification, you can restart all application services and open the system for users. If the verification was not successful, you should restore the database backup that you have created in preparation phase. Please verify that you have used exactly the same purging cut-off date on querying purging candidates as on purging itself. If you did use the same cut-off-date and the error still occurs, please contact the FACTON support.

Additional Steps

After a purging operation, rebuilding the indexes at the database is recommended.


6. MONITORING THE SYSTEM

FACTON EPC provides logging and monitoring methods and tools to check the system health, monitor server availability and performance. This section describes the methods and tools in detail.

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6.1. APPLICATION SERVER HEALTH MONITORING

The application server health can be monitored by performance counters using either standard server monitoring tools or the Windows Management Instrumentation (WMI) interface.

There are counters for monitoring and logging. Monitoring-counters describe the current status of the system. A system administrator can identify bottlenecks and obtain information about the overall performance of the system. There are thresholds defined that indicate what range of values to expect. Exceeding those limits usually results from poor system performance. Thus they can be used as a trigger for taking closer look at the system.

Logging-counters provide additional information for further performance-analysis.



Monitoring Performance Counters

- 1. Click on Windows Start.
- 2. Select All Programs.
- 3. Choose Administrative Tools.
- 4. Open Performance Monitor.

(i) Note

For definition of thresholds and actions upon threshold violation see:

http://technet.microsoft.com/en-us/library/cc722414.aspx



6.1.1 Production environment

See the table below to get an overview on the counters that should be monitored in production-environments. It also shows the corresponding limits and the purpose of the counter.

.NET CLR Memory

Instance: Facton.Infrastructure.Distribution.ServerHosts.WcfWindowsService

| Metric | Purpose | Sample Rate | Threshold |
|---------------------------|----------------------------|------------------------|--|
| # Bytes in all Heaps | Logging | 1 min | - |
| Description: Standard Mi | crosoft .NET Counter - Int | ended for support only | |
| # of Sink Blocks in use | Logging / Monitoring | 1 min | Warning: 10,000,000 Error: 50,000,000 |
| Description: Standard Mi | crosoft .NET Counter - Int | ended for support only | |
| Large Object Heap size | Logging | 1 min | - |
| Description: Standard Mi | crosoft .NET Counter - Int | ended for support only | |
| % Time in GC | Logging | 1 min | - |
| Description: Standard Mi | crosoft .NET Counter - Int | ended for support only | |

Table 6.1: Production Environment: Health Monitoring Indicators for .NET CLR Memory

■ .NET Data provider for SQL

In stance: Facton. In frastructure. Distribution. ServerHosts. WcfW indows Service

| Metric | Purpose | Sample Rate | Threshold |
|-----------------------------------|--------------------------|-------------|--------------------------|
| NumberOfPooledConnections | Logging / Monitoring | 1 min | Warning: 50 Error: 80 |
| Description: The number of establ | ished database connectio | ns. | |

Table 6.2: Production Environment: Health Monitoring Indicators for .NET Data provider for SQL



FACTON EPC Database

| Metric | Purpose | Sample Rate | Threshold | |
|--|---------|-------------|-----------|--|
| Active Purging Operations | Logging | 1 min | | |
| Description: Counts the total number of active purging operations. | | | | |

Table 6.3: Production Environment: Health Monitoring Indicators for FACTON EPC Database

FACTON EPC Load

| Metric | Purpose | Sample Rate | Threshold |
|---|---|---|--|
| % Outstanding Column Updates | Logging | 1 min | - |
| Description: Counts the r standing column updates | number of active outstandi s. This is an indicator of ho | ng column updates as a p w long the cache update v | ercentage of all out- will take. |
| % Rejected Publishing Operations | Logging | 1 min | - |
| Description: The percentary operations per sample in | age of publishing operatic terval. | ons rejected due to too ma | any concurrent publishing |
| Active Column Generations | Logging | 1 min | - |
| Description: Counts the r | number of active column g | enerations. | |
| Active Prefetching Actions | Logging | 1 min | - |
| Description: Counts the r | number of active prefetchir | ng actions such as prefetch | ning queries. |
| Active Publishing Operations | Logging | 1 min | - |
| Description: Counts the r | number of active publishing | g operations. | |
| Highest Publishing Ticket Waiting Time | Logging / Monitoring | 1 min | Warning: 80% of the con- figured publishing timeout (default 80% of 18 min) |
| Description: The current l state of the whole system | highest waiting time for qu n. | ueued publishing tickets ir | seconds. Represents the |



| Metric | Purpose | Sample Rate | Threshold | |
|--|---------------------------------------|-----------------------------|---------------------------|--|
| Successful Publishing Duration | Logging | 1 min | - | |
| Description: Measures the seconds. | e average duration of succ | essful publishing operatio | ns per sample interval in | |
| Failed Publishing Dur- ation | Logging | 1 min | - | |
| Description: Measures the sample interval in second | e average duration of pub Is. | lishing operations failed d | lue to business rules per | |
| Successful Publishing Operations Delta | Logging | 1 min | - | |
| Description: Counts the r | number of successful publis | shing operations since the | last sample. | |
| Failed Publishing Operations Delta | Logging | 1 min | - | |
| Description: Counts the r sample. | number of publishing oper | ations failed due to busine | ess rules since the last | |
| Publishing Ticket Queue Size | Logging | 1 min | - | |
| Description: The size of the | ne publishing ticket queue | . Represents the state of t | he whole system. | |
| Queued Prefetching Actions | Logging / Monitoring | 1 min | Warning: > 10 | |
| Description: Counts the r currentPrefetchingOperat | number of prefetching actions"-Limit. | ons that could not be exec | cuted due to "MaxCon- | |
| Rejected Prefetching Actions Delta | Logging / Monitoring | 1 min | - | |
| Description: Counts the number of rejected prefetching actions since the last sample. | | | | |
| Rejected Publishing Operations Delta | Logging / Monitoring | 1 min | Warning: > 0 | |
| Description: Counts the number of publishing operations rejected due to too many concurrent pub- lishing operations since the last sample. | | | | |

Table 6.4: Production Environment: Health Monitoring Indicators for FACTON EPC Load



Memory

| Metric | Purpose | Sample Rate | Threshold | |
|--|-------------------------|-------------|---|--|
| Available MBytes | Logging / Monitoring | 1 min | Depending on size of Main Memory: With 256 GB Main Memory Warning: under 32GB longer than 30min; Error: under 25GB longer than 30min | |
| Description: System Counter: Available MBytes is the amount of physical memory, in Megabytes, imme- diately available for allocation to a process or for system use. It is equal to the sum of memory assigned to the standby (cached), free and zero page lists. | | | | |

Table 6.5: Production Environment: Health Monitoring Indicators for Memory

Process

Instance: Facton. In frastructure. Distribution. ServerHosts. WcfWindowsService

| Metric | Purpose | Sample Rate | Threshold | |
|---|---|---|---|--|
| % Processor Time | Logging | 1 min | | |
| Description: System Counter: % Processor Time is the percentage of elapsed time that all of the pro- cess threads using the processor to execute instructions. An instruction is the basic unit of execution in a computer, a thread is the object that executes instructions, and a process is the object created when a program is run. Code executed to handle some hardware interrupts and trap conditions are included in this count. | | | | |
| Handle Count | Logging | 1 min | | |
| Description: System is equal to the sum | n Counter: The tota of the handles cur | al number of hand rently open by eac | les currently open by this process. This number ch thread in this process. | |
| IO Data Bytes/sec | Logging | 1 min | | |
| Description: System This counter counts | n Counter: The rate s all I/O activity ger | e at which the proc nerated by the pro | cess reads and writes bytes in I/O operations. ocess to include file, network and device I/Os. | |
| IO Other Bytes/sec | Logging | 1 min | | |
| Description: System Counter: The rate at which the process is issuing bytes to I/O operations that do not involve data such as control operations. This counter counts all I/O activity generated by the process to include file, network and device I/Os. | | | | |



| Metric | Purpose | Sample Rate | Threshold | |
|---|---|---|---|--|
| Thread Count | Logging | 1 min | | |
| Description: System the basic unit of ex | m Counter: The nui «ecution in a proce | mber of threads cu essor, and a thread | rrently active in this process. An instruction is is the object that executes instructions. Every | |
| running process has at least one thread | | | | |

Table 6.6: Production Environment: Health Monitoring Indicators for Process

Processor

Instance: _Total

| Metric | Purpose | Sample Rate | Threshold |
|-------------------------------|------------|-------------|-------------------------------|
| ^o / Processor Time | Logging | 1 min | Warning: 75% longer than 5min |
| % Processor Time | Monitoring | 5 min | Error: 90% longer than 5min |

Description: System Counter: % Processor Time is the percentage of elapsed time that the processor spends to execute a non-Idle thread. It is calculated by measuring the percentage of time that the processor spends executing the idle thread and then subtracting that value from 100%. (Each processor has an idle thread that consumes cycles when no other threads are ready to run). This counter is the primary indicator of processor activity, and displays the average percentage of busy time observed during the sample interval. It should be noted that the accounting calculation of whether the processor is idle is performed at an internal sampling interval of the system clock (10ms). On today's fast processors, % Processor Time can therefore underestimate the processor utilization as the processor may be spending a lot of time servicing threads between the system clock sampling interval. Workload based timer applications are one example of applications which are more likely to be measured inaccurately as timers are signaled just after the sample is taken.

Table 6.7: Production Environment: Health Monitoring Indicators for Processor



ServiceModelService 4.0.0.0

| Metric | Purpose | Sample Rate | Threshold | |
|---|--|-------------------------------|--|--|
| Calls Duration | Logging Monitoring | 1 min | Warning: 300s Error: 600s | |
| Description: .NET Counte http://go.microsoft.com/ | er: The average duration o fwlink/?LinkId=222537 | f calls to this service | | |
| Calls Outstanding | Logging | 1 min | | |
| Description: .NET Counte http://go.microsoft.com/ | er: The number of calls to t fwlink/?LinkId=222532 | this service that are in pro- | gress. | |
| Calls Per Second | Logging Monitoring | 1 min 5 min | - Warning: over 100 Ionger than 5 min | |
| Description: .NET Counte http://go.microsoft.com/ | er: The number of calls to t /fwlink/?LinkId=222532 | this service that are in pro- | gress. | |
| Percent Of Max Con- current Calls | Logging Monitoring | 5 min | Warning: 80 % longer than 5 min Error: 100 %longer than 5 min | |
| Description: Number of calls waiting to be or being processed in the dispatcher as a percentage of max calls throttle. <u>http://go.microsoft.com/fwlink/?LinkId=222540</u> | | | | |
| Percent Of Max Concurrent Sessions | Logging Monitoring | 1 min | Warning: 85% Error: 90% | |
| Description: .NET Counter: Number of active sessions and messages waiting for sessions as a per- centage of max sessions throttle. <u>http://go.microsoft.com/fwlink/?LinkId=222542</u> | | | | |

Table 6.8: Production Environment: Health Monitoring Indicators for ServiceModelService 4.0.0.0



6.1.2 Test environment

In test environments we need all of the production counters along with the following additional counters.

