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Gesellschaft für angewandte Informatik und Mikroelektronik GmbH
Sasbacher Str. 2, D-79111 Freiburg, Germany

PBA.pro Database Manager

Getting Started

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AIM GmbH
Sasbacher Str. 2
79111 Freiburg
Germany
www.aim-online.com

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Gesellschaft für angewandte Informatik und Mikroelektronik GmbH
Sasbacher Str. 2, D-79111 Freiburg, Germany

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1 PBA.pro Database Manager

The PBA.pro Database Manager component provides functionality to define conversion routines to convert the raw data of a buffer or message, acquired by various resources, into Engineering Units. The current version of the Database Manager component supports payload decoding for the following resources:

- MIL-STD1553
- STANAG3910
- EFABus Express (EFEX)
- ARINC429
- ARINC664/AFDX
- ARINC825/CAN
- Panavia
- DISCRETES
- ANALOGUES
- Ethernet

The Database Manager's GUI parts are shown in the 'Parameters' tab in the Component Explorer. If a dedicated resource node is present, the corresponding database root node appears which represents an empty database.

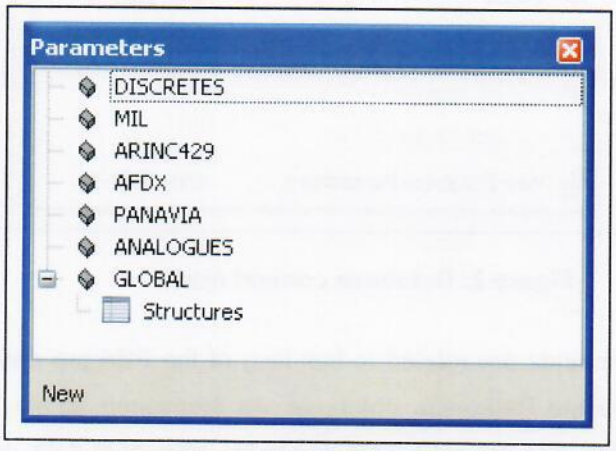


Figure 1: Supported Resources to define Parameters

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At the bottom of the Database Manager, the name of the current database file is shown. If started from scratch, the default name is 'New'. An asterisk behind the name indicates that the current database has been changed and not saved yet.

Please note, that the database information is always maintained in a separate database file in XML format and is not included in the PBA.pro project file!

When a PBA.pro 'Save Project' is commanded by the user and the database has not been saved before, the user is prompted for database file name. The database file name is stored in the PBA.pro project file as a reference. Thus, retrieving the PBA.pro project at a later time, an automatic load of the database is forced.

A right mouse click into the database manager window opens a context popup menu offering various functions for the database handling.

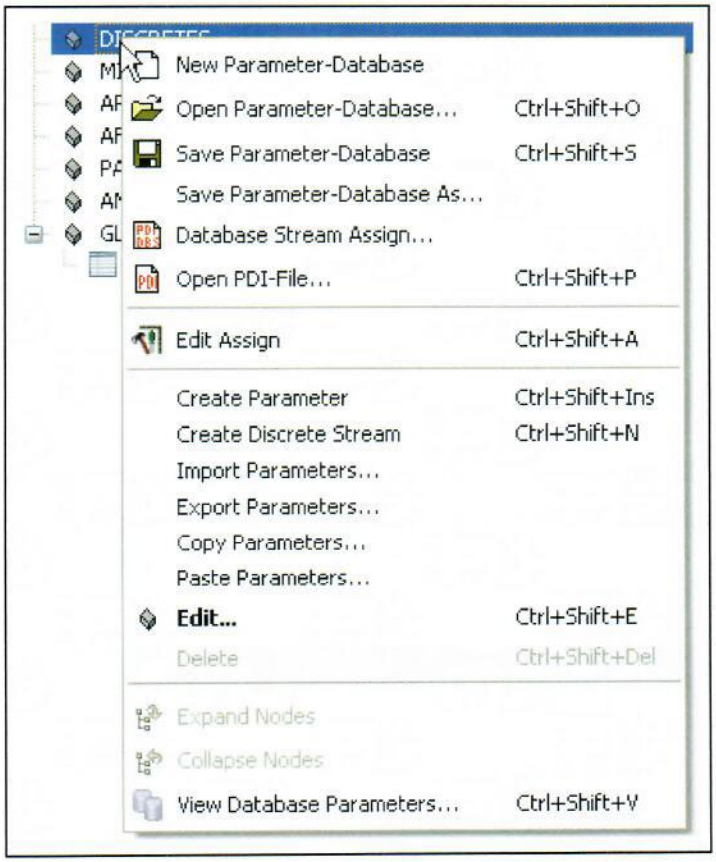


Figure 2: Database context menu

- The first four menu commands are related to handling of the PBA.pro database files to create a new, to open or to save the Parameter database. As mentioned above, the database file is a separate file apart from the PBA.pro project file due to the amount of data, which may appear in big databases. Hence, a separate file handling is offered.

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- The 'Open PDI-File…' option offers support for direct import of AIM ParaView (former generation AIM Data bus Visualiser Software) Database format PDI (Parameter Database Information). These files may be used in the Database Stream assign or may be imported, but they cannot be written by PBA.pro. So if you modify an imported PDI File, the data must be saved to a ppdbs file.

