

# OPC UA C++ SDK Release Notes

**June 2022**

Version	Date	Release Note
V6.00.0	09.06.2022	<p>New features:</p> <ul style="list-style-type: none"><li>• Use OPC UA Nodeset 1.05 for default address space.</li><li>• Support of Visual Studio 2022</li><li>• Windows Server 2022 Support</li><li>• Windows 11 Support</li><li>• RegisterServer2 support for Server applications</li><li>• Support of ResendData method</li><li>• Denial of repeated connect attempts</li><li>• Rework on license evaluation</li><li>• Update to OpenSSL 1.1.1o</li></ul> <p><b>Bug fixes:</b></p> <ul style="list-style-type: none"><li>• CVE-2022-1292 - command injection in OpenSSL</li><li>• Changed interface of Server::BaseNode::generateNodeIdForSubNode</li></ul>
V5.70.0	28.02.2022	<p><b>New features:</b></p> <ul style="list-style-type: none"><li>• Support of GDS for certificate management</li><li>• Option to send own instance certificate as chain</li><li>• PKIStoreConfiguration paths can be initialized via base path</li><li>• PKI store option to allow partial chains</li><li>• Store rejected certificate chain as separate files</li><li>• Update to OpenSSL 1.1.1m</li></ul> <p><b>Bug fixes:</b></p> <ul style="list-style-type: none"><li>• Application::createSelfSignedCertificate now stores private key in password protected PEM format</li><li>• CVE-2021-42262 - endless loop in case of malformed type dictionary</li><li>• CVE-2021-3451 - update to libxml2 2.9.11</li><li>• CVE-2021-42577, CVE-2021-45117 - a possible crash in UA client communication</li></ul>
V5.66.1	06.09.2021	<p><b>New features:</b></p> <ul style="list-style-type: none"><li>• Structured data types support fields containing matrix values</li></ul> <p><b>Bug fixes:</b></p> <ul style="list-style-type: none"><li>• PubSub does not work for Unicast</li><li>• Fix delayed republish when detected on KeepAlive message</li><li>• CVE-2021-40873 - a possible crash in UA server communication</li><li>• CVE-2021-40871 - a possible crash in UA client communication</li></ul>
V5.66.0	21.07.2021	<p><b>New features:</b></p> <ul style="list-style-type: none"><li>• Support of reverse connect</li><li>• Support of unions</li><li>• Update to OpenSSL 1.1.1k</li><li>• Discontinued support for writing DataTypeDefinition attribute</li></ul> <p><b>Bug fixes:</b></p> <ul style="list-style-type: none"><li>• Changed behaviour of init()</li><li>• Fixed a rare issue with a missing notification during Client::Session connect and reconnect.</li><li>• Fixed encoding / decoding of structure fields using fixed length array</li></ul>