■ .NET CLR LocksAndThreads

Instance: Facton.Infrastructure.Distribution.ServerHosts.WcfWindowsService

| Metric | Purpose | Sample Rate | Threshold |
|---------------------------------|----------------------------|------------------------|---------------|
| # of current logical threads | Logging Monitoring | 1 min | Warning: 1024 |
| Description: Standard Mi | crosoft .NET Counter - Int | ended for support only | |
| Contention Rate / sec | Logging | 1 min | - |
| Description: Standard Mi | crosoft .NET Counter - Int | ended for support only | |
| Current Queue Length | Logging | 1 min | - |
| Description: Standard Mi | crosoft .NET Counter - Int | ended for support only | |
| Queue Length / sec | Logging | 1 min | - |
| Description: Standard Mi | crosoft .NET Counter - Int | ended for support only | |
| Queue Length Peak | Logging | 1 min | - |
| Description: Standard Mi | crosoft .NET Counter - Int | ended for support only | |

Table 6.9: Test Environment: Health Monitoring Indicators for .NET CLR LocksAndThreads



.NET CLR Memory

Instance: Facton.Infrastructure.Distribution.ServerHosts.WcfWindowsService

| Metric | Purpose | Sample Rate | Threshold | |
|--|-----------------------------|------------------------|---|--|
| # GC Handles | Logging | 1 min | | |
| Description: Standard M | icrosoft .NET Counter - Int | ended for support only | | |
| # Gen 0 Collections | Logging | 1 min | - | |
| Description: Standard M | icrosoft .NET Counter - Int | ended for support only | | |
| # Gen 1 Collections | Logging | 1 min | - | |
| Description: Standard M | icrosoft .NET Counter - Int | ended for support only | | |
| # Gen 2 Collections | Logging / Monitoring | 1 min | Warning: > 1/10 of Gen 1 Collections | |
| Description: Standard M | icrosoft .NET Counter - Int | ended for support only | | |
| # of Pinned Objects | Logging | 1 min | - | |
| Description: Standard M | icrosoft .NET Counter - Int | ended for support only | | |
| % Time in GC | Logging / Monitoring | 1 min | Warning: Average of 50 over 5 min, if cpu time is over 30% Error: Average of 80 over 10 min, if cpu time is over 30% | |
| Description: Standard Microsoft .NET Counter - Intended for support only | | | | |
| Allocated Bytes/sec | Logging | 1 min | - | |
| Description: Standard Microsoft .NET Counter - Intended for support only | | | | |
| Gen 2 heap size | Logging | 1 min | - | |
| Description: Standard M | icrosoft .NET Counter - Int | ended for support only | | |

Table 6.10: Test Environment: Health Monitoring Indicators for .NET CLR Memory



FACTON EPC Database

| Metric | Purpose | Sample Rate | Threshold | |
|--|-------------------------------|----------------------------|---------------------|--|
| Executed Purging Iterations | Logging | 1 min | | |
| Description: Counts the total r | number of executed purgin | g iterations within active | ourging operations. | |
| Get Version Duration | Logging | 1 min | | |
| Description: The average dura | tion [in sec] for Version-red | quests during a sample int | erval. | |
| Total GetChangedSpaces Calls | Logging | 1 min | | |
| Description: Counts the total r | number of GetChangedSpa | aces calls. | | |
| Total GetCount Calls | Logging | 1 min | | |
| Description: Counts the total r | number of GetCount calls. | | | |
| Total GetIn- comingReferences (by ID) Calls | Logging | 1 min | | |
| Description: Counts the total r | number of GetIncomingRef | erences (by id) calls. | | |
| Total GetIn- comingReferences (by IDs) Calls | Logging | 1 min | | |
| Description: Counts the total r | number of GetIncomingRef | erences (by ids) calls. | | |
| Total GetMaxVersion Calls | Logging | 1 min | | |
| Description: Counts the total r | number of GetMaxVersion | calls. | | |
| Total Physical Database Requests | Logging | 1 min | | |
| Description: Counts the total r | number of physical databa | se requests. | | |
| Total ReadByldsInSnapshot Calls | Logging | 1 min | | |
| Description: Counts the total number of ReadByldsInSnapshot calls. | | | | |
| Total ReadByPar- titionsInSnapshot Calls | Logging | 1 min | | |
| Description: Counts the total r | umber of ReadByPartition | sInSnapshot calls. | | |



| Metric | Purpose | Sample Rate | Threshold | |
|---|-------------------------|----------------|-----------|--|
| Total ReadDeltaByPartitions Calls | Logging | 1 min | | |
| Description: Counts the total n | umber of ReadDeltaByPar | titions calls. | | |
| Total ReadInSnapshot Calls | Logging | 1 min | | |
| Description: Counts the total n | umber of ReadInSnapshot | calls. | | |
| Total TryRead Calls | Logging | 1 min | | |
| Description: Counts the total number of TryRead calls. | | | | |
| Total Version Calls | Logging | 1 min | | |
| Description: Counts the total number of GetVersion (transaction version) calls. | | | | |

Table 6.11: Test Environment: Health Monitoring Indicators for FACTON EPC Database

FACTON EPC Load

| Metric | Purpose | Sample Rate | Threshold | | |
|---|---------|-------------|-----------|--|--|
| % Outstanding Prefetching Queries | Logging | 1 min | - | | |
| Description: Counts the number of active outstanding prefetching queries as a percentage of all out- standing prefetching queries. | | | | | |
| Expensive Properties Cache Misses / sec | Logging | 1 min | | | |
| Description: Counts the number of expensive properties per second failed to read from any cache. Those properties will be require calculating. | | | | | |
| Public State Cache Misses / sec | Logging | 1 min | | | |
| Description: Counts the number of entities per second where reading the public state from cache failed for at least one property, which requires calculating the value for those properties. | | | | | |

Table 6.12: Test Environment: Health Monitoring Indicators for FACTON EPC Load



FACTON EPC Network Requests

| Metric | Purpose | Sample Rate | Threshold | | |
|---|-----------------------------|------------------------|-----------|--|--|
| Active Persist Requests | Logging | 1 min | - | | |
| Description: Counts the number of active Persist requests. | | | | | |
| Total AcquireLock (by Entity) Requests | Logging | 1 min | | | |
| Description:Counts the total number of A | AcquireLock (by entity) rec | quests. | | | |
| Total AcquireLocks (by Query) Requests | Logging | 1 min | | | |
| Description:Counts the total number of A | AcquireLocks (by query) re | quests. | | | |
| Total AcquireLocks (by Spaces) Requests | Logging | 1 min | - | | |
| Description: Counts the total number of | AcquireLocks (by spaces) | requests. | | | |
| Total GetCurrentVersion Requests | Logging | 1 min | | | |
| Description: Counts the total number of | GetCurrentVersion reques | sts. | | | |
| Total GetDelta Requests | Logging | 1 min | | | |
| Description: Counts the total number of | GetDelta requests. | | | | |
| Total GetEntities Requests | Logging | 1 min | | | |
| Description: Counts the total number of | GetEntities requests. | | | | |
| Total GetIdsOfIncomingReferences (by ID) Requests | Logging | 1 min | | | |
| Description: Counts the total number of | GetIdsOfIncomingReferer | ices (by id) requests. | | | |
| Total GetIdsOfIncomingReferences (by IDs) Requests | Logging | 1 min | | | |
| Description: Counts the total number of GetIdsOfIncomingReferences (by ids) requests. | | | | | |
| Total GetPublicStates Requests | Logging | 1 min | | | |
| Description: Counts the total number of | GetPublicStates requests. | | | | |
| Total GetPublicStatesToRep- licateForlds Requests | Logging | 1 min | | | |
| Description: Counts the total number of | GetPublicStatesToReplica | teForlds requests. | | | |



| Metric | Purpose | Sample Rate | Threshold |
|--|---------------------------|-----------------------------|-----------|
| Total GetPublicStatesToRep- licateForQuery Requests | Logging | 1 min | |
| Description: Counts the total number of (| GetPublicStatesToReplica | teForQuery requests. | |
| Total GetSpaceModifications Requests | Logging | 1 min | |
| Description: Counts the total number of (| GetSpaceModifications re | quests. | |
| Total GetState Requests | Logging | 1 min | |
| Description: Counts the total number of (| GetState requests. | | |
| Total GetStatesBylds Requests | Logging | 1 min | |
| Description: Counts the total number of (| GetStatesBylds requests. | | |
| Total GetStatesToReplicateForlds Requests | Logging | 1 min | |
| Description: Counts the total number of (| GetStatesToReplicateForl | ds requests. | |
| Total GetStatesToReplicateForQuery Requests | Logging | 1 min | |
| Description: Counts the total number of (| GetStatesToReplicateForG | Query requests. | |
| Total GetVersionInformation Requests | Logging | 1 min | |
| Description: Counts the total number of (| GetVersionInformation rec | quests. | |
| Total HasUserLocks Requests | Logging | 1 min | |
| Description: Counts the total number of I | HasUserLocks requests. | | |
| Total Persist Requests | Logging | 1 min | |
| Description: Counts the total number of I | Persist requests. | | |
| Total ReleaseAllLocksExcept (by Entit- ies and Spaces) Requests | Logging | 1 min | |
| Description: Counts the total number of I | ReleaseAllLocksExcept (by | / entities and spaces) requ | lests. |
| Total ReleaseAllLocksExcept (by Entit- ies) Requests | Logging | 1 min | |
| Description: Counts the total number of f | ReleaseAllLocksExcept (by | / entities) requests. | |



| Metric | Purpose | Sample Rate | Threshold | |
|---|-----------------------------|-----------------------|-----------|--|
| Total ReleaseLocks (by Entities and Spaces) Requests | Logging | 1 min | | |
| Description: Counts the total number of F | ReleaseLocks (by entities a | and spaces) requests. | | |
| Total ReleaseLocks (by Entities) Requests | Logging | 1 min | | |
| Description: Counts the total number of F | ReleaseLocks (by entities) | requests. | | |
| Total RevokeUserLocks Requests | Logging | 1 min | | |
| Description: Counts the total number of F | RevokeUserLocks requests | 5. | | |
| Total SystemInformation Requests | Logging | 1 min | | |
| Description: Counts the total number of SystemInformation requests. | | | | |
| Total TryGetState Requests | Logging | 1 min | | |
| Description: Counts the total number of ⁻ | TryGetState requests. | | | |

Table 6.13: Test Environment: Health Monitoring Indicators for FACTON EPC Network Requests

