

OPC UA .NET Standard SDK Release Notes

August 2023

| Version | Date | Release Note |
|---------|------------|--|
| V3.50.0 | 02.08.2023 | Integrates the new version of OPC UA .NET Standard Stack from OPC Foundation (NuGet package OPCFoundation.NetStandard.Opc.Ua - version 1.4.371.96) which includes: ·Fixes for the following cybersecurity vulnerabilities: CVE-2023-27321, CVE-2023-31048. ·Improve reverse connect functionality. ·Add partial support for asynchronous service calls. ·Sample code is available on github. |
| | | Bug fixes. OPC UA .NET Standard SDK Client Library: |
| | | Improve reverse connect functionality into a network environment and introduce a callback for a longer period detection. Bug fixes. |
| | | Note: SDK libraries are compiled using NuGet package OPCFoundation.NetStandard.Opc.Ua - version 1.4.371.96 . When using OPC UA .NET Standard SDK version 3.50 it is mandatory to use the same version of OPC UA .NET Standard Stack from OPC Foundation. |
| V3.40.0 | 17.03.2023 | Integrates the new version of OPC UA .NET Standard Stack from OPC Foundation (NuGet package OPCFoundation.NetStandard.Opc.Ua - version 1.4.371.60) which includes: Implement a prevention mechanism against brute forcing passwords. Improve the connect timeout of the first session created. Sample code is available on github. |
| | | - OPC UA .NET Standard SDK Server Library: |
| | | The server library offers the possibility to configure a mechanism for stopping brute force client attempts to log in with invalid credentials. Bug fixes. |
| | | - OPC UA .NET Standard SDK Client Library: |
| | | Bug fixes. |
| | | Note: SDK libraries are compiled using NuGet package OPCFoundation.NetStandard.Opc.Ua - version 1.4.371.60 . When using OPC UA .NET Standard SDK version 3.40 it is mandatory to use the same version of OPC UA .NET Standard Stack from OPC Foundation. |

| V3.30.0 | 14.12.2022 | · Integrates the new version of OPC UA .NET Standard Stack from OPC Foundation (NuGet package OPCFoundation.NetStandard.Opc.Ua - version 1.4.370.12) which includes: |
|---------|------------|---|
| | | The fix for the following cybersecurity vulnerability: CVE-2022-33916. As a consequence of this fix the SampleServer DiagnosticsSummary information was changed. In order to be able to see the entire information from the ServerDiagnosticsSummary node (the SubscriptionDiagnosticsArray and all the SessionDiagnosticsObject instances) the current session must have SysAdmin rights and use an encrypted channel. The client must connect with user: admin, password: admin which has sysadmin privileges and use a secure encrypted channel to be able to see all diagnostics information. All other connections are considered "Unauthorized" and can examine only their session related information as written in the specification. |
| | | · OPC UA Server Compliance Certification. (CTT Version: 1.04.9.398) |
| | | - OPC UA .NET Standard SDK Server Library: |
| | | Implementation of Audit Events for all available services. SampleClient and SampleServer alarms changes. Bug fixes. |
| | | - OPC UA .NET Standard SDK Client Library: |
| | | Bug fixes. |
| | | Note: SDK libraries are compiled using NuGet package OPCFoundation.NetStandard.Opc.Ua - version 1.4.370.12. When using OPC UA .NET Standard SDK version 3.30 it is mandatory to use the same version of OPC UA .NET Standard Stack from OPC Foundation. |
| V3.20.0 | 04.08.2022 | Integrates the new version of OPC UA .NET Standard Stack from OPC Foundation (NuGet package OPCFoundation.NetStandard.Opc.Ua - version 1.4.369.30) which includes: The fixes for the following cybersecurity vulnerabilities: CVE-2022-29862, CVE-2022-29863, CVE-2022-29864, CVE-2022-29865, CVE-2022-29866. Improvements for Tracing and Logging described in The logging solution in Version 1.4.368. Added support for Windows 11 and Windows Server 2022. Removed support for .NET Core 2.1 SDK. Add support for Visual Studio 2022. HTTPS support of OPC UA .NET Standard Stack from OPC Foundation was tested and added as supported by the OPC UA .NET Standard SDK. Sample code is available on github. OPC UA .NET Standard SDK Server Library: The PubSub node manager from SampleServer was disabled by default. It can be easily enabled by uncommenting a line of code (see PubSub |
| | | Node Manager). |