		<ul style="list-style-type: none"> <li>Fixed security checks for client session not needing security</li> <li>Fixed Client::Session::updateDataTypes for large number of data types</li> </ul>
V5.65.0	16.03.2021	<p><b>New features:</b></p> <ul style="list-style-type: none"> <li>Improved access to array members of data type classes</li> <li>Update to OpenSSL 1.1.1i</li> <li>Support for Decimal Data Type</li> </ul> <p><b>Bug fixes:</b></p> <ul style="list-style-type: none"> <li>Changed behaviour of inserting nodes into address space</li> <li>Changed behaviour of Server::BaseNode::init</li> <li>Fixed possible crash in recursive invocation of BaseNode::removeTree()</li> <li>Fixed vulnerability CVE-2021-32994 (missing type checks for decoding various PubSub data types)</li> </ul>
V5.64.0	06.10.2020	<p><b>New features:</b></p> <ul style="list-style-type: none"> <li>Support Role Permissions</li> <li>Discontinued support for Visual Studio 2010</li> <li>Convenience function to configure Client::Session</li> </ul>
V5.63.0	04.06.2020	<p><b>New features:</b></p> <ul style="list-style-type: none"> <li>Support for Visual Studio 2019</li> <li>Update to OpenSSL 1.1.1g</li> <li>Configurable discovery URL</li> <li>Interface changes for host name resolution</li> <li>Configurable operation limits</li> <li>Added support for ARMv7, reduced Linux installer size</li> </ul> <p><b>Bug fixes:</b></p> <ul style="list-style-type: none"> <li>Corrected problems related to Nodeset2 import/export.</li> <li>Trace enabled by default in all samples and tutorials.</li> <li>Fix error handling on client side when republishing is enabled.</li> <li>Corrected FileDirectory::addFile() to support files &gt; 2GB.</li> </ul>
V5.62.1	09.04.2020	<p><b>Bug fixes:</b></p> <ul style="list-style-type: none"> <li>Fixed documentation issues.</li> </ul>
V5.62.0	26.02.2020	<p><b>New features:</b></p> <ul style="list-style-type: none"> <li>Support of Attribute DataTypeDefinition</li> <li>Support of Structures with Optional Fields</li> <li>Support of OptionSet data type</li> <li>Support for Application Configuration Files</li> <li>Control the Initialization and Deinitialization of Libxml2 via loadToolbox()</li> <li>Validation of CVE-2019-19135 Method "disableSecurityChecks" replaces "ignoreMantis4545" and "ignoreMissingNonce"</li> </ul>
V5.61.0	06.11.2019	<p><b>New Features:</b></p> <ul style="list-style-type: none"> <li>Support of delta frames on publishing</li> <li>Support for FileDirectory object type</li> </ul> <p><b>Bug fixes:</b></p> <ul style="list-style-type: none"> <li>Fixed missing notifications in Application::handleMonitoingChange</li> <li>Missing bad status code if Client::Session did not connect</li> <li>Fix in Client::Session::getCustomDataTypesds</li> </ul>

		<ul style="list-style-type: none"> <li>• Fixed a missing publish response in case of session reconnect</li> <li>• Various bugs in PubSub implementation</li> <li>• Correct handling of NaN for floating point values</li> </ul>
V5.60.0	08.08.2019	<p><b>New Features:</b></p> <ul style="list-style-type: none"> <li>• Samples for PubSub applications</li> <li>• Support exposing of PubSub configuration in address space</li> <li>• Support to request and get PubSub MetaData information</li> <li>• Allow to Identify the source of PubSub subscribed data</li> <li>• Workaround for non-compliant UA applications</li> </ul> <p><b>Bug fixes:</b></p> <ul style="list-style-type: none"> <li>• Various bugs in PubSub implementation</li> <li>• Minor bugs in Nodeset2 XML import</li> </ul>
V5.59.0	15.05.2019	<p><b>New Features:</b></p> <ul style="list-style-type: none"> <li>• Support for Publisher and Subscriber based on UDP</li> </ul> <p><b>Bug fixes:</b></p> <ul style="list-style-type: none"> <li>• Correct handling of EnumRequestState_Pending in transaction classes</li> </ul>
V5.58.0	29.01.2019	<p><b>New Features:</b></p> <ul style="list-style-type: none"> <li>• Update to OpenSSL 1.1.1a</li> <li>• Endpoint can use PKI store configuration for user validation</li> <li>• Self-signed certificates can be created during runtime</li> <li>• New license keys</li> </ul> <p><b>Bug fixes:</b></p> <ul style="list-style-type: none"> <li>• Client::Session does not return from connect() or disconnect() under rare conditions with multiple sessions</li> <li>• Methods at types can be invoked without explicit HasComponent reference between object instance and method</li> </ul>
V5.57.0	06.11.2018	<p><b>New Features:</b></p> <ul style="list-style-type: none"> <li>• Generic validation of input arguments</li> <li>• Support of FileType</li> <li>• Samples for custom data types</li> <li>• New installer for Linux, Windows and VxWorks</li> <li>• Updated to OpenSSL version 1.1.0i</li> </ul> <p><b>Bug fixes:</b></p> <ul style="list-style-type: none"> <li>• Access pattern can be modified during runtime</li> <li>• Memory leak in rare conditions of parallel access</li> <li>• Minor bugs in client support of structured data types</li> <li>• CVE-2018-12087 See <a href="https://opcfoundation-onlineapplications.org/faq/SecurityBulletins/OPC_Foundation_Security_Bulletin_CVE-2018-12087.pdf">https://opcfoundation-onlineapplications.org/faq/SecurityBulletins/OPC_Foundation_Security_Bulletin_CVE-2018-12087.pdf</a></li> </ul>
V5.56.0	07.08.2018	<p><b>New Features:</b></p> <ul style="list-style-type: none"> <li>• Client support of custom data types</li> <li>• XML import creates custom data types</li> </ul>
V5.54.0	15.05.2018	<p><b>New Features:</b></p> <ul style="list-style-type: none"> <li>• Certificate Change Callback</li> <li>• Specific PKI store configuration for client sessions and server endpoints</li> </ul>