■ HTTP Service URL Groups

| Metric | Purpose | Sample Rate | Threshold | | |
|--|---------------------------------------|---------------|-----------|--|--|
| AllRequests | Logging | 1 min | - | | |
| Description: Total numbe | er of HTTP requests made t | for this site | | | |
| BytesReceivedRate | Logging | 1 min | | | |
| Description:Rate of recei | ved data by HTTP service [•] | for this site | | | |
| BytesSentRate | Logging | 1 min | | | |
| Description:Rate of sending data by HTTP service for this site | | | | | |
| CurrentConnections | Logging | 1 min | - | | |
| Description: Number of current connections established for this site | | | | | |

Table 6.14: Test Environment: Health Monitoring Indicators for HTTP Service URL Groups



Memory

| Metric | Purpose | Sample Rate | Threshold | | |
|--|---------|-------------|-----------|--|--|
| % Committed Bytes In Use | Logging | 1 min | | | |
| Description: System Counter: % Committed Bytes In Use is the ratio of Memory\\Committed Bytes to the Memory\\Commit Limit. Committed memory is the physical memory in use for which space has been reserved in the paging file should it need to be written to disk. The commit limit is determined by the size of the paging file. If the paging file is enlarged, the commit limit increases, and the ratio is reduced). This counter displays the current percentage value only; it is not an average. | | | | | |
| Committed Bytes | Logging | 1 min | | | |
| Description: System Counter: Committed Bytes is the amount of committed virtual memory, in bytes. Committed memory is the physical memory which has space reserved on the disk paging file(s). There can be one or more paging files on each physical drive. This counter displays the last observed value only; it is not an average. | | | | | |

Table 6.15: Test Environment: Health Monitoring Indicators for Memory

Network Interface

| Metric | Purpose | Sample Rate | Threshold | |
|--|---------|-------------|-----------|--|
| Bytes Received/sec | Logging | 1 min | | |
| Description: Bytes Received/sec is the rate at which bytes are received over each network adapter, including framing characters. Network Interface\Bytes Received/sec is a subset of Network Interface\Bytes Total/sec. | | | | |
| Bytes Sent/sec | Logging | 1 min | | |
| Description: Bytes Sent/sec is the rate at which bytes are sent over each network adapter, including framing characters. Network Interface\Bytes Sent/sec is a subset of Network Interface\Bytes Total/sec. | | | | |
| Bytes Total/sec | Logging | 1 min | | |
| Description: Bytes Total/sec is the rate at which bytes are sent and received over each network adapter, including framing characters. Network Interface\Bytes Total/sec is a sum of Network Interface\Bytes Received/sec and Network Interface\Bytes Sent/sec. | | | | |

Table 6.16: Test Environment: Health Monitoring Indicators for Network Interface



PhysicalDisk

Instance: _Total

| Metric | Purpose | Sample Rate | Threshold | |
|---|-------------------------------|------------------------------|--------------------------|--|
| % Idle Time | Logging | 1 min | | |
| Description: % Idle Time idle. | reports the percentage of | time during the sample in | terval that the disk was | |
| Avg. Disk sec/Transfer | Logging | 1 min | | |
| Description: Avg. Disk sec/Transfer is the time, in seconds, of the average disk transfer. | | | | |
| Disk Bytes/sec | Logging | 1 min | | |
| Description: Disk Bytes/se operations. | ec is the rate bytes are tran | nsferred to or from the disl | k during write or read | |
| Disk Read Bytes/sec | Logging | 1 min | | |
| Description: Disk Read By operations. | ytes/sec is the rate at whic | h bytes are transferred from | m the disk during read | |
| Disk Write Bytes/sec | Logging | 1 min | | |
| Description: Disk Write Bytes/sec is rate at which bytes are transferred to the disk during write oper- ations. | | | | |
| Table 6.17: Test Environment: Health Monitoring Indicators for PhysicalDisk | | | | |

Process

Instance: _Total

| Metric | Purpose | Sample Rate | Threshold |
|--|--|--|---|
| Working Set | Logging | 1 min | |
| Description: Working Set Set is the set of memory p computer is above a thre use. When free memory fa needed they will then be | is the current size, in byte bages touched recently by shold, pages are left in the alls below a threshold, pag soft-faulted back into the | s, of the Working Set of th the threads in the process Working Set of a process ges are trimmed from Wor Working Set before leavin | is process. The Working s. If free memory in the s even if they are not in king Sets. If they are ng main memory. |

Table 6.18: Test Environment: Health Monitoring Indicators for Process



Process

Instance: Facton.Infrastructure.Distribution.ServerHosts.WcfWindowsService

| Metric | Purpose | Sample Rate | Threshold |
|--|---|--|---------------------------------------|
| IO Read Bytes/sec | Logging | 1 min | |
| Description: The rate at v I/O activity generated by | which the process is readin the process to include file | g bytes from I/O operate, network and device I/ | tions. This counter counts all Os. |
| IO Write Bytes/sec | Logging | 1 min | |
| Description: The rate at v I/O activity generated by | which the process is writing the process to include file | g bytes to I/O operation e, network and device I/ | ns. This counter counts all Os. |
| Table 6.19: Test ton.Infrastructure.Distribution | Environment: Health n.ServerHosts.WcfWindowsServ | Monitoring Indicato | ors for Process Fac- |

System

| Metric | Purpose | Sample Rate | Threshold |
|---------------------------|---------|-------------|-----------|
| Processor Queue Length | Logging | 1 min | |
| D | | | |

Description: Processor Queue Length is the number of threads in the processor queue. Unlike the disk counters, this counter counters, this counter shows ready threads only, not threads that are running. There is a single queue for processor time even on computers with multiple processors. Therefore, if a computer has multiple processors, you need to divide this value by the number of processors servicing the workload. A sustained processor queue of less than 10 threads per processor is normally acceptable, dependent of the workload.

Table 6.20: Test Environment: Health Monitoring Indicators for Network Interface

6.2. SQL SERVER MONITORING

The health of the SQL server can be monitored by performance counters as well.

| Category | Metric | Purpose | Sample Rate | Threshold |
|-----------|-------------|---------|-------------|---|
| LocalDisk | % Idle Time | Logging | 1 min | Should be nearly at 100% on a system under normal load. |

Description: This counter provides a very precise measurement of how much time the disk remained in idle state, meaning all the requests from the operating system to the disk have been completed and there is zero pending requests.



| Category | Metric | Purpose | Sample Rate | Threshold |
|-------------------------------|-----------------------|---------|-------------|-----------|
| SQL server: SQL Statistics | Batches per Second | Logging | 1 min | |

Description: Number of batch requests received per second, and is a good general indicator for the activity level of the SQL server.

Table 6.1: Health Monitoring Indicators and Counters for Logging for the SQL Server in a production environment and test environment

6.3. EVENT LOG

FACTON delivers log information for operational monitoring and error tracking. The way errors and events are logged differs between FACTON Client and FACTON Application Service.

6.3.1 Save Support Information

If the FACTON client was installed via Click-Once-Installation, events are logged in an XML log file.

If you wish to report a problem to FACTON EPC Support you will be asked to provide an event log file. Save this file and send it to: **support@facton.com**.

Save event log file

Д

- 1. Start the FACTON Client.
- 2. Click on the FILE tab > Information, Save Support Information.

The »FACTON - Save Support Information« dialog opens.

3. Enter a file name and click **Save**.

The file is saved as a ZIP file.

4. Send the file to the FACTON Support Team.

6.3.2 FACTON Application Service

An overview of known messages is included in the attachment.

Ì

Note

If you find error messages which are not part of this list, please contact FACTON support (see <u>Support</u>).



Access Event Logs

The application service uses »Event Tracing for Windows« (ETW) technology for event logging. This is the standard logging and tracing system under Microsoft Windows.

The installation process of the application service registers five FACTON specific ETW providers under the FACTON category on the server system:

- Common
- Core
- Data
- Domain
- Entities

The installation of the FACTON Identity Broker register an additional ETW provider under Facton/Integration/IdentityBroker.

The installation of FACTON activates channels for important messages that are used for operational monitoring and error detection.



View Messages in the Event Viewer

- 1. Click on Windows Start.
- 2. Select All Programs.
- 3. Choose Administrative Tools.
- 4. Open Event Viewer.
- 5. Select FACTON EPC (see figure: »Event Viewer«).

Every ETW provider has an own folder (see figure: »Event Viewer«). Every message is sorted by the typical

interest group (e.g. Admin).

These log messages are persistent but can be overwritten, if there are too many messages stored. The size of the message store can be separately configured for each leaf (lowest level of the menu tree).



| | | Event Vie | ewer | | _ [| x |
|--|---------------|------------------------|--|------------------|-----|-----------------|
| <u>F</u> ile <u>A</u> ction <u>V</u> iew <u>H</u> elp | | | | | | |
| Event Viewer (Local) | ^ | Admin Number o | of events: 1 | | | |
| Custom Views Windows Logs Applications and Services Logs Facton EPC Common A Core Admin Core Admin Operational Data | = | Level i Information | Date and Time 11/14/2016 8:52:01 AM | Source Common | | Event ID 106 |
| Entities | $\overline{}$ | < | Ш | | | > |
| | | r | | | | |

Figure 6.1: Event Viewer



Configuring Log Messages

- 1. Right-click on a leaf.
- 2. Select Log Properties.

A new window opens, and shows the current log configuration (see figure: <u>»Log Properties«</u>).

| | Log Properties - Admin (Type: Administrative) |
|-------------------------------|---|
| General Subscriptions | |
| <u>F</u> ull Name: | Facton-EPC-Common/Admin |
| <u>L</u> og path: | %SystemRoot%\System32\Winevt\Logs\Facton-EPC-Common%4Admin.evtx |
| Log size: | 68 KB(69,632 bytes) |
| Created: | Monday, November 14, 2016 8:49:11 AM |
| Modified: | Monday, November 14, 2016 8:49:11 AM |
| Accessed: | Monday, November 14, 2016 8:49:11 AM |
| ✓ Enable logging | |
| Ma <u>x</u> imum log size (K | B): 1028 🗘 |
| When maximum ever | nt log size is reached: |
| Over <u>w</u> rite ever | nts as needed (oldest events first) |
| O <u>A</u> rchive the log | g when full, do not overwrite events |
| O Do <u>n</u> ot overwr | ite events (Clear logs manually) |
| | |
| | Clearlog |
| | Clea <u>r</u> Log |
| | OK Cancel Apply |
| | |

Figure 6.2: Log Properties



i

Note

More messages can be activated for debugging. Those detailed messages require knowledge of internal components. Pass log results to FACTON Support for further analysis.

Configuring Tasks for Certain Events

The »Event Tracing for Windows« infrastructure allows starting tasks on special events. A typical task could be sending an email when an error occurs. See an example of creating such tasks below.



Open the Task Scheduler

- 1. Click on Windows Start.
- 2. Select All Programs.
- 3. Choose Administrative Tools.
- 4. Open the **Task Scheduler**.
- A new window showing the **Task Scheduler** opens.