- The 'Database Steam Assign' option allows using more than one Database File. See the related chapter for details.

- An additional 'Open User Database' option is only available if it is configured via the Settings. For further details see chapter 14, User Databases.

- The "Edit Assign" option provides a window to add parameters via drag and drop for a fast parameter overview for further details see chapter 9, Assign.

- All further entries provide functionality to define setup and configure the database tree.

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2 Resource Specific Parameters

This chapter is used to describe the setup and configuration of resource specific Parameters. In addition to this, a short section of the later Parameter usage will be added within the corresponding resource sections as well. Note that the configuration of a database Parameter is basically resource independent and is documented in the common chapter 3, Edit Parameter Formats. Thus, this chapter will only deal with the resource related setup and configuration issues/ steps of the database configuration.

2.1 MIL-STD-1553/ STANAG 3910/ EFEx Parameters

2.1.1 Stream creation

Depending on the MIL Resource, parameters are related to a low or a high speed stream. Thus the database component offers two menu entries to specify on which stream type the Parameters are to be defined.

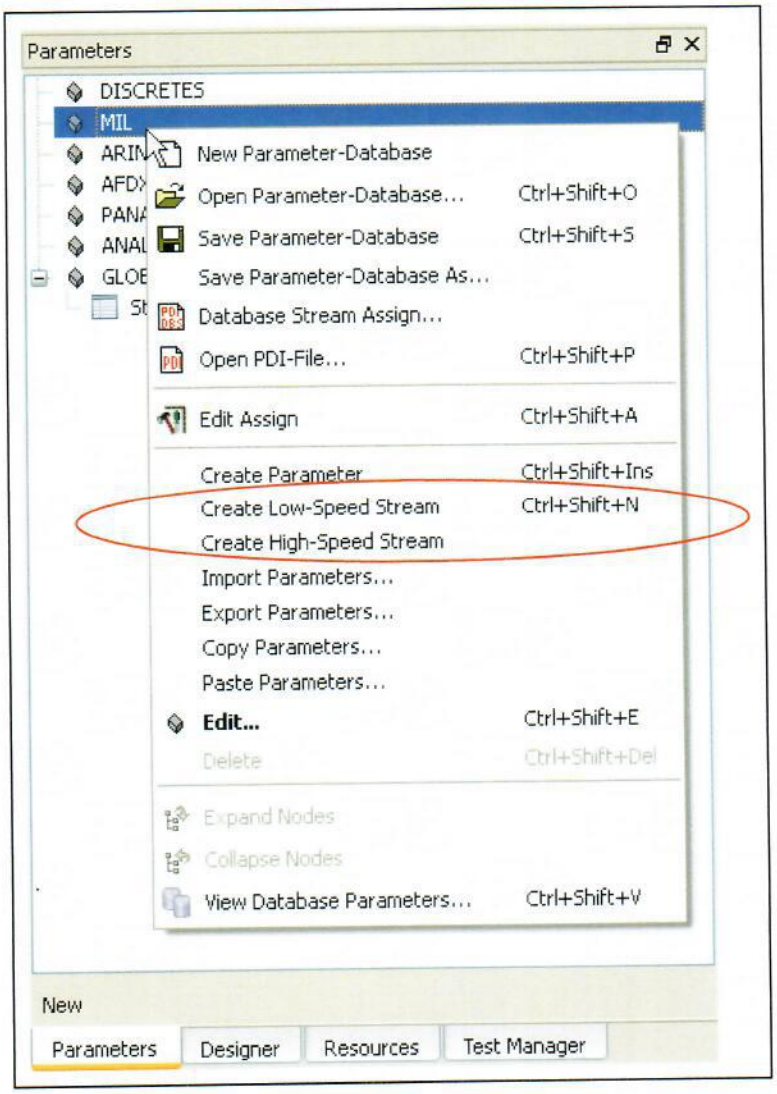


Figure 3: MIL-Bus - Stream Creation

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Selecting the 'Create Low-Speed Stream' command will create a new 1553 stream node for definition of MIL-STD1553 parameters; selection of the 'Create High-Speed Stream' command will create a new High-Speed stream node for definition of STANAG3910 or EFEX parameters.

Note that in case of 3910/ EFEX resources, a Low-Speed and a High-Speed stream definition is necessary in order to get access to signals of the Low-Speed and High-Speed buses.

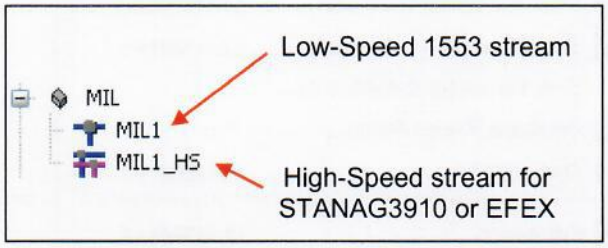


Figure 4: MIL-Bus - Low-Speed and High-Speed DBS Streams

The editable properties of a new stream node are the 'Alias' and the 'StreamId'. The Alias Property is used to add a more descriptive name to the node as the node name itself is not editable and indicates the stream type and the defined stream number. The 'StreamId' property is used to define the association with the corresponding resource in the way, that it has to match with the 'DbsStreamId" property of the Resource:

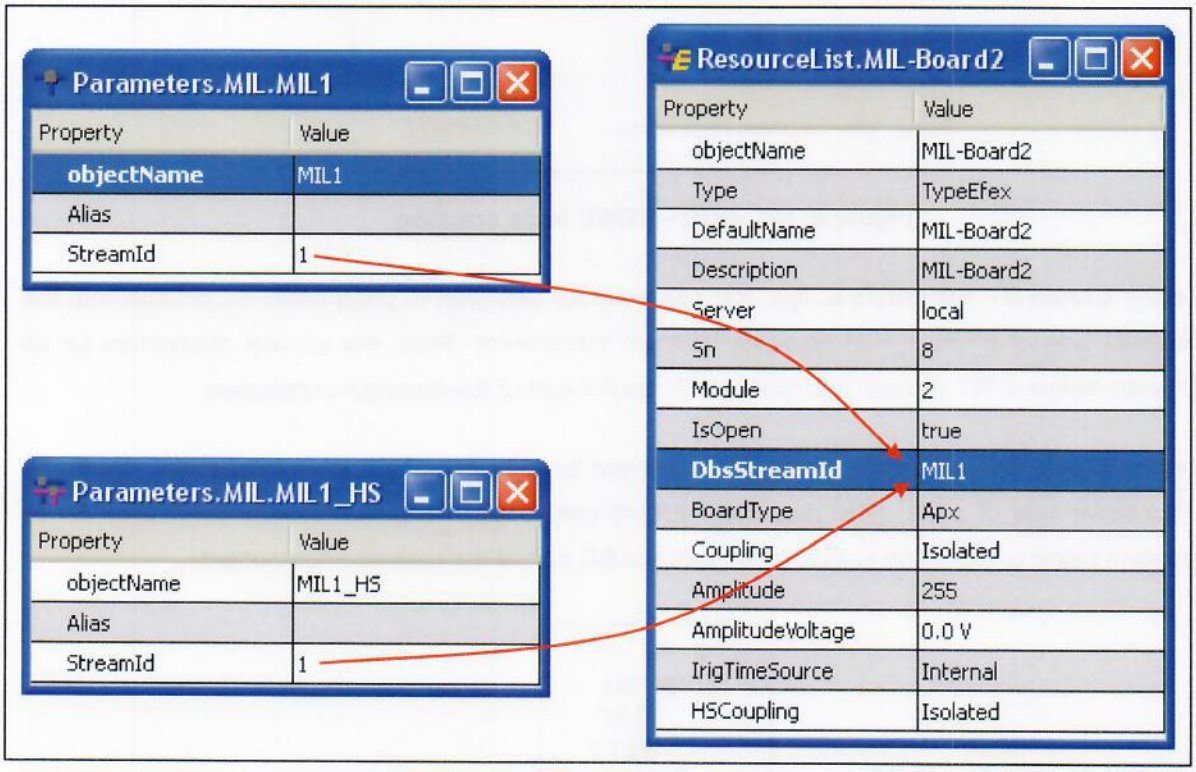


Figure 5: MIL-Bus - Database to Resource association

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2.1.2 RT/BC node creation

Selection of a stream node (e.g. MIL1) and right mouse click offers a context popup menu for further operations. This is similar for High-Speed streams.

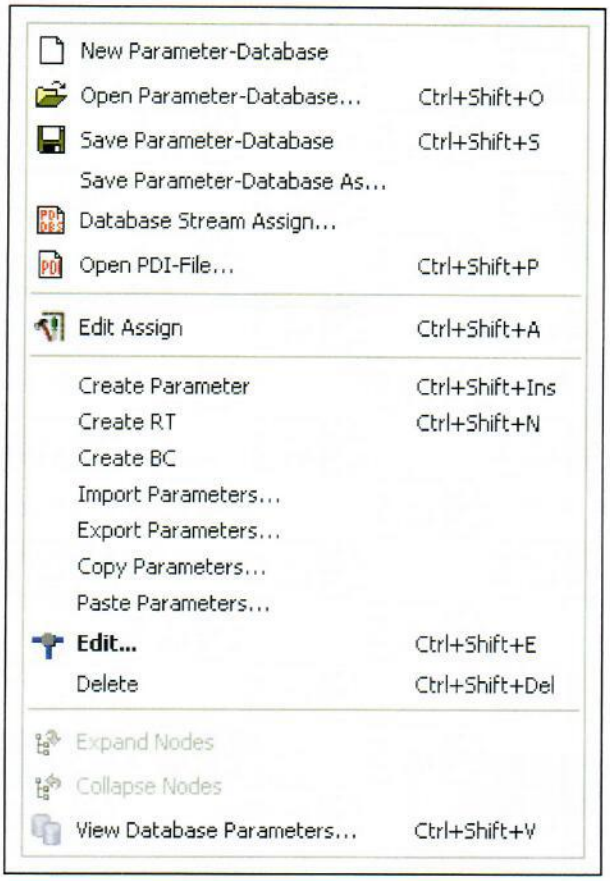


Figure 6: MIL-BUS - RT/BC node creation

The entry 'Create RT' will create a new 'RT' sub node for definition of parameters associated with the RT-SA/MID side of a MIL (_HS) resource PBA.pro component. Thus, the source/ destination for all parameters below a 'RT' node is associated with the RT part of the resource component.