| | | More alarm types were added to the SampleServer. Added sample implementation of a custom role (see Define And Use Custom Role) Bug fixes. OPC UA .NET Standard SDK Client Library: Added method UaApplication.CreateSessionCopy that will create a new session based on an existing connected session and it will also copy the custom data type information from the original object. New feature added for reusing the custom data type information loaded into a ClientSession across the entire life of that ClientSession. See ReuseCustomDataTypeInfoAtReconnect section for more details. The connect logic from ClientSession was reworked. ConnectAsync and Connect methods will return only after the custom data types are loaded as configured by DecodeCustomDataTypes and DecodeDataTypeDictionaries flags from ClientToolkitConfiguration. There is no need to wait until the flags that indicate if custom data types are loaded become true. The methods FetchDataDictionaries() and FetchDataTypeDefinitions() and all their variations were marked as obsolete since it is not recommended to be called from an already connected session while the session is receiving data change notifications. Bug fixes. |
|---------|------------|---|
| V3.10.0 | 08.03.2022 | OPC UA .NET Standard SDK Server Library: Handling of Variable node default values changed. When a new variable node is created using the Create methods from NodeManager, its value is not automatically initialized, it remains null, and the status code of the node is BadWaitingForInitialData. The first value assignment will reset the variable status code to Good. Bug fixes: |
| V3.00.0 | 26.11.2021 | The changes in PubSub Library from OPC UA .NET Standard Stack from OPC Foundation include Discovery Messages for JSON and UADP encodings and the implementation of KeyFrameCount that allows sending delta frames not only key frames for both: JSON and UADP encodings. The OPC UA .NET Standard SDK is also deployed as nuget packages on https://nuget.org. See section Nuget Packages for more details. |

- OPC UA .NET Standard SDK Server Library:

Breaking change:

- The IEncodeableFactory extension methods from OPC UA .NET Standard SDK Server Library have a new parameter of type Softing.Opc.Ua.Server.Types.Domain. This parameter allows the usage of both Server and Client libraries in the same application without custom data type implementation interfering from one domain to the other. The methods that have this new parameter are: GetComplexTypeInfo(), GetTypeTable().
- The ServerCertificateLifeTime property was added to ServerToolkitConfiguration to allow creating the server certificate with a custom lifetime.
- NodeManager class has two new protected methods that can be useful in creating unique Nodelds that have an uint Identifier:
 - GetLastUsedNodeldIdentifier(ushort namespaceIndex)
 - SetLastUsedNodeldIdentifier(ushort namespaceIndex, uint lastUsedIdentifier)

Bug fixes:

- The CreateObjectFromType method from NodeManager will preserve the NamespaceIndex of the BrowseNames for the child nodes that created based on object type definition. However, the node returned by this method will have the NamespaceIndex of current node manager.
- CreateObjectFromType was modified to allocate only the needed node ids and this may lead to different values for NodeId.Identifier if the node ids were generated using the default New() method from NodeManager class.

- OPC UA .NET Standard SDK Client Library:

Breaking changes:

- The API changes from OPC UA .NET Standard Stack from OPC Foundation requested some API changes in OPC UA .NET Standard SDK:
 - The ClientSession.Factory property type changed from Opc.Ua.EncodeableFactory to Opc.Ua.IEncodeableFactory.
 - The signature of Initialize method from BaseComplexTypeValue and all derived types changed to Initialize(IEncodeableFactory factory).
- The IEncodeableFactory extension methods from OPC UA .NET Standard SDK Client Library have a new parameter of type Softing.Opc.Ua.Client.Types.Domain. This parameter allows the usage of both Server and Client libraries in the same application without custom data type implementation interfering from one domain to the other. The methods that have this new parameter are: GetComplexTypeInfo(), GetTypeTable(). Two helper methods were added to the ClientSession: GetComplexTypeInfo() one with type id parameter and one with and type name.
- The ClientCertificateLifeTime property was added to ClientToolkitConfiguration to allow creating the client certificate with a custom lifetime.