Create a Task

- 1. In Task Scheduler, left-click on Create Task.
- 2. Enter a name and if necessary add a description (see figure: »Create a New Task«).
- 3. Switch between the tabs to set the following settings:
 - 1. Tab General: Check Run whether user logged on or not (see figure: <u>»Create a New Task«</u>).
 - 2. Tab General: Assign users or user groups to the task (depending on IT policy).
 - 3. Tab **Triggers**: Set trigger to **On an Event** and select **Custom Settings** (see figure: <u>»Define a Trigger«</u>).
 - 4. Tab **Triggers**: Click on **New Event Filter** and set the settings as in the figure <u>»Define a Custom</u> <u>Event Filter«</u>.
 - 5. Tab Actions: Click on New and define an action (see figure: »Add an Action to the Event«).
 - 6. Click **OK** to confirm. An new task is created.

6. MONITORING THE SYSTEM | 6.3. EVENT LOG

| FA | CT | 0 | Ν |
|-----------|-----------|---------|------|
| INNOVATI\ | /E COST I | MANAGEI | MENT |

| Θ | | Create Task | x |
|----------------------|-------------------------------|---|---------------------------|
| General Trigg | gers Actions Condi | tions Settings | |
| Na <u>m</u> e: | Example Task | | |
| Location: | ١ | | |
| Author: | DOMAIN\Administra | itor | |
| <u>D</u> escription: | | | |
| -Security opt | ions | | |
| When runni | ng the task, use the fo | llowing user account: | |
| DOMAIN\A | dministrator | Char | nge <u>U</u> ser or Group |
| O <u>R</u> un only | when user is logged | on | |
| 🔘 🖲 Run <u>w</u> he | ther user is logged on | or not |) |
| 🗌 Do n | ot store <u>p</u> assword. Th | e task will only have access to local computer resource | es. |
| 🗌 Run w <u>i</u> th | highest privileges | | |
| 🗌 Hidd <u>e</u> n | <u>C</u> onfigure for: | Windows Server 2012 R2 | ~ |
| | | ОК | Cancel |

Figure 6.3: Create a New Task



| Begin the task: On an event Settings Basig Basig New Event Filter Custom Advanced settings Delay task for: 15 minutes Regeat task every: 1 hour gr a duration of: 1 day Stop all running tasks at end of repetition duration Stop task if it runs longer than: 3 days Activate: 11/14/2016 9:04:24 AM Synchronize across time zones | New Trigger 🗙 |
|---|--|
| Settings Basig New Event Filter © Custom Advanced settings Delay task for: 15 minutes Repeat task every: 1 hour growth for a duration of: 1 day Stop task if it runs longer than: 3 days Activate: 11/14/2016 9:04:24 AM Synchronize across time zones Expire: 11/14/2017 | Begin the task: On an event |
| ○ Basic New Event Filter ⓒ Custom Advanced settings □ Delay task for: 15 minutes ○ Repeat task every: 1 hour ○ Stop all running tasks at end of repetition duration ○ Stop task if it runs longer than: 3 days ○ Activate: 11/14/2016 ○ 9:04:24 AM ○ Synchronize across time zones ○ Expire: 11/14/2017 | Settings |
| Custom Advanced settings Delay task for: 15 minutes Repeat task every: 1 hour © for a duration of: 1 day Stop all running tasks at end of repetition duration Stop task if it runs longer than: 3 days Activate: 11/14/2016 9:04:24 AM Synchronize across time zones | O Basi <u>c</u> <u>N</u> ew Event Filter |
| Advanced settings Delay task for: 15 minutes Repeat task every: 1 hour for a duration of: 1 day Stop all running tasks at end of repetition duration Stop task if it runs longer than: 3 days Activate: 11/14/2016 9:04:24 AM Synchronize across time zones Expire: 11/14/2017 | ● C <u>u</u> stom |
| Advanced settings Delay task for: 15 minutes Delay task for: 15 minutes Repeat task every: 1 hour Stop all running tasks at end of repetition duration Stop task if it runs longer than: 3 days Activate: 11/14/2016 9:04:24 AM Synchronize across time zones Expire: 11/14/2017 | |
| Advanced settings Delay task for: 15 minutes Delay task for: 15 minutes Repeat task every: 1 hour for a duration of: 1 day Stop all running tasks at end of repetition duration Stop task if it runs longer than: 3 days Activate: 11/14/2016 9:04:24 AM Synchronize across time zones Expire: 11/14/2017 | |
| Advanced settings Delay task for: 15 minutes Repeat task every: 1 hour for a duration of: 1 day Stop all running tasks at end of repetition duration Stop task if it runs longer than: 3 days Activate: 11/14/2016 9:04:24 AM Synchronize across time zones Expire: 11/14/2017 | |
| Advanced settings Delay task for: 15 minutes Repeat task every: 1 hour Stop all running tasks at end of repetition duration Stop task if it runs longer than: 3 days Activate: 11/14/2016 9:04:24 AM Synchronize across time zones Expire: 11/14/2017 | |
| Delay task for: 15 minutes Repeat task every: 1 hour for a duration of: 1 day Stop all running tasks at end of repetition duration Stop task if it runs longer than: 3 days Activate: 11/14/2016 9:04:24 AM Synchronize across time zones Expire: 11/14/2017 | Advanced settings |
| □ Regeat task every: 1 hour ✓ for a duration of: 1 day ✓ □ Stop all running tasks at end of repetition duration □ Stop task if it runs longer than: 3 days ✓ □ Stop task if it runs longer than: 3 days ✓ □ Activate: 11/14/2016 Image: 9:04:24 AM □ Synchronize across time zones □ Expire: 11/14/2017 Image: 9:04:24 AM □ Synchronize across time zones | Delay tas <u>k</u> for: 15 minutes |
| Stop all running tasks at end of repetition duration Stop task if it runs longer than: 3 days Activate: 11/14/2016 9:04:24 AM Synchronize across time zones Expire: 11/14/2017 | □ Repeat task every: 1 hour ∨ for a duration of: 1 day ∨ |
| Stop task if it runs longer than: 3 days Activate: 11/14/2016 9:04:24 AM Synchronize across time zones Expire: 11/14/2017 | Stop all running tasks at end of repetition duration |
| Activate: 11/14/2016 ■ 9:04:24 AM □ Synchronize across time zones Expire: 11/14/2017 ■ 9:04:24 AM □ Synchronize across time zones | Stop task if it runs longer than: 3 days ∨ |
| Expire: 11/14/2017 V. O.O.O.24 AM | Activate: 11/14/2016 ■▼ 9:04:24 AM Synchronize across time zones |
| | Expire: 11/14/2017 9:04:24 AM Synchronize across time zones |
| ✓ Ena <u>b</u> led | ✓ Ena <u>b</u> led |
| OK Cancel | OK Cancel |

Figure 6.4: Define a Trigger



| | New Event Filter |
|---------------------------------------|---|
| Filter XML | |
| Logged: | Any time 🗸 |
| Event level: | Critical <u>W</u> arning Ver <u>b</u> ose |
| | Error Information |
| By log | Event logs: Facton-EPC-Common/Admin,Facton-EPC-Co |
| O By <u>s</u> ource | Event sources: |
| Includes/Exclude exclude criteria, | es Eve <u>n</u> t IDs: Enter ID numbers and/or ID ranges separated by commas. To type a minus sign first. For example 1,3,5-99,-76 |
| | <all event="" ids=""></all> |
| <u>T</u> ask category: | |
| <u>K</u> eywords: | |
| <u>U</u> ser: | <all users=""></all> |
| Com <u>p</u> uter(s): | <all computers=""></all> |
| | Cle <u>a</u> r |
| | OK Cancel |

Figure 6.5: Define a Custom Event Filter



| | New Action X |
|----------------------|---|
| You must sp | ecify what action this task will perform. |
| Act <u>i</u> on: Ser | nd an e-mail (deprecated) |
| Settings | |
| <u>F</u> rom: | FactonAppService@example.com |
| <u>T</u> o: | FactonAppAdmin@example.com |
| <u>S</u> ubject: | Error on FACTON EPC Application Service 8 |
| T <u>e</u> xt: | |
| | |
| | |
| | |
| | |
| L | |
| <u>A</u> ttachmer | Browse |
| SMTP serv | er: smtp.example.com |
| | OK Cancel |

Figure 6.6: Add an Action to the Event



6.4. QUERY MONITORING

Use Data Collector Sets for monitoring queries over a defined period of time.



Create a Data Collector Set

- 1. Open the **Performance Monitor** via your Windows.
- 2. Expand the Data Collector Sets group.
- 3. Right-click on User Defined > New > Data Collector Set, to create a new » User Defined Set«.

| Sile Asting View Window Hale | |
|---|-----|
| | 8 × |
| Image: System Image: System | |
| Create a new Data Collector Set. | > |

Figure 6.1: Creating a new Data Collector Set

4. Provide a name for the new Data Collector Set and choose the second option Create manually (Advanced).



| × 🔊 © Create new Data Collector Set. |
|--|
| How would you like to create this new data collector set? |
| Na <u>m</u> e: Query Monitor |
| Create from a template (Recommended) Create manually (Advanced) |
| |
| <u>N</u> ext <u>Finish</u> Cancel |
| ure 6.2: Data Collector Set creation options |



Configure the Data Collector Set

1. Click Next and select Create data logs and activate Event trace data.

| Create new Data Collector Set. What type of data do you want to include? Create data logs Performance counter Event trace data System configuration information Performance Counter Alert Next Einish Cancel injure 6 3: Data Collector Set with event trace data | × |
|---|--|
| What type of data do you want to include? Create data logs Performance counter System configuration information Performance Counter Alert Next Finish Cancel igure 6 3: Data Collector Set with event trace data | 🕙 🕚 Create new Data Collector Set. |
| Create data logs Performance counter Event trace data System configuration information Performance Counter Alert Next Finish Cancel igure 6.3: Data Collector Set with event trace data | What type of data do you want to include? |
| System configuration information Performance Counter Alert <u>Next</u> <u>Finish</u> Cancel | Create <u>d</u> ata logs Performance counter Image: Second se |
| O Performance Counter Alert Next Einish Cancel igure 6.3: Data Collector Set with event trace data | System <u>c</u> onfiguration information |
| Next <u>Finish</u> Cancel | O Performance Counter A <u>l</u> ert |
| Next <u>Finish</u> Cancel | |
| <u>N</u> ext <u>Finish</u> Cancel | |
| igure 6 3: Data Collector Set with event trace data | <u>N</u> ext <u>F</u> inish Cancel |
| | Figure 6.3: Data Collector Set with event trace data |



2. Click on 'Add...' to add a new »Event Trace Provider«.

| Vhich event | trace providers would | d you like to enable? |
|----------------------|-----------------------|--------------------------------|
| Providers: | | A <u>d</u> d <u>R</u> emove |
| Proper <u>t</u> ies: | Value | Edit |
| Property | Value | Luita |
| | | |
| | | |