The entry 'Create BC' will create a new 'BC' sub node for definition of parameters associated with the Bus Controller side of a MIL_(HS) resource PBA.pro component. Thus, the source/ destination for all parameters below a 'BC' node is associated with the BC part of the resource component.

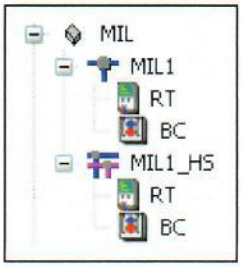


Figure 7: MIL-Bus - RT and BC DBS nodes

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2.1.3 RT node creation

Selection of a 'RT' or 'BC' node and right mouse click offers a context menu for further operations.

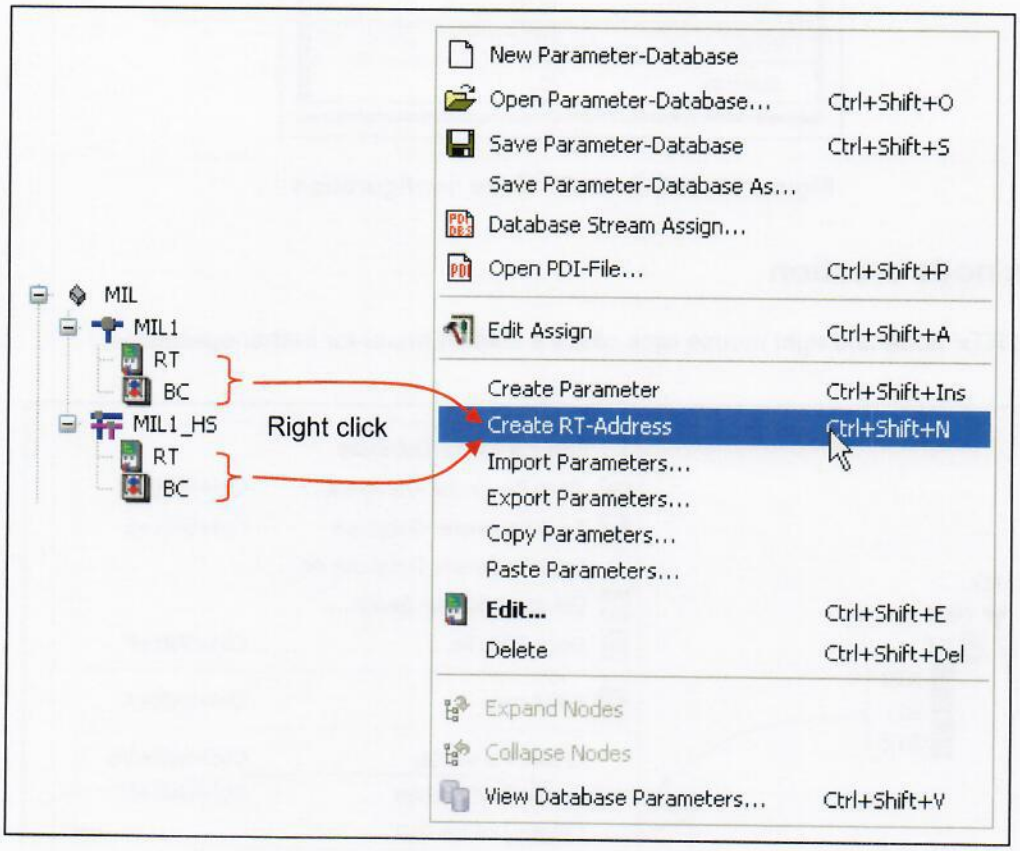


Figure 8: MIL-Bus - RT node creation

The entry 'Create RT-Address' will create a new 'RTx' sub node for definition of parameters which are associated with the RT number x on the RT side of a MIL(_HS) resource PBA.pro component. Thus, the source/ destination for all parameters below an 'RTx' node is associated with the RTx functional part of the resource component's RT section.

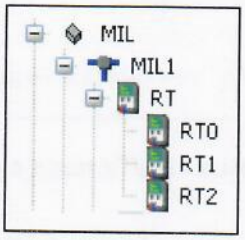


Figure 9: MIL-Bus - RT DBS Nodes

Per default, the database manager starts with RT0 and performs an auto increment on further creations. A double click on the corresponding node supports changing of the RT number property as well as to set an Alias name for the RT.

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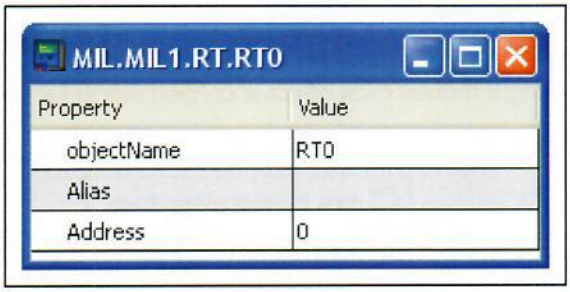


Figure 10: MIL-Bus: RT Node configuration

2.1.4 Rx/Tx node creation

Selection of an 'RTx' node and right mouse click offers a context menu for further operations.

