

OPC UA - Wireless SMI V1.1.3 Modelling

OPC UA Discussion points [↗](#)

Most of the discussion points are already implemented and the NodeSet2 XML is modified. Open points to discuss with @Martin Lang are marked with red color.

check JSON WG documents

NodeSet2 XML: [opc.ua.iolinkwireless.NodeSet2.xml](#)

- Move `IOLinkWirelessMasterType` under `ComponentType` (because of the interface `IVendorNameplateType`). This should apply to wired as well -> wait for Mahnke's answer?
- Move `IOLinkWirelessPortType` under `TopologyType` -> wait for Mahnke's answer?
 - add interface reference
- No need to create explicit children for the Port instance under `IOLinkWirelessMasterType`. An object without children is sufficient in this case (see wired NodeSet2)
 - in original xml NodeSet2 keep the children (?)
- Change `UniqueID`, `ScanResultUniqueID` and `BlockList` DataTypes to Byte Array instead of ByteString. This should apply to the Variables themselves as well as for the input arguments in methods.
- UpdateTrackConfiguration Method not needed anymore. Track configuration should be done using the Method `UpdateMasterConfiguration`.
 - The following Input and Output Arguments should be used for `UpdateMasterConfiguration`:
 - InputArguments

InputArgument	Data Type	Notes
MasterID	Byte	
AdvancedConnectivity	UInt16	
BlockList	Byte[10]	
PairingTimeout	Duration	
ServiceTrackN	Byte	
ServiceTrackMode	Byte	
NumberOfTracks	Byte	is there a use case where this config parameter is configurable? At the moment this argument is not implemented. Hilscher implementation ignores it. Configure it to tell the server how many tracks to configure?
Track1TxPower	Byte	
Track2TxPower	Byte	
Track3TxPower	Byte	

Track4TxPower	Byte	
Track5TxPower	Byte	

- SignalQuality Variable should be mapped to QualityStatus Object with 4 Variables (LQI_Device (Byte), LQI_Master (Byte), RSSI_Device (SByte), RSSI_Master (SByte)).
 - The values of these variables are seen as one entity, so maybe it would be better to define a Structure DataType QualityStatusType with these Values, so we can make sure they are consistent? → Ask Mahnke (DataType seems the best solution)
- Change EnumStrings according to wired style. Reserved options/enums should be represented as Empty LocalizedText with Locale = "en". Also, The array dimensions should be the exact number of the options/enums. → Mantis issues exist
- Master and Port Object "Statistics" should be optional not mandatory.
- WMasterCycleTimeOut and WMasterCycleTimeIn should have Duration DataType in Variables and in Method arguments.
- Modelling of Wireless Bridges: SMI defines Standalone mode for bridges. Also bridge info can be read using ISDU

6170 **C.4.9 W-Bridge Information**

6171 This index range WBridgeInfo stores the parameters used in a W-Bridge configuration. This index is
6172 mandatory for W-Bridge. BDeviceID, BVendorID and BFunctionID are similar to DeviceID, VendorID and
6173 FunctionID and refer to the W-Bridge, not the connected IO-Link device.
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Table 192 W-Bridge information index assignments

Index	Subindex	Access	Parameter name	Coding	Data type	
0x5004	0x00	Gives access to the whole index				
	0x01	R	BDeviceID	Octet 1: DeviceID 1 (MSB) Octet 2: DeviceID 2 Octet 3: DeviceID 3(LSB)	OctetStringT3	
	0x02	R	BVendorID	Octet 1: VendorID 1 (MSB) Octet 2: VendorID 2(LSB)	OctetStringT2	
	0x03	R	BFunctionID	Octet 1: FunctionID 1 (MSB) Octet 2: FunctionID 2(LSB)	OctetStringT2	
	0x04	R	BDevice DistinguishingID	Octet 1: DeviceD_ID1 (MSB) Octet 2: DeviceD_ID 2 Octet 3: DeviceD_ID 3 Octet 4: DeviceD_ID4(LSB)	OctetStringT4	
	0x05	R	ConnectionStatus	0x00: No device connected 0x10: Device connected	UIntegerT8	

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Thus, Wireless Bridge should be modelled separately from the port or the device. As a proposal, IOLinkWirelessBridgeType can be introduced:

Attribute	Value
BrowseName	IOLinkBridgeType
IsAbstract	False

References	Node Class	BrowseName	DataType	TypeDefinition	Modelling Rule	
Subtype of TopologyElementType defined in OPC 10000-100.						
HasProperty	Variable	DeviceID	Byte[3]	PropertyType	Mandatory	
HasProperty	Variable	VendorID	Byte[2]	PropertyType	Mandatory	
HasProperty	Variable	FunctionID	Byte[2]	PropertyType	Mandatory	could be left
HasProperty	Variable	DeviceDistinguishingID	Byte[4]	PropertyType	Mandatory	
HasProperty	Variable	ConnectionStatus	Byte	PropertyType	Mandatory	

An instance of this ObjectType would be then instantiated under IOLinkWirelessPortType as the optional object "Bridge" or "BridgeInformation". This Object should always appear whenever a Device Object appear (assuming all Devices are connected to Bridges or has integrated Bridges). We could use the Reference "ConnectsTo" to add more semantic to the relationship between the Device and the Bridge. The Bridge Properties' values would be mapped to the ISDU values of the previous table.

- Remove the Nodes FunctionID, ConnectionStatus and DeviceDistinguishingID from under IOLinkWirelessPortType.
- VendorURL should stay unchanged
- Add the Variable "NumberOfTracks" to IOLinkWirelessMasterType.
 - change to MaxNumberOfTracks?
- Track<n> Object (i=5011) not described in spec.
- Start Track numbering with 1? It seems that tracks count starts at 1 not 0, see ServiceTrackN. Also Track01 vs Track1 -> in Method Arguments, Objects and Variables. → start with 1
- Should we model IMATimeBase as MultiStateVariableType with enumstrings? See table 184 in SMI
 - better to use EnumStrings-> Martin will clarify it
- Change Quality EnumStrings to OptionValueSet.
- Remove RevisionID from IOLinkWirelessPortType -> like wired (RevisionID is only under Master and Device)
 - DataType should be changed to String (e.x. "1.1", see how to map the data in wired)
- Shall we modell PairingCommand as Variable Node with EnumStrings? Or define Enum DataType "PairingCommandType" and use it for the input arguments? The same applies to ScanBehavior
 - Or we could define a variable with EnumStrings like "LastPairingCommand" and "LastScanBehavior". In this case we won't need DataTypes. Or we just could assume that the user is familiar with IOL SMI Spec and keep the Method Arguments without further descriptions.
 - Enumerations can't be changed anymore
 - Or just create a note in the spec about the valid values
- Should be ScanRequest Method disabled when MasterConfigurationDisabled = true (Generally, which Method should be disabled when MasterConfigurationDisabled = true)