3. Select the Facton-EPC-Entities provider.

| Event Trace Providers | x |
|------------------------------------|----------|
| Choose Event Trace Provider: | |
| Facton-EPC-Common | ~ |
| Facton-EPC-Core | _ |
| Facton-EPC-Data | _ |
| Facton-EPC-Domain | |
| Facton-EPC-Entities | |
| Facton-EPC-UI | |
| Facton-Integration-DataExchange | |
| FD Core Trace | |
| FD Publication Trace | |
| FD SSDP Trace | |
| FD WNet Trace | |
| FD WSDAPI Trace | |
| FDPHost Service Trace | |
| File Kernel Trace; Operation Set 1 | |
| File Kernel Trace; Operation Set 2 | |
| File Kernel Trace; Optional Data | _ |
| File Kernel Trace: Volume To Loo | <u> </u> |
| OK Cancel | |
| | |
| | |

Figure 6.5: Event trace provider selection



| Vhich event | trace providers | would you like to enable? |
|-----------------|-----------------|---------------------------|
| Providers: | | |
| Facton-EPC-Enti | ties | Add Remove |
| Properties: | | |
| Property | Value | Edit |
| Keywords(Any) | 0x2000 | |
| Keywords(All) | 0x0 | |
| Level | 0x00 | |
| Properties | 0x0000000 | |
| Filter | Disabled | |
| L | | |



4. Select a path to save the trace data.

| × |
|---|
| S Create new Data Collector Set. |
| Where would you like the data to be saved? |
| Root <u>d</u> irectory: |
| %systemdrive%\PerfLogs\Admin\Query Monitor Browse |
| |
| |
| |
| |
| |
| |
| |
| <u>N</u> ext <u>F</u> inish Cancel |
| -igure 6.7: Data Collector Set store location |

FACTON INNOVATIVE COST MANAGEMENT

5. Run the **Collector Set** with default rights.

| 🕥 Create new Data Collector Set. | |
|---|---------------------------|
| Create the data collector set? | |
| Run as: <default> <u>Chang</u></default> | Je |
| ○ <u>O</u> pen properties for this data collector set | |
| Start this data collector set now Save and close | |
| 0.1.1 | |
| | |
| | |
| | Next <u>Finish</u> Cancel |
| | |



Configure the Data Collector Set II

1. Open the **Data Collector Properties** from the set.

| 8 | Performance N | Ionitor | – – X |
|---|-----------------|------------|--------------|
| No File Action View Window Help Image: Image: Image: |) | | _ 8 × |
| N Performance | Name | Туре | Output |
| 🔺 Monitoring Tools | DataCollector01 | Trace | |
| Performance Monitor | | Delete | |
| ⊿ Bata Collector Sets ⊿ I User Defined | | Properties | |
| Query Monitor | | Help | |
| System Event Trace Sessions | | | |
| Startup Event Trace Sessions | | | |
| ▷ □ Reports | | | |
| | | | |
| | < | III | > |
| | | | |
| | | | |

Figure 6.9: Open Data Collector properties

2. Switch to the Trace Session tab to change the settings for Clock type to 'System' and Stream mode to 'File and Real Time'.



| DataColl | ector01 Properties |
|--|--------------------|
| Trace Providers Trace Session | Trace Buffers File |
| Session <u>n</u> ame: DataCollector01 | |
| Clock type: | |
| Stream mode: | Process mode |
| | |
| | |
| | |
| | |
| | OK Cancel Apply |
| | Cancel Apply |

Figure 6.10: Data Collector trace session settings

- 3. Switch to the **Trace Buffers** tab.
- 4. Set the Buffer size to 64KB.


| DataColle | ector01 Properties |
|-------------------------------|---------------------------|
| Trace Providers Trace Session | Trace Buffers File |
| Buffer size: | Minimum buffers: |
| 64 🐺 KB | |
| Elush timer: | Ma <u>x</u> imum buffers: |
| seconds | · · |
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| | OK Cancel <u>A</u> pply |

Figure 6.11: Data Collector trace buffers settings

The Data Collector Set is ready to use.



7. ATTACHMENTS

The tables and illustration below describes the schema of the FACTON database.

7.1. DATA DICTIONARY REPORT - TABLES

| Schema | Table | Description |
|--------|------------------------|---|
| dbo | Blob | all blobs, for example attachments |
| dbo | DbVersion | version of the logical and physical structure of the database |
| dbo | EntityLock | locked entities for user |
| dbo | EntityReference | all references between entities |
| dbo | EntityType | mapping table to optimize database size |
| dbo | EntityVersion | the history of all entities including the specification of entities with the entity type (defined by infrastructure), signature (defined in Cost#) and space (master data, system or a calculation |
| dbo | IdMapping | mapping table to optimize database size |
| dbo | MetadataltemIdMapping | mapping table to optimize database size |
| dbo | PrivateEntity | only used in the client, but available on the server in order to have an identical database scheme on client & server |
| dbo | PrivateEntityReference | only used in the client, but available on the server in order to have an identical database scheme on client & server |



| Schema | Table | Description |
|--------|--------------------------|---|
| dbo | PrivateEntityVersion | only used in the client, but available on the server in order to have an identical database scheme on client & server |
| dbo | PrivatePropertyValue | only used in the client, but available on the server in order to have an identical database scheme on client & server |
| dbo | PropertyValue | all stored values for properties on entities |
| dbo | PublicStatePropertyValue | only used in the client, but available on the server in order to have an identical database scheme on client & server |
| dbo | PublicStateVersion | only used in the client, but available on the server in order to have an identical database scheme on client & server |
| dbo | ReplicationStatus | only used in the client, but available on the server in order to have an identical database scheme on client & server |
| dbo | SnapshotIndex | only used in the client, but available on the server in order to have an identical database scheme on client & server |
| dbo | SpaceIdMapping | mapping table to optimize database size |
| dbo | SpaceLock | completely locked calculations for user |
| dbo | SystemInformation | identifier to ensure clients work against the right server (database) |
| dbo | TransactionVersion | the highest version of all entities |
| dbo | Version | information about created versions like a timestamp and the user |

Table 6.1: Data Dictionary Report Tables



7.2. DATA DICTIONARY REPORT - COLUMNS

| Schema | Table | Number | Column | Data Type | Size | Nullable | IsPrimaryKey | IsForeignKey |
|--------|-----------------|--------|-----------------|------------------|------|----------|--------------|--------------|
| dbo | Blob | 1 | Id | UniqueIdentifier | 16 | Ν | Y | Ν |
| dbo | Blob | 2 | Size | Int | 4 | Ν | Ν | Ν |
| dbo | Blob | 3 | Data | VarBinaryMax | -1 | Y | Ν | Ν |
| dbo | Blob | 4 | CreateTime | DateTime | 8 | Ν | Ν | Ν |
| dbo | DbVersion | 1 | Version | BigInt | 8 | Ν | Y | Ν |
| dbo | EntityLock | 1 | EntityId | BigInt | 8 | Ν | Y | Y |
| dbo | EntityLock | 2 | Spaceld | Int | 4 | Ν | Ν | Y |
| dbo | EntityLock | 3 | UserId | UniqueIdentifier | 16 | Ν | Ν | Ν |
| dbo | EntityLock | 4 | LockTime | DateTime | 8 | Ν | Ν | Ν |
| dbo | EntityLock | 5 | IsCompleteSpace | Bit | 1 | Ν | Ν | Y |
| dbo | EntityReference | 1 | ParentVersion | BigInt | 8 | Ν | Y | Y |
| dbo | EntityReference | 3 | ParentId | BigInt | 8 | Ν | Y | Y |
| dbo | EntityReference | 4 | Childld | BigInt | 8 | Ν | Y | Y |



| Schema | Table | Number | Column | Data Type | Size | Nullable | lsPrimaryKey | IsForeignKey |
|--------|-------------------|--------|----------------|----------------|------|----------|--------------|--------------|
| dbo | EntityReference | 5 | Version | BigInt | 8 | Ν | Ν | Ν |
| dbo | EntityReference | 6 | SameSpace | Bit | 1 | Ν | Ν | Ν |
| dbo | EntityReference | 7 | GroupId | VarChar (60) | 60 | Ν | Y | Ν |
| dbo | EntityReference | 8 | Position | Int | 4 | Ν | Ν | Ν |
| dbo | EntityTypeMapping | 1 | Storeld | SmallInt | 2 | Ν | Y | Ν |
| dbo | EntityTypeMapping | 2 | ConceptualType | VarChar (900) | 900 | Ν | Ν | Ν |
| dbo | EntityVersion | 1 | Version | BigInt | 8 | Ν | Y | Y |
| dbo | EntityVersion | 2 | Id | BigInt | 8 | Ν | Y | Y |
| dbo | EntityVersion | 3 | EntityType | SmallInt | 2 | Ν | Ν | Y |
| dbo | EntityVersion | 4 | Signatureld | SmallInt | 2 | Ν | Ν | Y |
| dbo | EntityVersion | 5 | Spaceld | Int | 4 | Ν | Ν | Y |
| dbo | EntityVersion | 6 | Deleted | Bit | 1 | Ν | Ν | Ν |
| dbo | IdMapping | 1 | Storeld | BigInt | 8 | Ν | Y | Ν |
| dbo | IdMapping | 2 | ConceptualId | VarChar (4000) | 4000 | Ν | Ν | Ν |



| Schema | Table | Number | Column | Data Type | Size | Nullable | IsPrimaryKey | IsForeignKey |
|--------|------------------------|--------|------------------|------------------|------|----------|--------------|--------------|
| dbo | IdMapping | 3 | ConceptualIdHash | Char (12) | 12 | Y | Ν | Ν |
| dbo | MetadataltemIdMapping | 1 | Storeld | SmallInt | 2 | Ν | Y | Ν |
| dbo | MetadataltemIdMapping | 2 | ConceptualId | UniqueIdentifier | 16 | Ν | Ν | Ν |
| dbo | PrivateEntity | 1 | Id | BigInt | 8 | Ν | Y | Y |
| dbo | PrivateEntity | 2 | EntityType | SmallInt | 2 | Ν | Ν | Y |
| dbo | PrivateEntity | 3 | Signatureld | SmallInt | 2 | Ν | Ν | Y |
| dbo | PrivateEntity | 4 | Spaceld | Int | 4 | Ν | Ν | Y |
| dbo | PrivateEntityReference | 1 | Sourceld | BigInt | 8 | Ν | Y | Y |
| dbo | PrivateEntityReference | 2 | TargetId | BigInt | 8 | Ν | Y | Y |
| dbo | PrivateEntityReference | 4 | Version | BigInt | 8 | Ν | Ν | Ν |
| dbo | PrivateEntityReference | 5 | GroupId | VarChar (60) | 60 | Ν | Y | Ν |
| dbo | PrivateEntityReference | 6 | Position | Int | 4 | Ν | Ν | Ν |
| dbo | PrivateEntityVersion | 1 | Id | BigInt | 8 | Ν | Y | Y |
| dbo | PrivateEntityVersion | 2 | Version | BigInt | 8 | Ν | Ν | Ν |