| | | Bug fixes: The loading of custom data types was improved to avoid problems if a monitored item receives data events with instances of custom data types while the data type information is loading. While the data type information is loading the data notifications contain only the bytes not the decoded instance of StructuredValue. |
|---------|------------|---|
| V2.90.0 | 28.05.2021 | The PubSub Library was removed from the OPC UA .NET Standard SDK. The <i>PubSub</i> implementation is now part of OPC UA .NET Standard Stack from OPC Foundation and the <i>Publisher</i> and <i>Subscriber</i> sample applications were modified accordingly. • Note: PubSub Library from OPC UA .NET Standard Stack from OPC Foundation is currently in beta version because there will be breaking changes in future release. For applications developed with OPC UA .NET Standard SDK version 2.90 it is mandatory to add reference to OPCFoundation.NetStandard.Opc.Ua.PubSub - version 1.4.366.38-beta NuGet package. The <i>Publisher</i> and <i>Subscriber</i> sample applications were modified to include handling for the implementation of MQTT with JSON and UADP encoding that was recently added to OPC UA .NET Standard Stack from OPC Foundation. - OPC UA .NET Standard SDK Server Library: |
| | | The custom structure data type was extended to support fields that have the ValueRank greater than OneDimension. SampleServer project provides sample code for creating a structured value with TwoDimension fields and also it creates a Variable node that uses this data type for its value. In NodeManager class: The NodeManager.CreateDataType() method was modified to add also the Default XML encoding node for the newly created data type node. Note: This change is possible to shift node ids if they are created using the default New() method. The NodeManager.GetDefaultValueForDatatype() method can create values with ValueRank greater than OneDimension. Bug fixes. OPC UA .NET Standard SDK Client Library: The ClientSession.GetDefaultValueForDatatype() method can create values with ValueRank greater than OneDimension. Bug fixes. |
| | | SDK libraries are compiled using NuGet package OPCFoundation.NetStandard.Opc.Ua - version 1.4.366.38. When using OPC UA .NET Standard SDK version 2.90 it is mandatory to use the same version of OPC UA .NET Standard Stack from OPC Foundation. |
| V2.80.0 | 30.03.2021 | Integrates the new version of OPC UA .NET Standard Stack from OPC Foundation (NuGet package OPCFoundation.NetStandard.Opc.Ua - version 1.4.365.48) which includes: The fixes for the following cybersecurity vulnerabilities: CVE: 2021-27432, CVE: 2020-29457. |

| | | TranslateBrowsePathsToNodelds fix: In RelativePathElement objects the IncludeSubtypes should be ignored when the ReferenceTypeId is not specified. |
|---------|------------|--|
| | | - dataFEED OPC UA .NET Standard SDK Server Library: |
| | | In NodeManager class: The existing ReportEvent method became obsolete and a new version of ReportEvent method was created with a different set of parameters. SampleServer project was modified to reference the fine grained OPCFoundation.NetStandard.Opc.Ua.* nuget packages as described in |
| | | Reduce Server's Output Folder Size section. • Bug fixes. |
| | | - dataFEED OPC UA .NET Standard SDK Client Library: |
| | | |
| | | SampleClient project was modified to reference the fine grained OPCFoundation.NetStandard.Opc.Ua.* nuget packages as described in Reduce Client's Output Folder Size section. |
| | | Bug fixes |
| | | SDK libraries are compiled using NuGet package OPCFoundation.NetStandard.Opc.Ua - version 1.4.365.48. When using dataFEED OPC UA .NET Standard SDK version 2.80 it is mandatory to use the same version of OPC UA .NET Standard Stack from OPC Foundation. |
| V2.70.0 | 05.02.2021 | - dataFEED OPC UA .NET Standard SDK Server Library: |
| | | Include the Amendment OPC 10001-13: Ordered List. Import NodeSet2 XML sets the Parent node for nodes that have ParentNodeId property. The XamarinSampleServer target android version was upgraded to version 9.0 (Pie). Bug fixes. |
| | | - dataFEED OPC UA .NET Standard SDK Client Library: |
| | | Support for Register and Unregister Nodes. The XamarinSampleClient target android version was upgraded to version 9.0 (Pie). Bug fixes. |
| | | - dataFEED OPC UA .NET Standard SDK PubSub Library: |
| | | Bug fixes. |
| | | - Support for VisualStudio 2019. SDK libraries are compiled using NuGet package OPCFoundation.NetStandard.Opc.Ua - version 1.4.364.40. When using dataFEED OPC UA .NET Standard SDK version 2.70 it is important to use the same version of OPC UA .NET Standard Stack from OPC Foundation. |
| V2.60.0 | 16.10.2020 | - dataFEED OPC UA .NET Standard SDK Server Library: |
| | | Support for reverse connectivity. In NodeManager class: |
| | | - mmodelvariager class. |