		<ul style="list-style-type: none"> <li>• Updated to OpenSSL version 1.0.2o</li> <li>• Windows Server 2016 Support</li> </ul> <p><b>Bug-fixes and optimizations as customer feedback</b></p>
V5.53.2	11.08.2017	<p><b>Bug fixes:</b></p> <ul style="list-style-type: none"> <li>• Clients based on .NET stack failed to connect.</li> <li>• <b>CVE 2018-12086</b> See <a href="https://opcfoundation-onlineapplications.org/faq/SecurityBulletins/OPC_Foundation_Security_Bulletin_CVE-2018-12086.pdf">https://opcfoundation-onlineapplications.org/faq/SecurityBulletins/OPC_Foundation_Security_Bulletin_CVE-2018-12086.pdf</a></li> </ul>
V5.53.0	21.06.2017	<p><b>New Features:</b></p> <ul style="list-style-type: none"> <li>• Support of multi-dimensional arrays</li> <li>• Visual Studio 2017 project and solution files</li> <li>• Importing NodeSet2 XML works also when comments are included</li> <li>• Updated to OpenSSL version 1.0.2k</li> <li>• For Linux: Support for linking the Toolkit as a shared library</li> </ul> <p><b>Bug-fixes and optimizations as customer feedback</b></p>
V5.52.0	30.09.2016	<p><b>New Features:</b></p> <ul style="list-style-type: none"> <li>• IPV6 support for Windows and Linux versions</li> <li>• TranslateBrowsePathToNodeIds extended to find more than one NodeId</li> <li>• NodeSet Import adaptation to use OPC UA 1.03 schema</li> </ul> <p><b>Bug-fixes and optimizations as customer feedback</b></p>
V5.51.0	03.08.2016	<p><b>New Features:</b></p> <ul style="list-style-type: none"> <li>• MultiStateValueDiscreteType as described in part 8, chapter 5.3.3.4 of the OPC UA specification is now supported.</li> <li>• Model designer server backend component extended to export “virtual” nodes, nodes defined and served at application level only.</li> </ul>
V5.50.0	02.05.2016	<p><b>New Features:</b></p> <ul style="list-style-type: none"> <li>• Address Space Model Designer Interface added – UA compatible interface</li> <li>• NodeSet2 compatible files Import and Export capabilities added to Address Space Designer interface</li> <li>• Windows 10 Support</li> <li>• Basic256Sha256 security policy added</li> <li>• Server asynchronous service handling extended with subscriptions and session management services.</li> <li>• Use monotonic clock to calculate sampling and publishing interval</li> <li>• Client subscription can connect a list of monitored items</li> <li>• VxWorks 7 compatibility extensions added</li> <li>• Open SSL updated to 1.0.1s</li> <li>• Linux build scripts extended for cross compiling and share objects support</li> </ul>
V5.41.1	27.10.2015	<p><b>New features:</b></p> <ul style="list-style-type: none"> <li>• Support of asynchronous handling for deleting sessions</li> <li>• Visual Studio 2015 project and solution files</li> </ul>