| Schema | Table | Number | Column | Data Type | Size | Nullable | IsPrimaryKey | lsForeignKey |
|--------|--------------------------|--------|--------------------|------------------|------|----------|--------------|--------------|
| dbo | PrivateEntityVersion | 9 | FirstVersion | BigInt | 8 | Ν | Ν | Ν |
| dbo | PrivateEntityVersion | 10 | Deleted | Bit | 1 | Ν | Ν | Ν |
| dbo | PrivateEntityVersion | 11 | PublishingPending | Bit | 1 | Ν | Ν | Ν |
| dbo | PrivatePropertyValue | 1 | Id | UniqueIdentifier | 16 | Ν | Y | Ν |
| dbo | PrivatePropertyValue | 2 | EntityId | BigInt | 8 | Ν | Y | Y |
| dbo | PrivatePropertyValue | 3 | Value | NVarCharMax | -1 | Ν | Ν | Ν |
| dbo | PropertyValue | 1 | Id | UniqueIdentifier | 16 | Ν | Y | Ν |
| dbo | PropertyValue | 2 | EntityVersion | BigInt | 8 | Ν | Y | Y |
| dbo | PropertyValue | 3 | Value | NVarCharMax | -1 | Ν | Ν | Ν |
| dbo | PropertyValue | 4 | EntityId | BigInt | 8 | Ν | Y | Y |
| dbo | PublicStatePropertyValue | 1 | Id | UniqueIdentifier | 16 | Ν | Y | Ν |
| dbo | PublicStatePropertyValue | 2 | PublicStateId | BigInt | 8 | Ν | Y | Y |
| dbo | PublicStatePropertyValue | 3 | PublicStateVersion | BigInt | 8 | Ν | Y | Y |
| dbo | PublicStatePropertyValue | 4 | Value | NVarCharMax | -1 | Ν | Ν | Ν |



| Schema | Table | Number | Column | Data Type | Size | Nullable | IsPrimaryKey | IsForeignKey |
|--------|--------------------------|--------|--------------------------|------------------|------|----------|--------------|--------------|
| dbo | PublicStatePropertyValue | 5 | Attributes | Int | 4 | Ν | Ν | Ν |
| dbo | PublicStateVersion | 1 | Id | BigInt | 8 | Ν | Y | Y |
| dbo | PublicStateVersion | 2 | Version | BigInt | 8 | Ν | Y | Ν |
| dbo | PublicStateVersion | 3 | Snapshot | BigInt | 8 | Ν | Ν | Ν |
| dbo | PublishingTicket | 1 | Id | BigInt | 8 | Ν | Y | Ν |
| dbo | PublishingTicket | 2 | HostName | NVarChar (256) | 256 | Ν | Ν | Ν |
| dbo | PublishingTicket | 3 | UserName | NVarChar (100) | 100 | Ν | Ν | Ν |
| dbo | PublishingTicket | 4 | CreateTime | DateTime | 8 | Ν | Ν | Ν |
| dbo | PublishingTicket | 5 | LastHeartbeat | DateTime | 8 | Ν | Ν | Ν |
| dbo | ReplicatedSnapshot | 1 | ReplicationStatusId | UniqueIdentifier | 16 | Ν | Y | Y |
| dbo | ReplicatedSnapshot | 2 | Snapshot | BigInt | 8 | Ν | Y | Ν |
| dbo | ReplicationStatus | 1 | Id | UniqueIdentifier | 16 | Ν | Y | Ν |
| dbo | ReplicationStatus | 2 | ReplicationSpecification | NVarCharMax | -1 | Ν | Ν | Ν |
| dbo | SnapshotIndex | 1 | Id | BigInt | 8 | Ν | Y | Y |



| Schema | Table | Number | Column | Data Type | Size | Nullable | IsPrimaryKey | IsForeignKey |
|--------|--------------------|--------|-----------------|------------------|------|----------|--------------|--------------|
| dbo | SnapshotIndex | 2 | Version | BigInt | 8 | Ν | Y | Y |
| dbo | SnapshotIndex | 3 | Snapshot | BigInt | 8 | Ν | Ν | Ν |
| dbo | SpaceldMapping | 1 | Storeld | Int | 4 | Ν | Y | Ν |
| dbo | SpaceldMapping | 2 | ConceptualId | UniqueIdentifier | 16 | Ν | Ν | Ν |
| dbo | SpaceLock | 1 | Spaceld | Int | 4 | Ν | Y | Y |
| dbo | SpaceLock | 2 | UserId | UniqueIdentifier | 16 | Ν | Ν | Ν |
| dbo | SpaceLock | 3 | LockTime | DateTime | 8 | Ν | Ν | Ν |
| dbo | SpaceLock | 4 | IsCompleteSpace | Bit | 1 | Ν | Y | Ν |
| dbo | SystemInformation | 1 | Id | NVarChar (200) | 200 | Ν | Y | Ν |
| dbo | SystemInformation | 2 | Value | NVarChar (4000) | 4000 | Ν | Ν | Ν |
| dbo | TransactionVersion | 1 | Name | NVarChar (10) | 10 | Ν | Y | Ν |
| dbo | TransactionVersion | 2 | Version | BigInt | 8 | Ν | Ν | Ν |
| dbo | Version | 1 | VersionNumber | BigInt | 8 | Ν | Y | Ν |
| dbo | Version | 2 | CreateTime | DateTime | 8 | Ν | Ν | Ν |



| Schema | Table | Number | Column | Data Type | Size | Nullable | IsPrimaryKey | IsForeignKey |
|--------|---------|--------|-------------|------------------|------|----------|--------------|--------------|
| dbo | Version | 3 | CreatorId | Uniqueldentifier | 16 | Ν | Ν | Ν |
| dbo | Version | 4 | CreatorName | NVarChar (100) | 100 | Ν | Ν | Ν |

Table 6.2: Data Dictionary Report Columns



7.3. DATA DICTIONARY REPORT - DATABASE DIAGRAM



Figure 6.3: Database Diagram



7.4. FACTON EVENT LOGS

| Log Name | Source | Level | Event ID | Task Category | Log Message | Instruction |
|-----------------------------|--------|-------|-------------|---------------|---|---|
| Facton-EPC- Common/Admin | Common | Error | 31 | AdminError | Could not publish Cost# sharp entity. [DETAILED INFORMATION] | Fix the issue shown in the detailed information of the message. |
| Facton-EPC- Common/Admin | Common | Error | 31 | AdminError | Asynchronously trying to get columns threw exception [EXCEPTION] | Can occur during the start of the applic- ation service but not during normal oper- ation of the applic- ation server, contact your FACTON support in this case. |
| Facton-EPC- Common/Admin | Common | Error | 31 | AdminError | An Exception occurred while trying to read from persistence [EXCEPTION] | Check your file sys- tem or access rights. |
| Facton-EPC- Common/Admin | Common | Error | 31 | AdminError | Could not persist Cost# entity [EXCEPTION] | Check availability of application services and database. |



| Log Name | Source | Level | Event ID | Task Category | Log Message | Instruction |
|-----------------------------|--------|---------|-------------|---------------|---|---|
| acton-EPC- Common/Admin | Common | Warning | 32 | AdminWarning | A configuration was registered already! | Please contact the FACTON support. |
| Facton-EPC- Common/Admin | Common | Warning | 32 | AdminWarning | Initial retry delay cannot be greater than total retry delay. Default values will be used. Initial:; Total: | Check and fix your issues in the Sys- temSettings.ini file. |
| Facton-EPC- Common/Admin | Common | Warning | 32 | AdminWarning | Caught exception while executing action. (Method declared in:) Retrying. Waiting ms [EXCEPTION] | Uncritical warning - no action required. |
| Facton-EPC- Common/Admin | Common | Warning | 32 | AdminWarning | Caught exception while executing action. (Method declared in:) Retrying [EXCEPTION] | Uncritical warning - no action required. |
| Facton-EPC- Common/Admin | Common | Warning | 32 | AdminWarning | Caught exception while executing action. (Method declared in:) Execution of action failed [EXCEPTION] | Uncritical warning - no action required. |
| Facton-EPC- Common/Admin | Common | Warning | 32 | AdminWarning | Caught exception while executing action. (Method declared in:) Retrying [EXCEPTION] | Uncritical warning - no action required. |



| Log Name | Source | Level | Event ID | Task Category | Log Message | Instruction |
|-----------------------------|--------|---------|-------------|---------------|---|--|
| Facton-EPC- Common/Admin | Common | Warning | 32 | AdminWarning | There was an error executing the optimized algorithm to recycle delegation entities. The user to set the delegate for: The delegates to set: | Uncritical warning - no action required. |
| Facton-EPC- Common/Admin | Common | Warning | 32 | AdminWarning | Could not check out Cost# entity. | The Cost# template is still checked out by another user. Wait until the other user has checked in. |
| Facton-EPC- Common/Admin | Common | Warning | 32 | AdminWarning | Errors in Cost# entity to activate: | Check and fix the Cost# template. |
| Facton-EPC- Common/Admin | Common | Warning | 32 | AdminWarning | Could not compile predicate part of rule. Errors: | Can be fixed by cor- recting or removing the query. |
| Facton-EPC- Common/Admin | Common | Warning | 32 | AdminWarning | Could not compile validation query for rule. Errors: | Can be fixed by cor- recting or removing the query. |
| Facton-EPC- | Common | Warning | 32 | AdminWarning | Could not find a rule factory for line: | Remove the integrity |



| Log Name | Source | Level | Event ID | Task Category | Log Message | Instruction |
|-----------------------------|--------|---------|-------------|---------------|---|---|
| Common/Admin | | | | | | rule causing the issue. |
| Facton-EPC- Common/Admin | Common | Warning | 32 | AdminWarning | Expecting 2 amounts of generation numbers instead of Using default. | Check and fix your issues in the Sys- temSettings.ini file. |
| Facton-EPC- Common/Admin | Common | Warning | 32 | AdminWarning | Wrong number of thresholds given. Using default. | Check and fix your issues in the Sys- temSettings.ini file. |
| Facton-EPC- Common/Admin | Common | Warning | 32 | AdminWarning | A replace operation on a filtered list is not properly supported. | Uncritical warning - no action required. |
| Facton-EPC- Common/Admin | Common | Warning | 32 | AdminWarning | A move operation on a filtered list is not prop- erly supported. | Uncritical warning - no action required. |
| Facton-EPC- Common/Admin | Common | Warning | 32 | AdminWarning | A replace operation on a sorted list is not properly supported. | Uncritical warning - no action required. |
| Facton-EPC- Common/Admin | Common | Warning | 32 | AdminWarning | A move operation on a sorted list is not sup- ported. | Uncritical warning - no action required. |
| Facton-EPC- | Common | Warning | 32 | AdminWarning | Binding was no WSHttpBindingBase as expec- | Might be temporary |