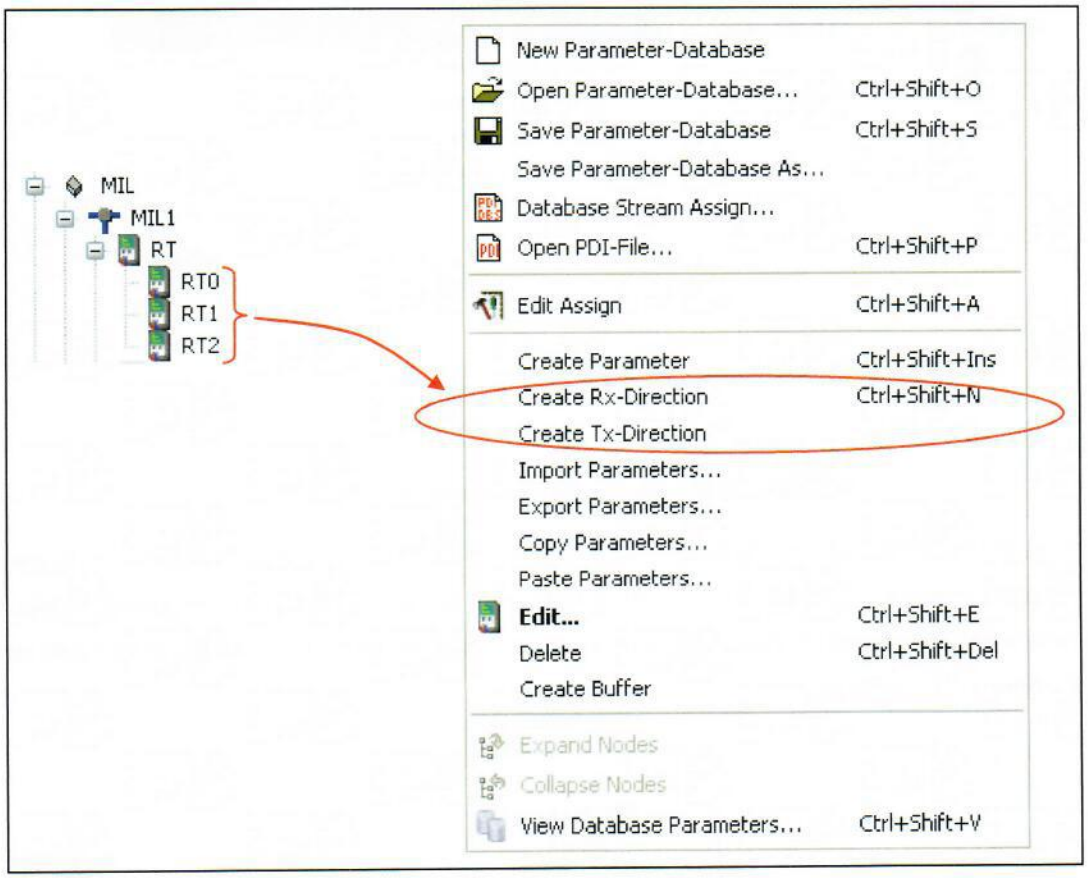


Figure 11: MIL-Bus - Rx/Tx node creation

The entry 'Create Rx-Direction' will create a new 'Rx' sub node for definition of parameters which are associated with the Receive Sub addresses on the RT side of a MIL(_HS) resource PBA.pro component.

The entry 'Create Tx-Direction' will create a new 'Tx' sub node for definition of parameters which are associated with the Transmit Sub addresses on the RT side of a MIL(_HS) resource PBA.pro component.

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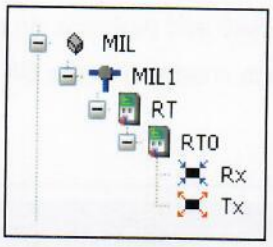


Figure 12: MIL-Bus - Rx/Tx DBS nodes

2.1.5 Sub Address node creation

Selection of a 'Rx' or 'Tx' node and right mouse click offers a context menu for further operations.