The CreateObjectFromType() and CreateVariableFromType() methods were enhanced with an additional parameter (createOptionalProperties) that specifies if the properties that have optional modelling rule are instantiated when creating an object/variable. Note that the types from OPC UA .NET Standard Stack from OPC Foundation will not create optional properties. The ReportEvent method was enhanced to accept also the node id of the event type that will be reported. Bug fixes. - dataFEED OPC UA .NET Standard SDK Client Library: Support for reverse connectivity. Asynchronously methods added for Connect (ConnectAsync), Disconnect (DisconnectAsync), GetEndpoints (GetEndpointsAsync), DiscoverServers (DiscoverServersAsync) and DiscoverServersOnNetwork (DiscoverServersOnNetworkAsync). Bug fixes. - dataFEED OPC UA .NET Standard SDK PubSub Library: Bug fixes. SDK libraries are compiled using the NuGet package OPCFoundation.NetStandard.Opc.Ua - version 1.4.363.49. When using dataFEED OPC UA .NET Standard SDK version 2.60 it is important to use the same version of OPC UA .NET Standard Stack from OPC Foundation. - dataFEED OPC UA .NET Standard SDK Server Library: V2.50.0 09.07.2020 Internal support for AccessRestrictions, RolePermissions and UserRolePermissions attributes. Support for GDS and Push Management of application certificates and trust lists. Bug fixes. - dataFEED OPC UA .NET Standard SDK Client Library: Support for GDS and Pull Management of application certificates and trust lists. ReadNode method from ClientSession will not throw a ServiceResultException when the node is not found, but will return an instance of VariableNodeEx. Status codes for each attribute are available via GetStatusCode() method. Bug fixes. - dataFEED OPC UA .NET Standard SDK PubSub Library:

.NET Standard Stack from OPC Foundation .- Support for Visual Studio 2015 was removed.

- .NET Framework support updated to version 4.6.2 in accordance with OPC UA

Bug fixes.