		<ul style="list-style-type: none"> <li>• Support for VxWorks 7.0</li> <li>• Updated to OpenSSL version 1.0.1p</li> </ul> <p><b>Bug-fixes and optimizations as customer feedback</b></p>
V5.41.0	04.09.2015	<p><b>New features:</b></p> <ul style="list-style-type: none"> <li>• Support of user-defined enumerations (server only)</li> <li>• Support of asynchronous handling for deleting subscription</li> <li>• HTTPS as transport layer for OPC UA</li> </ul>
V5.40.0	15.07.2015	<p><b>New Features:</b></p> <ul style="list-style-type: none"> <li>• Address space modelling: Server is now capable to export it's address space into an NodeSet2 XML file</li> <li>• Visual Studio 2013 support</li> <li>• Secure Channel sharing for Client::Sessions – Multiple sessions between one client and a server shares now the same Secure Channel respective TCP/IP resources.</li> <li>• Tracing (logging) mechanism was extended with the option of the application to hook in and receive the toolkit internally generated trace mechanism</li> </ul>
V5.36.1	04.03.2015	<p><b>OPC Foundation Lab certified version – Server for Linux</b></p> <p><b>Bug fixes</b></p> <ul style="list-style-type: none"> <li>• Adaptions and bug fixes for OPC UA 1.02 compliance</li> </ul>
V5.36.0	19.12.2014	<p><b>New Features</b></p> <ul style="list-style-type: none"> <li>• Server Endpoint Binding: the toolkit now supports restriction of a servers endpoint to a single IP interface.</li> <li>• Server Address Space Import: The import of address space via NodeSet2 XML files now supports extensions within the XML file.</li> <li>• Server Queuing Mechanism for Monitored Items changes: The monitored items at server store changed values in a queue for reporting to client. Only one value shall be stored for a sampling interval. In former toolkit versions the timestamp used for this comparison was the actual system time in the server; now the server timestamp of the DataValue is used for this calculation.</li> </ul>
V5.35.0	03.11.2014	<p><b>New Features</b></p> <ul style="list-style-type: none"> <li>• Support of custom structured data type for servers</li> </ul> <p><b>Licensing</b></p> <ul style="list-style-type: none"> <li>• The toolkit licensing model extended to source code</li> </ul>
V5.30.2	19.09.2014	<p><b>New Features:</b></p> <ul style="list-style-type: none"> <li>• Updated to OpenSSL version 1.0.0m</li> <li>• isCancelled method now detects timed out transactions and requests</li> </ul>
V5.30.1	10.04.2014	<p><b>New Features:</b></p> <ul style="list-style-type: none"> <li>• Support for native 64 Bit applications on Linux</li> <li>• Support for asynchronous create, modify and delete for Monitored Items</li> </ul>
V5.30.0	21.02.2014	<p><b>New features:</b></p> <ul style="list-style-type: none"> <li>• Support for native 64 Bit applications on Windows</li> </ul>

		<ul style="list-style-type: none"> <li>• Import nodes to a server using a NodeSet2 XML file</li> <li>• Address space validation to OPC UA conformance for servers</li> <li>• Custom handling of Browse and TranslateBrowsePathToNodeid on servers</li> <li>• Redundancy support for clients for working with redundant servers</li> </ul>
V5.21.2	01.07.2013	<p><b>New features:</b></p> <ul style="list-style-type: none"> <li>• Linux versions now deliver static OpenSSL 0.9.8 library</li> </ul> <p><b>Bug fixes:</b></p> <ul style="list-style-type: none"> <li>• Set an empty string array to a value does not work</li> </ul>
V5.21.1	07.03.2013	<p><b>Bug fixes:</b></p> <ul style="list-style-type: none"> <li>• Diagnostic nodes are not always removed when disabling diagnostic</li> <li>• Problems retrieving values of type Duration and UtcTime</li> <li>• Crash in server in case of calling RefreshSubscription with an invalid subscription ID</li> </ul>
V5.21.0	17.01.2013	<p><b>New Client and Server Features:</b></p> <ul style="list-style-type: none"> <li>• Support for HistoryRead Services</li> <li>• Support for Query Services</li> <li>• Support for Cancel Service</li> <li>• Support for Node Registration Services</li> <li>• Authentication with WS-Security Tokens</li> <li>• General fixes and performance optimization</li> </ul> <p><b>New Client Features</b></p> <ul style="list-style-type: none"> <li>• Auto-Reconnect</li> <li>• Connection Watchdog</li> </ul> <p><b>New Server Features</b></p> <ul style="list-style-type: none"> <li>• Support for Disabling Services</li> <li>• Data Access Server Facet</li> <li>• Condition Branches</li> <li>• Server Diagnostics</li> <li>• Language Support</li> <li>• Support for SemanticChange events</li> <li>• Support for ModelChange events</li> <li>• Bulk Access to Cached Data Values</li> <li>• Initial Values of Subscriptions</li> </ul> <p><b>Notes</b></p> <ul style="list-style-type: none"> <li>• Source code version is available as Client &amp; Server bundle in 3 flavors: Windows, Linux, VxWorks</li> <li>• Product name changed to OPC UA C++ Toolkit</li> <li>• The former .NET API is discontinued</li> <li>• The VxWorks deliverables are available in zip format only</li> </ul>
V5.10.03.6665	04.11.2011	<p><b>Bug fixes:</b></p> <ul style="list-style-type: none"> <li>• #408: Corrected marshalling of StatusCode.GetErrorText for .NET API</li> <li>• #409: Memory Leak under very rare conditions</li> <li>• #419: Client session name is not passed to server</li> </ul>
V5.10.03.6594	31.08.2011	<p><b>Bug fixes:</b></p> <ul style="list-style-type: none"> <li>• #397: Crash due to wrong reference counting in MonitoredItem::getNode and MonitoredItem::getSubscription</li> </ul>