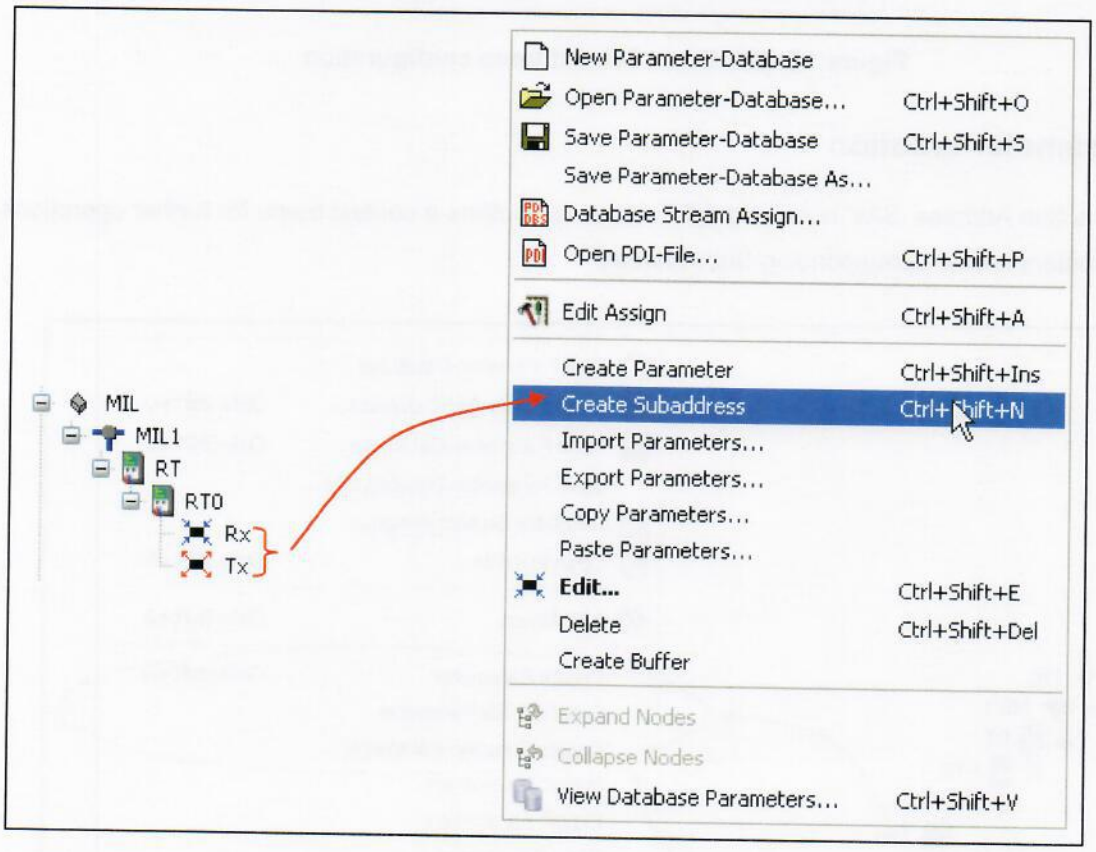


Figure 13: MIL-Bus - Subdues node creation

The entry 'Create Sub address' will create a new 'Rx' sub node for definition of parameters associated with the corresponding Receive/ Transmit Sub address on the RT side of a MIL(_HS) resource.

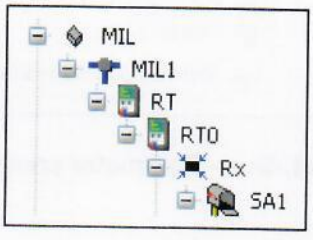


Figure 14: MIL-Bus - Sub Address DBS nodes

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Per default, the database manager starts with SA0 and performs an auto increment on further creations. A double click on the corresponding node supports changing of the SA number property as well as definition of an Alias (=Name) and comment.

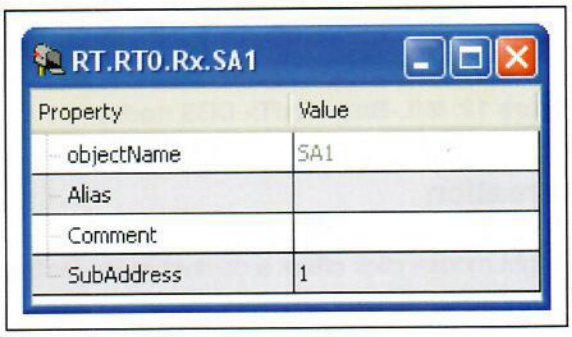


Figure 15: MIL-Bus - Sub Address configuration

2.1.6 Parameter creation

Selection of a Sub Address 'SAx' node and right mouse click offers a context menu for further operations to create parameters for the corresponding Sub Address.