| | 1 | |
|---------|------------|---|
| | | SDK libraries are compiled using NuGet package |
| | | OPCFoundation.NetStandard.Opc.Ua - version 1.4.362.42. When using dataFEED |
| | | OPC UA .NET Standard SDK version 2.50 it is important to use the same version of |
| | | OPC UA .NET Standard Stack from OPC Foundation. |
| V2.40.0 | 26.02.2020 | - dataFEED OPC UA .NET Standard SDK Server Library: |
| | | Support for creating custom DataType, VariableType and ObjectType nodes and instances |
| | | Extended support for complex data types: |
| | | Support for custom Structure, StructureWithOptionalFields, Union, Enumeration and OptionSet types. |
| | | Expose DataTypeDefinition attribute of DataType nodes to allow clients to read custom data types. |
| | | Enhanced ImportNodeSet functionality for reading the DataTypeDefinition attribute of DataType nodes. |
| | | Sample code for creating and handling custom types. |
| | | Support for creating custom variable and object types. |
| | | Bug fixes. |
| | | .NET Standard 1.4 support removed. |
| | | - dataFEED OPC UA .NET Standard SDK Client Library: |
| | | Extended support for complex data types: |
| | | Support for custom Structure, StructureWithOptionalFields, Union, |
| | | Enumeration and OptionSet types. |
| | | Load server custom data types by reading the <i>DataTypeDefinition</i> attribute |
| | | of DataType nodes for V1.04 servers. |
| | | Sample code for handling custom data types.Bug fixes |
| | | .NET Standard 1.4 support removed. |
| | | - dataFEED OPC UA .NET Standard SDK PubSub Library: |
| | | Bug fixes |
| | | SDK libraries are compiled using the NuGet package |
| | | OPCFoundation.NetStandard.Opc.Ua - version 1.4.359.31. When using dataFEED |
| | | OPC UA .NET Standard SDK version 2.40 it is important to use the same version of |
| | | OPC UA .NET Standard Stack from OPC Foundation. |
| V2.30.0 | 06.08.2019 | - dataFEED OPC UA .NET Standard SDK PubSub Library: |
| | | · Provides simplified API for configuring a PubSub application. |
| | | SampleServer provides a new dedicated node manager that uses dataFEED OPC |
| | | UA .NET Standard SDK PubSub Library and behaves like a Publisher and |
| | | Subscriber. |
| | | Implemented PubSubState State Machine. Implemented Unicost and Multipast communication for ORC UA UDB Transport. |
| | | Implemented Unicast and Multicast communication for <i>OPC UA UDP Transport Protocol.</i> |
| | | · Changes in licensing namespaces: |
| | | In version 2.20 the <i>PubSub</i> licensing classes were part of <i>Softing.Opc.Ua.Private</i> |
| | | 13131311 Eled the radous heerising classes were part of softling operoun nivate |
| | | namespace. Starting with version 2.30 the <i>PubSub</i> licensing classes are part of |
| | | namespace. Starting with version 2.30 the <i>PubSub</i> licensing classes are part of <i>Softing.Opc.Ua.PubSub</i> namespace. Please change your code to point to the new |

- dataFEED OPC UA .NET Standard SDK Server Library:

- · Bug fixes.
- · Changes in licensing namespaces:

In version 2.20 the *Server* licensing classes were part of *Softing.Opc.Ua.Private* namespace. Starting with version 2.30 the *Server* licensing classes are part of *Softing.Opc.Ua.Server* namespace. Please change your code to point to the new namespace.

- dataFEED OPC UA .NET Standard SDK Client Library:

- · Bug fixes.
- · Changes in licensing namespaces:

In version 2.20 the *Client* licensing classes were part of *Softing.Opc.Ua.Private* namespace. Starting with version 2.30 the *Client* licensing classes are part of *Softing.Opc.Ua.Client* namespace. Please change your code to point to the new namespace.

SDK libraries are compiled using NuGet package OPCFoundation.NetStandard.Opc.Ua - version 1.4.356.27. When using dataFEED OPC UA .NET Standard SDK version 2.30 it is important to use the same version of OPC UA .NET Standard Stack from OPC Foundation.

V2.20.0 | 15.05.2019

- The initial version of dataFEED OPC UA .NET Standard SDK PubSub Library:
 - Provides an API for simplified OPC UA Publisher and Subscriber development using UDP transport and binary encoded messages.
 - Provides SamplePublisher and SampleSubscriber projects that use the simplified API from dataFEED OPC UA .NET Standard SDK PubSub Library.

dataFEED OPC UA .NET Standard SDK Server Library:

- Enhanced ImportNodeSet functionality that allows instantiating data types loaded from dictionaries.
- New method GetDefaultValueForDatatype was added to NodeManager. It creates and returns the default value for the specified data type, including data types imported from NodeSet2 XML files.
- Added support for Aes256_Sha256_RsaPss security policy.

dataFEED OPC UA .NET Standard SDK Client Library:

 ClientSession.KeepAlive handling was moved on a separate thread to avoid possible deadlocks.