		<ul style="list-style-type: none"> <li>• #402: Crash "out-of-bounds" if context filter causes casting of an XML element</li> <li>• #403: Subscriptions of sub-ranges return complete array</li> <li>• #407: Memory leak in server if a client invokes a not supported history-Read of historyWrite service</li> </ul>
V5.10.02.6340	20.06.2011	<p><b>Bug fixes:</b></p> <ul style="list-style-type: none"> <li>• Memory leaks in OPC UA stack in specific error conditions</li> <li>• #377: Crash in event filter in specific circumstances</li> <li>• #380: Possible leak on removing nodes from address space under very rare timing circumstances</li> <li>• #382: Possible deadlock (Linux and VxWorks only) under very rare conditions (re-use of thread handle before thread is terminated)</li> <li>• #383: Client can remove wrong monitored item</li> <li>• #387: Some event filters do not work as expected</li> <li>• #388: Memory leak (server) when filter is modified</li> <li>• #391: Monitored items in triggered mode do not always report changes</li> <li>• #394: Client deadlock in synchronous browseNext with 0 continuation points</li> <li>• Correct initialization of ServerArray and NamespaceArray</li> </ul>
V5.10.01.6067		<p><b>New features:</b></p> <ul style="list-style-type: none"> <li>- Support for Linux Debian/Ubuntu and Scientific Linux Asynchronous</li> </ul> <p><b>Bug fixes:</b></p> <ul style="list-style-type: none"> <li>• #345: Improved performance in reference access</li> <li>• #369: Browse direction not correctly evaluated in TranslateBrowsePath-ToNodeId service</li> <li>• Potential crash on shutdown tracing module</li> <li>• Initial value reporting of monitored item</li> </ul>
V5.10.01.5872	31.05.2011	<p><b>Bug fixes:</b></p> <ul style="list-style-type: none"> <li>• #334: Tutorials 8 and 9 fixed</li> <li>• #346: Default install path adapted</li> <li>• #364: Fixed deadlock in removeEndpoint</li> <li>• #365: User access check for write variables fixed</li> </ul>
V5.10.00	22.10.2010	<p><b>New Features</b></p> <ul style="list-style-type: none"> <li>• Alarms&amp;Condition added,</li> <li>• Support of VxWorks version 6.7.1.1 and 6.8.2</li> </ul> <p><b>Server and Client:</b></p> <ul style="list-style-type: none"> <li>• #331: Memory leak (Windows only under very rare conditions)</li> </ul> <p><b>Server only:</b></p> <ul style="list-style-type: none"> <li>• Memory leak discovered on replay attack</li> </ul> <p><b>Client only:</b></p> <ul style="list-style-type: none"> <li>• #303: Memory leak (and possible crash)</li> <li>• #317: .NET client API support for A&amp;C filters</li> </ul>
V5.00.04	14.12.2009	<p>First release of OPC Toolbox UA for Windows and VxWorks supporting UA Binary protocol and Data Access.</p> <p>There is no clear correspondence to Profiles and Facets, yet.</p> <p>There has not been available any Compliance Test Tool for OPC UA (UA CTT), yet.</p>