| Log Name | Source | Level | Event ID | Task Category | Log Message | Instruction |
|-----------------------------|--------|---------|-------------|---------------|--|--|
| Common/Admin | | | | | ted. | or can be fixed by checking the cli- ent/server com- munication configuration. |
| Facton-EPC- Common/Admin | Common | Warning | 32 | AdminWarning | There was an error sending a message. The error involves tokens. The server may not have accepted the public key thumbprint. | Might be temporary or can be fixed by checking the cli- ent/server com- munication configuration. |
| Facton-EPC- Common/Admin | Common | Warning | 32 | AdminWarning | The maximum number of communication retrys has been reached. | Might be temporary or can be fixed by checking the cli- ent/server com- munication configuration. |
| Facton-EPC- Common/Admin | Common | Warning | 32 | AdminWarning | An exception occurred while executing a request [EXCEPTION] | Might be temporary |



| Log Name | Source | Level | Event ID | Task Category | Log Message | Instruction |
|-----------------------------|--------|---------|-------------|---------------|--|--|
| | | | | | | or can be fixed by checking the cli- ent/server com- munication configuration. |
| Facton-EPC- Common/Admin | Common | Warning | 32 | AdminWarning | Possible HTTP Proxy Exception that did not have an HttpWebResponse as response [EXCEPTION] | Might be temporary or can be fixed by checking the cli- ent/server com- munication configuration. |
| Facton-EPC- Common/Admin | Common | Warning | 32 | AdminWarning | No basic proxy authentication credentials given by the user. | Uncritical warning - no action required. |
| Facton-EPC- Common/Admin | Common | Warning | 32 | AdminWarning | Trying to set default proxy credentials that are already set. | Uncritical warning - no action required. |
| Facton-EPC- Common/Admin | Common | Warning | 32 | AdminWarning | SingleOrDefault used in GetParentCollection() for entity: (). | Uncritical warning - no action required. |
| Facton-EPC- | Common | Warning | 32 | AdminWarning | Found duplicate entities from Entity Store in | Uncritical warning - |



| Log Name | Source | Level | Event ID | Task Category | Log Message | Instruction |
|-----------------------------|--------|---------|-------------|---------------|--|---|
| Common/Admin | | | | | partition, snapshot with ids ; | no action required. |
| Facton-EPC- Common/Admin | Common | Warning | 32 | AdminWarning | Shutting down. Now. | Uncritical warning - no action required. |
| Facton-EPC- Common/Admin | Common | Warning | 32 | AdminWarning | Shutting down on error. ExitCode: | Uncritical warning - no action required. |
| Facton-EPC- Common/Admin | Common | Warning | 32 | AdminWarning | Converting '' failed, because an attempt was made to divide by zero. | Contact your Master Data Configurator to fix the exchange rate definition. |
| Facton-EPC- Common/Admin | Common | Warning | 32 | AdminWarning | Converting '' to '' failed, because of: | No further action required. |
| Facton-EPC- Common/Admin | Common | Warning | 32 | AdminWarning | TransactionalPersist failed. Retrying the cur- rent persist operation. | Uncritical warning - no action required. |
| Facton-EPC- Common/Admin | Common | Warning | 32 | AdminWarning | Unexpected current version after save: Nex- tVersion: ActualNextVersion: | Uncritical warning - no action required. |
| Facton-EPC- Common/Admin | Common | Warning | 32 | AdminWarning | Concurrent transaction detected: Actual trans- action number is Last committed trans- | Uncritical warning - no action required. |



| Log Name | Source | Level | Event ID | Task Category | Log Message | Instruction |
|-----------------------------|--------|---------|-------------|---------------|--|---|
| | | | | | action number is | |
| Facton-EPC- Common/Admin | Common | Warning | 32 | AdminWarning | Publishing failed. There are too many parallel transactions. ErrorCode: MaxCon- currentPublishingOperationsExceeded | If this message occurs frequently this indicates there is a high publishing rate. Please check whether this is expected or whether the con- figured maximum count of parallel pub- lishing operations is correct. |
| Facton-EPC- Common/Admin | Common | Warning | 32 | AdminWarning | Publishing failed. There are too many parallel transactions. ErrorCode: InitialValidationTimeout | If this message occurs frequently this indicates there is a high publishing rate. Please check whether this is expected or whether the con- |



| Log Name | Source | Level | Event ID | Task Category | Log Message | Instruction |
|-----------------------------|--------|---------|-------------|---------------|---|--|
| | | | | | | figured initial val- idation timeout is correct. |
| Facton-EPC- Common/Admin | Common | Warning | 32 | AdminWarning | Publishing failed. There are too many parallel transactions. ErrorCode: MaxRetriesReached | This message indic- ates database con- nection problems or a timed out pub- lishing ticket. Please check whether the FACTON-Server has connection to the database or whether the configured pub- lishing ticket settings are correct. |
| Facton-EPC- Common/Admin | Common | Warning | 32 | AdminWarning | Check privileges failed: [DETAILED INFORMATION] | Uncritical warning - no action required. |
| Facton-EPC- Common/Admin | Common | Warning | 32 | AdminWarning | PersistChanges was called with no changed tar- gets to persist. | Uncritical warning - no action required. |



| Log Name | Source | Level | Event ID | Task Category | Log Message | Instruction |
|-----------------------------|--------|---------|-------------|---------------|---|---|
| Facton-EPC- Common/Admin | Common | Warning | 32 | AdminWarning | There was a problem converting the group: to an NTAccount. | Uncritical warning - no action required. |
| Facton-EPC- Common/Admin | Common | Warning | 32 | AdminWarning | Could not add claims to role. Role is not a predefined role. | Can be fixed by cor- recting the role assignments text. |
| Facton-EPC- Common/Admin | Common | Warning | 32 | AdminWarning | No log on permission found. | Uncritical warning - no action required. |
| Facton-EPC- Common/Admin | Common | Warning | 32 | AdminWarning | Could not read settings file: Reason: [EXCEPTION] | Check file system or access rights. |
| Facton-EPC- Common/Admin | Common | Warning | 32 | AdminWarning | Could not write file or create directory for: Exception: [EXCEPTION] | Check file system or access rights. |
| Facton-EPC- Common/Admin | Common | Warning | 32 | AdminWarning | The invalid character at setting-line has been removed. | Will be fixed auto- matically and does not require any action. |
| Facton-EPC- Common/Admin | Common | Warning | 32 | AdminWarning | The command line argument: was not recog- nized. | Check the command line parameters or |



| Log Name | Source | Level | Event ID | Task Category | Log Message | Instruction |
|-----------------------------|--------|---------|-------------|---------------|---|---|
| | | | | | | the settings file and remove the invalid line. |
| Facton-EPC- Common/Admin | Common | Warning | 32 | AdminWarning | Application.Current not set. This might be ok for tests. | Uncritical warning - no action required. |
| Facton-EPC- Common/Admin | Common | Warning | 32 | AdminWarning | Shutting down on error. ExitCode: | Uncritical warning - no action required. |
| Facton-EPC- Common/Admin | Common | Warning | 32 | AdminWarning | Caught metadata instantiation exception while parsing a unit: | No further action required. |
| Facton-EPC- Common/Admin | Common | Warning | 32 | AdminWarning | The current map was null. | Recover backup of database. If problem persists, contact FACTON support. |
| Facton-EPC- Common/Admin | Common | Warning | 32 | AdminWarning | Malformed XML in server Cost# map: | Recover backup of database. If problem persists, contact FACTON support. |



| Log Name | Source | Level | Event ID | Task Category | Log Message | Instruction |
|-----------------------------|--------|---------|-------------|--------------------------------|---|--|
| Facton-EPC- Common/Admin | Common | Warning | 32 | AdminWarning | Could not create performance counter Instance 'facton.infrastructure. distribution.serverhosts. wcfwindowsservice' already exists with a life- time of Process. It cannot be recreated or reused until it has been removed or until the process using it has exited | The specified per- formance counter will not be instan- tiated and thus can- not be monitored. (It is likely that this message is logged for every per- formance counter). Restart the service to fix this. When restart- ing the service, wait for the previous pro- cess to end before starting the service again to avoid this problem. |
| Facton-EPC- Common/Admin | Common | Warning | 101 | BlobWarning VirusScanFailed | The virus scan has failed. Please check the virus scanner as well as the configuration file. | Please check the virus scanner as well |



| Log Name | Source | Level | Event ID | Task Category | Log Message | Instruction |
|-----------------------------|--------|---------|-------------|---|---|---|
| | | | | NotFound | | as the configuration file. |
| Facton-EPC- Common/Admin | Common | Error | 102 | BlobError | The file uploaded by the Client contains a virus. It has not been stored in the database and it has been deleted from the quarantine folder. Please follow the instructions of your company corresponding to an infected file on a client. | Please follow the instructions of your company cor- responding to an infected file on a cli- ent. |
| Facton-EPC- Common/Admin | Common | Warning | 103 | BlobWarning VirusScanProgram NotFound | The program for the virus scan has not been found. Please check the installation directory of the virus scanner and adjust the con- figuration file where applicable. | Please check the installation directory of the virus scanner and adjust the con- figuration file where applicable. |
| Facton-EPC- Common/Admin | Common | Warning | 104 | BlobWarning VirusScanQuarantine DirectoryNotFound | The quarantine folder of the virus scanner "" has not been found. Please review the quar- antine folder of the virus scanner and adjust the configuration file where applicable. | Please review the quarantine folder of the virus scanner and adjust the con- figuration file where |



| Log Name | Source | Level | Event ID | Task Category | Log Message | Instruction |
|-----------------------------|--------|---------|-------------|--|--|---|
| | | | | | | applicable. |
| Facton-EPC- Common/Admin | Common | Error | 107 | VirusScan ConfigIncorrect | The virus scanner is not active because the con- figuration file is erroneous. Please check the configuration file. | Please check the con- figuration file. |
| Facton-EPC- Common/Admin | Common | Error | 108 | VirusScanTimeout | The virus scanner has timed out. The file uploaded by the client has not been stored in the database. Please check the virus scanner and adjust the configuration file, if necessary. | Please check the virus scanner and adjust the con- figuration file, if necessary. |
| Facton-EPC- Common/Admin | Common | Warning | 200 | Metadata DynamicIndex FillLevelWarning | The dynamic index cache is half-full. Please contact support. | Please contact the FACTON support. |
| Facton-EPC- Common/Admin | Common | Warning | 300 | PerformanceCounter InstallationFailed | Unable to install the performance counters. To install them run this application with admin-istrator privileges once. | To install them run this application with administrator priv- ileges once. |
| Facton-EPC- Common/Admin | Common | Error | 400 | InternalServerError | An unhandled exception has occurred in your | Please contact the FACTON support. |