| V2.10.0 | 06.02.2019 | "Softing OPC UA .NET Standard Toolkit" was renamed to "dataFEED OPC UA .NET Standard SDK". OPC UA Server Compliance Certification. dataFEED OPC UA .NET Standard Server SDK Library: ○ Enhanced ImportNodeSet functionality that handles duplicate nodes. Added Export NodeSet functionality. ○ Added create instance from OPC UA type specified by NodeId functionality. Added sample code for file transfer. Added sample code for temporary file transfer. Added support for Aes128_Sha256_RsaOaep security policy. Removed Windows 8.1 support due to known security limitations |
|---------|------------|---|
| | | incompatible with dataFEED OPC UA .NET Standard SDK implementation. Properties marked as deprecated in ServerToolkitConfiguration. |
| | | |
| V2.00.0 | 31.07.2018 | Softing Client Toolkit Library: |
| | | DII name was changed from Softing.Opc.Ua.dII to Softing.Opc.Ua.Client.dII. Namespace changes: All entities from namespace Softing.Opc.Ua were moved to namespace Softing.Opc.Ua.Client (SecurityPolicy enum, ToolkitUtils and UaApplication classes) All entities from namespace Softing.Opc.Ua.Private were moved to Softing.Opc.Ua.Client.Private (License class and LicenseFeature enum) All entities from namespace Softing.Opc.Ua.Types were moved to Softing.Opc.Ua.Client.Types. ApplicationConfigurationEx class available in version 1.00 and 1.10 in namespace Softing.Opc.Ua was removed. We are using the ApplicationConfiguration class available in OPC UA .NET Standard Stack from OPC Foundation . A new configuration class ClientToolkitConfiguration was added to the Softing Client Toolkit Library, it is used as a configuration extension as described in Client configuration section. New method added to ClientSubscription class. ConditionRefresh method tells the server to refresh all conditions (alarms) being monitored by the subscription. |
| | | Softing Server Toolkit Library - initial version: |
| | | Provides an API for simplified server development. The Softing Server Toolkit Library offers a simplified approach for Data Access, Methods and Standard Event Subscriptions SampleServer and XamarinSampleServer are refactored to use the new Softing Server Toolkit Library (Softing.Opc.Ua.Server.dll). |
| V2.00.0 | 31.07.2018 | Softing Client Toolkit Library: DII name was changed from Softing.Opc.Ua.dll to Softing.Opc.Ua.Client.dll. Namespace changes: |

| | | All entities from namespace Softing.Opc.Ua were moved to namespace Softing.Opc.Ua.Client (SecurityPolicy enum, ToolkitUtils and UaApplication classes) |
|---------|------------|--|
| | | All entities from namespace Softing.Opc.Ua.Private were moved to Softing.Opc.Ua.Client.Private (License class and LicenseFeature enum) |
| | | All entities from namespace Softing.Opc.Ua.Types were moved to Softing.Opc.Ua.Client.Types. |
| | | ApplicationConfigurationEx class available in version 1.00 and 1.10 in namespace Softing.Opc.Ua was removed. We are using the ApplicationConfiguration class available in OPC UA .NET Standard Stack from OPC Foundation . A new configuration class ClientToolkitConfiguration was added to the Softing Client Toolkit Library, it is used as a configuration extension as described in Client configuration section. |
| | | New method added to ClientSubscription class. ConditionRefresh method tells the server to refresh all conditions (alarms) being monitored by the subscription. |
| | | Softing Server Toolkit Library - initial version: |
| | | Provides an API for simplified server development. The Softing Server Toolkit Library offers a simplified approach for Data Access, Methods and Standard Event Subscriptions SampleServer and XamarinSampleServer are refactored to use the new Softing Server Toolkit Library (Softing.Opc.Ua.Server.dll). |
| V1.10.0 | 13.04.2017 | Added support for Linux distributions. Ubuntu 16.04 and Debian 9.30. Added support for Android. Sample Client and Sample Server for Android implemented with Xamarin Forms were added in the samples folder. |
| V1.00.0 | 31.12.2017 | Initial Version |