| Log Name | Source | Level | Event ID | Task Category | Log Message | Instruction |
|---------------------------------|--------|---------|-------------|----------------------------------|---|---|
| | | | | | application server. Please contact support. Exception detail information: Correlation Id: Exception type: Exception message: | |
| Facton-EPC- Core/Operational | Core | Warning | 200 | InvalidNumber SettingInRange | The configured value '' for the setting '' is not valid. The value must be in the range of <>. The default value '' is used instead. Please contact the solution configurator. | Check setting in Sys- temSettings.ini for FACTON Server. |
| Facton-EPC- Data/Admin | Data | Warning | 108 | IndexFragmentation Rebuild | Index '' on table '' has a fragmentation of percent. Rebuild required. | The database should be rebuilt. Please contact your data- base administrator. |
| Facton-EPC- Data/Admin | Data | Warning | 109 | IndexFragmentation Reorganize | Index '' on table '' has a fragmentation of percent. Reorganization required. | The database should be reorganized. Please contact your database admin- istrator. |



| Log Name | Source | Level | Event ID | Task Category | Log Message | Instruction |
|---------------------------|--------|---------|-------------|--|--|--|
| Facton-EPC- Data/Admin | Data | Error | 110 | DuplicateId Detected | Duplicate id detected: Please contact support. | Please contact the FACTON support. |
| Facton-EPC- Data/Admin | Data | Error | 111 | EntityDefinition OfEntitiesChanged | Entity definition (EntityType, SignatureId, SpaceId) was changed in history of the entities: Please contact support. | Please contact the FACTON support. |
| Facton-EPC- Data/Admin | Data | Warning | 113 | IdMapping Preloading NotPossible CacheMissing | Preloading id mapping is not possible because no id mapping cache is registered at the context. Activate id mapping cache and restart application. | Activate id mapping cache and restart application. |
| Facton-EPC- Data/Admin | Data | Warning | 114 | UnknownSignature | Could not convert to entity state. The signature is not registered. (Entity-Id:, Entity-Type:, Signature-Id:). This could be caused by changing the configuration. Please contact the solution configurator. | Please contact the FACTON con- figurator. |
| Facton-EPC- Data/Admin | Data | Warning | 115 | UnknownEntityType | Could not convert to entity state. The entity type is not registered. (Entity-Id:, Entity- Type:, Signature-Id:). This could be caused by changing the configuration. Please | Please contact the FACTON con- figurator. |



| Log Name | Source | Level | Event ID | Task Category | Log Message | Instruction |
|---------------------------|--------|---------|-------------|--|---|---|
| | | | | | contact the solution configurator. | |
| Facton-EPC- Data/Admin | Data | Warning | 116 | UnknownProperty | Property with Id exists in database but not in current metadata. It will ignored. This could be caused by changing the configuration. Please contact the solution configurator. | Please contact the FACTON con- figurator. |
| Facton-EPC- Data/Admin | Data | Error | 117 | Database ConnectionFailed | The connection to your database is failed. Please check the connection settings to your database and the database access. | Please check the con- nection settings to your database and the database access. |
| Facton-EPC- Data/Admin | Data | Error | 118 | IndexMissing | The index '' on the table '' is missing. Please contact support. | Please contact the FACTON support. |
| Facton-EPC- Data/Admin | Data | Error | 127 | Predefined Mapping HasWrongIndex | Predefined mapping, which is part of database table '', is mapped to the wrong index. This can have a negative impact on the per- formance of the system. Please contact support. Further information: Mapped con- ceptual value: Expected store id: Actual store id: | Please contact the FACTON support. |



| Log Name | Source | Level | Event ID | Task Category | Log Message | Instruction |
|---------------------------|--------|-------|-------------|---|---|--|
| Facton-EPC- Data/Admin | Data | Error | 128 | Invalid TransactionVersion | The transaction version does not have a cor- responding version entry. Please contact support. | Please contact the FACTON support. |
| Facton-EPC- Data/Admin | Data | Error | 129 | ReleaseAll EntityLocks ExceptLimitReached | The user with the id '' has attempted to release all single locks except locks which exceeds the limit of locks. No locks have been released. To release the locks, the user with the id '' is required to publish or discard his changes and then release all locks manu- ally. To obtain the user name run the following FQL query: SELECT FactonUserName FROM TYPE Fac- tonUser, SPACE SYSTEM WHERE _Id="" | Please run the FQL query of the log message to obtain the name of the user who is required to publish or discard the changes and con- tact this user. |
| Facton-EPC- Data/Admin | Data | Error | 130 | ReleaseAllSpace LocksExcept LimitReached | The user with the id '' has attempted to release all space locks except locks which exceeds the limit of locks. No locks have been released. To release the locks, the user with the id '' is required to publish or discard | Please run the FQL query of the log message to obtain the name of the user who is required to |



| Log Name | Source | Level | Event ID | Task Category | Log Message | Instruction |
|---------------------------|--------|-------|-------------|--|--|---|
| | | | | | his changes and then release all locks manu- ally. To obtain the user name run the following FQL query: SELECT FactonUserName FROM TYPE Fac- tonUser, SPACE SYSTEM WHERE _Id="" | publish or discard the changes and con- tact this user. |
| Facton-EPC- Data/Admin | Data | Error | 131 | HostNameLength Exceeded | The host name '' exceeds the size of and will be truncated. Please contact support. | Please contact the FACTON support. |
| Facton-EPC- Data/Admin | Data | Error | 133 | Purging CutoffDate HasNotBeenDefined | Purging cut-off date has not been defined. | Specify cut-off date system setting. |
| Facton-EPC- Data/Admin | Data | Error | 134 | CannotParse PurgingCutoffDate | Cannot parse purging cut-off date. | Specify a cut-off date using the format 'yyyy-MM-dd' or as UTC time using ISO 8610. |
| Facton-EPC- Data/Admin | Data | Error | 135 | CutoffDateMust UtcOrOffsetOfUtc | The purging cut-off date must be defined as UTC or as offset of UTC. | Use UTC or offset of UTC. |



| Log Name | Source | Level | Event ID | Task Category | Log Message | Instruction |
|---------------------------|--------|---------------|-------------|---|--|---|
| Facton-EPC- Data/Admin | Data | Error | 136 | CannotFind Snapshot ForCutoffDate | Cannot find any snapshot for specified cut-off date. | Define another cut- off date or contact FACTON support. |
| Facton-EPC- Data/Admin | Data | Error | 137 | CutoffDateInIs RangeThatHasBeen AlreadyPurged | The specified cut-off date is in a range that has been already purged. | Specify a valid cut- off date. |
| Facton-EPC- Data/Admin | Data | Error | 138 | CannotCreate PurgeResultFile | Cannot create purge result file. | Please ensure that you have write priv- ileges on your local application dir- ectory. |
| Facton-EPC- Data/Admin | Data | Informational | 139 | PurgeResult FileHasBeenWritten | The purge result has been written. | |
| Facton-EPC- Data/Admin | Data | Informational | 140 | PurgingStarted | The purging operation has started. | |
| Facton-EPC- Data/Admin | Data | Informational | 141 | PurgingFinished | The purging operation has finished. | |



| Log Name | Source | Level | Event ID | Task Category | Log Message | Instruction |
|---|----------|---------|-------------|-------------------------------|--|--|
| Facton-EPC- Domain/Operational | Domain | Warning | 100 | CostSharp FreezingDisabled | Cost# freezing is disabled. Please contact support. | Please contact the FACTON support. |
| Facton-EPC- Entities/Admin | Entities | Error | 400 | NoDiskSpace Available | No more disk space available - get more disk space. | Get more disk space. |
| Facton-EPC- Entities/Admin | Entities | Error | 401 | NoWriteAccess | Could not write to application directory check file system or access rights. | Check file system or access rights. |
| Facton-EPC- Entities/Admin | Entities | Error | 402 | ErrorInaccessibleFile | Could not access file check if file is in use by another process, or contact your support. | Check if the file is in use by another pro- cess, or contact your FACTON support. |
| Facton-EPC- Entities/Admin | Entities | Error | 406 | NoReadAccess | Could not read file or directory check file system or access rights. | Check file system or access rights. |
| Facton-EPC- Entities/ Operational | Entities | Warning | 200 | PrefetchingDisabled | The prefetching is disabled. Thus the loading of some data may take longer. For more information, please contact your system admin- istrator. | Please contact the FACTON admin- istrator. |
| Facton-EPC- | Entities | Warning | 203 | Start | The start of the prefetching in snapshot | Please contact the |



| Log Name | Source | Level | Event ID | Task Category | Log Message | Instruction |
|---|----------|---------|-------------|-----------------------------------|--|---|
| Entities/ Operational | | | | PrefetchingFailed | failed (Reason: ''). | FACTON support. |
| Facton-EPC- Entities/ Operational | Entities | Warning | 204 | Prefetching SnapshotConfigured | The configured snapshot is used for prefetch- ing. This should only be used on a test system to generate Column Caching data for another system. Otherwise it is a configuration error. Please contact the solution configurator. | Check setting in Sys- temSettings.ini for FACTON Server. |
| Facton-EPC- Entities/ Operational | Entities | Warning | 300 | Publishing TicketTimeout | The publishing ticket on machine '' of user '' has timed out. It has last been refreshed at (UTC) and as a consequence reached the timeout of seconds. Check that the Application Service on machine '' is still running and has a connection to the database or whether the configured timeout value is large enough. | Check that the FACTON-Server on machine '' is still running and has a connection to the database or whether the configured timeout value is large enough. |
| Facton-EPC- Entities/ Operational | Entities | Warning | 301 | PublishingTimeout | A publishing request on machine '' by user '' has exceeded the maximum duration of | Check whether the frequency of pub- |



| Log Name | Source | Level | Event ID | Task Category | Log Message | Instruction |
|---|--------------|---------|-------------|---------------------------|--|--|
| | | | | | seconds. Check whether the frequency of publishing requests can be decreased or whether the con- figured publishing timeout should be increased. | lishing requests can be decreased or whether the con- figured publishing timeout should be increased. |
| Facton-EPC- Entities/ Operational | Entities | Warning | 403 | Warn InaccessibleFile | File is currently being accessed by another process. | Check if the file is in use by another pro- cess, or contact your FACTON support. |
| Facton-EPC- Entities/ Operational | Entities | Warning | 405 | CorruptedFile | File is corrupt and will be deleted. | Uncritical warning - no action required. |
| Facton-EPC- Entities/ Operational | Entities | Warning | 800 | WarnQuery CompileError | Could not parse the defined query ''and will be ignored. Parsing errors: | Please contact the FACTON support. |
| Facton-Integration- DataExchange/ | DataExchange | Error | 103 | CostML ProcessFailed | The CostML-Process with ID '' failed with the following error: | Please contact the FACTON support. |



| Log Name | Source | Level | Event ID | Task Category | Log Message | Instruction |
|---|--------------|-------|-------------|--------------------|--|------------------------------------|
| Operational | | | | | | |
| Facton-Integration- DataExchange/ Operational | DataExchange | Error | 201 | OptionLoadingError | Error while loading the option with ScopeID | Please contact the FACTON support. |
| Facton-Integration- DataExchange/ Operational | DataExchange | Error | 202 | OptionParsingError | Error while parsing the option with ScopeID ''. Message: '' | Please contact the FACTON support. |

Table 6.4: FACTON Event Logs