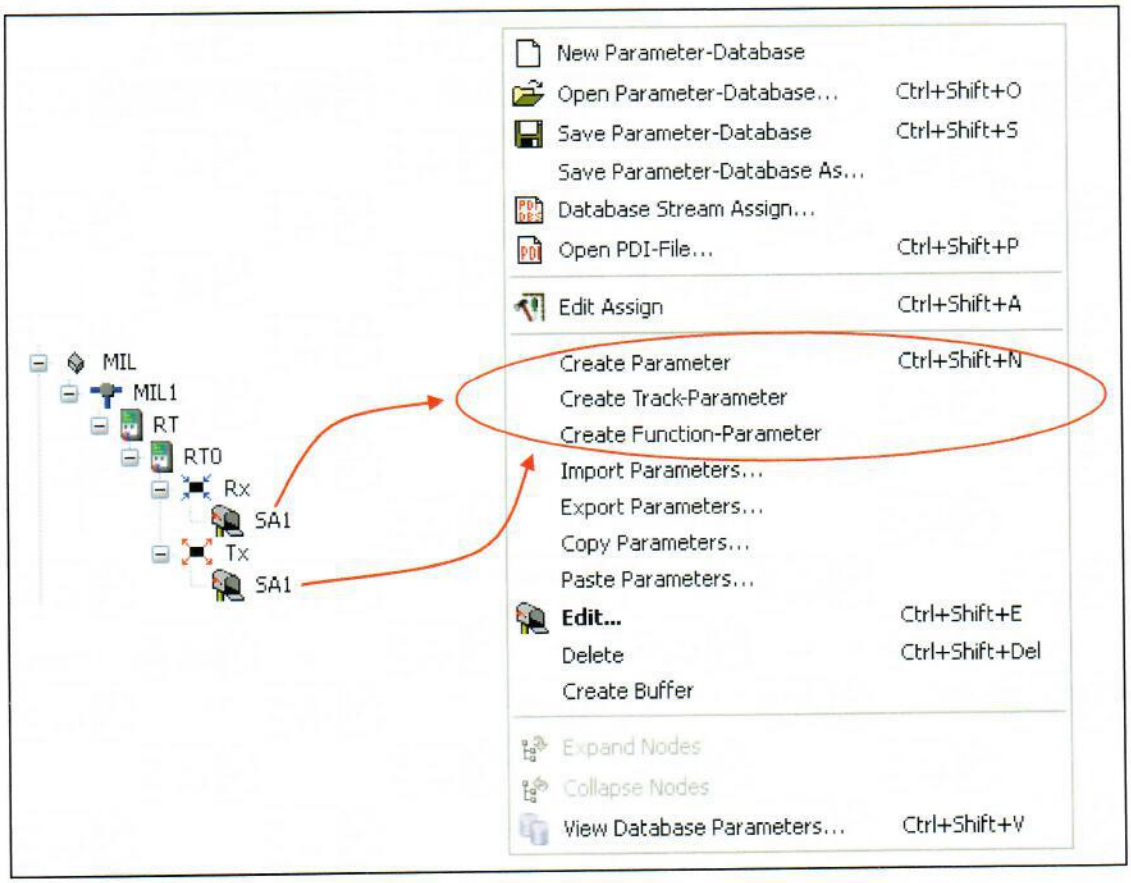


Figure 16: MIL-Bus - Parameter creation

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The entry 'Create Parameter' will create a new standard Parameter sub node for definition of parameters which are associated with the corresponding Receive/ Transmit Sub address on the RT side of a MIL(_HS) resource PBA.pro component.

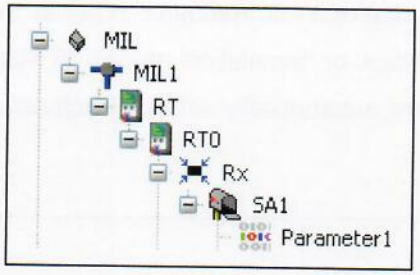


Figure 17: MIL-Bus - Parameter DBS nodes

To setup and configure a Parameter, double click on the corresponding Parameter node. The property editor dialog of the Parameter will pop up and provide modification of the parameter properties:

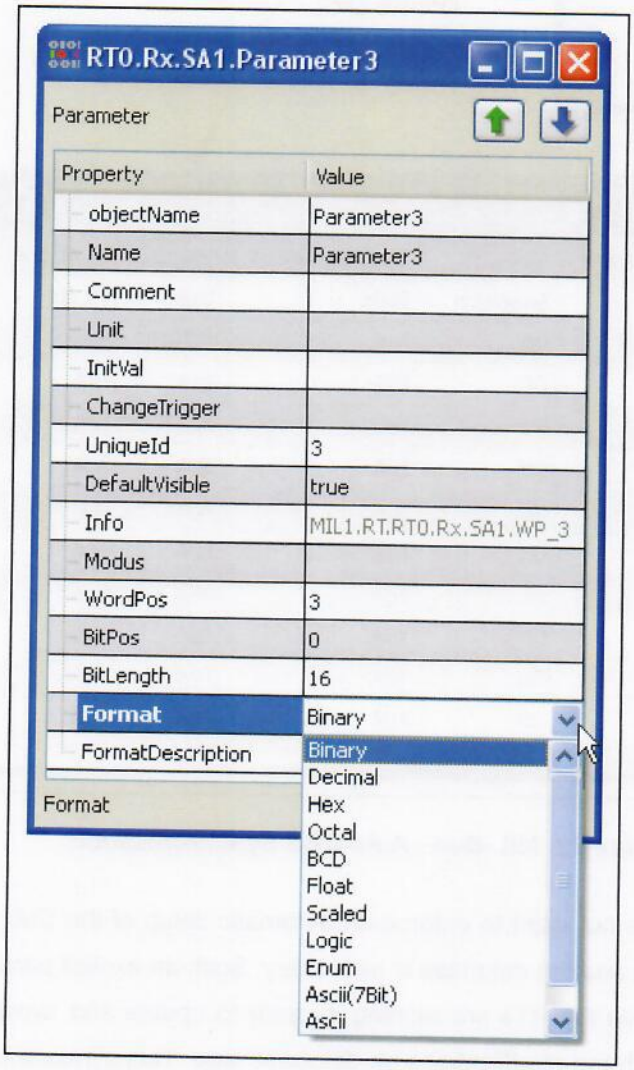


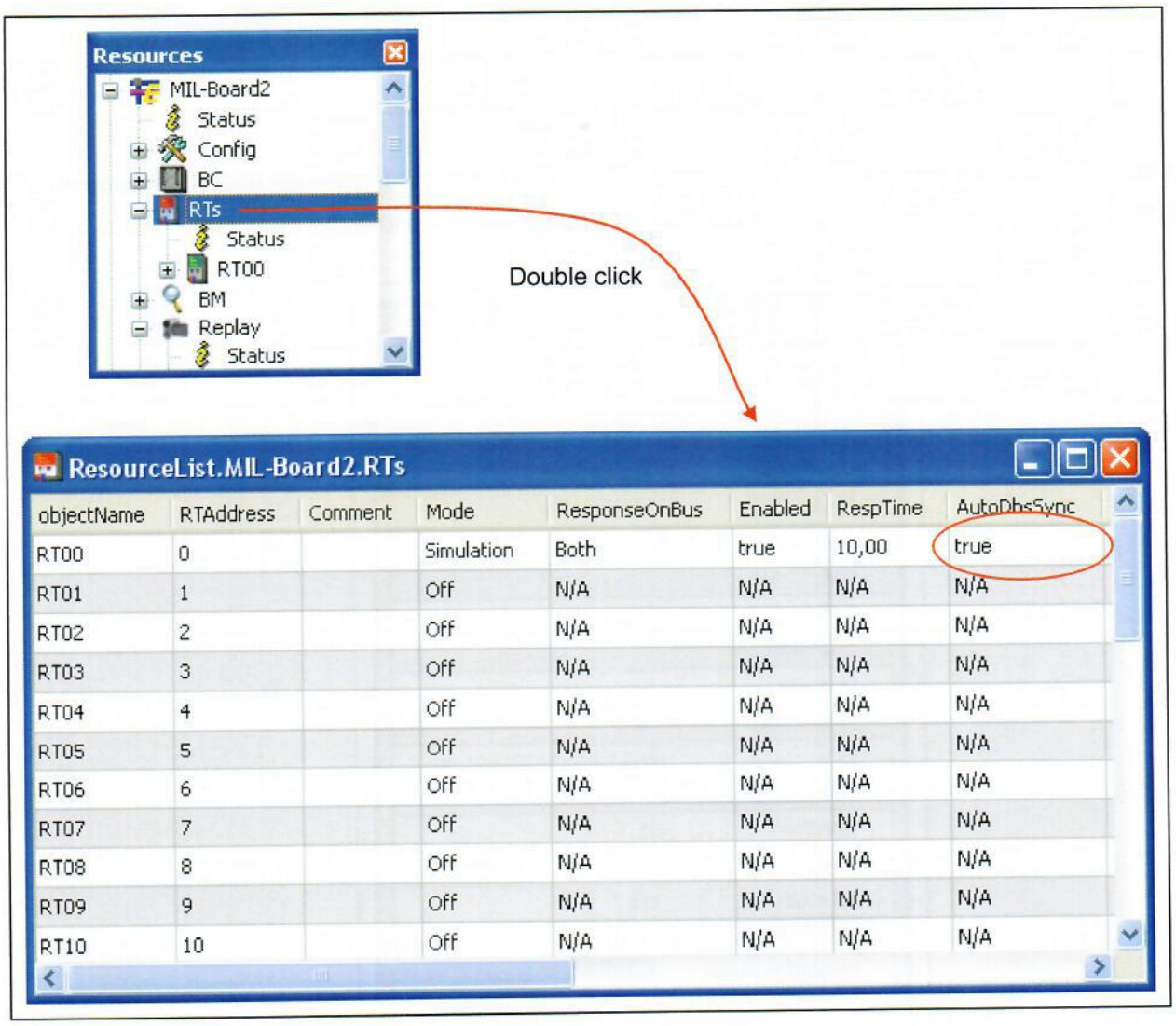
Figure 18: MIL-Bus - DBS Parameter configuration

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For further information about parameter configuration see chapter 3, Edit Parameter Formats.

2.1.6.1 RT related Parameters

If the property 'AutoDbsSync' on the RT side of a MIL Resource is set to 'true' (this requires that the corresponding RT is basically enabled for 'Mailbox' or 'Simulation' mode), all Sub addresses which are associated with parameters from the database are automatically setup for acquisition of the parameters when the RTs are started.



objectName	RTAddress	Comment	Mode	ResponseOnBus	Enabled	RespTime	AutoDbsSync
RT00	0		Simulation	Both	true	10,00	true
RT01	1		Off	N/A	N/A	N/A	N/A
RT02	2		Off	N/A	N/A	N/A	N/A
RT03	3		Off	N/A	N/A	N/A	N/A
RT04	4		Off	N/A	N/A	N/A	N/A
RT05	5		Off	N/A	N/A	N/A	N/A
RT06	6		Off	N/A	N/A	N/A	N/A
RT07	7		Off	N/A	N/A	N/A	N/A
RT08	8		Off	N/A	N/A	N/A	N/A
RT09	9		Off	N/A	N/A	N/A	N/A
RT10	10		Off	N/A	N/A	N/A	N/A

Figure 19: MIL-Bus - Auto DBS Synchronisation

If the 'AutoDbsSync' property is not used to enforce an automatic setup of the Sub addresses, an explicit synchronisation of the resource and the database is necessary. Such an explicit parameter synchronisation can be applied at any time while the RTs are running in order to update and synchronise the parameter nodes on the resource side with the modifications on database side. This synchronisation is controlled via right mouse click on the MIL resource node and selection of the 'Sync with parameters' menu entry.

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Figure 20: MIL-Bus - Manual Parameter synchronisation

If a synchronisation has been performed, the parameters appear below the 'SAx' node at the associated data buffer sub nodes. A double click on a 'Parameters' node will open the online display of a list of parameters associated with the selected node. A double click on a '<Parameter Name>' node opens the online display of the selected parameter. In both cases the data/ values of the parameters are showing the current values (on-line).

Note: If the Delayed Parameter Creation is enabled, the Parameters Sub nodes are created on the first open of the related views. The Delayed Parameter Creation on the Resource is to improve the performance if you have huge databases. You may disable the Delayed Parameter Creation within the Settings (PPDBS/ DelayedParamRef/ MilDBSSubAddress set to "false").

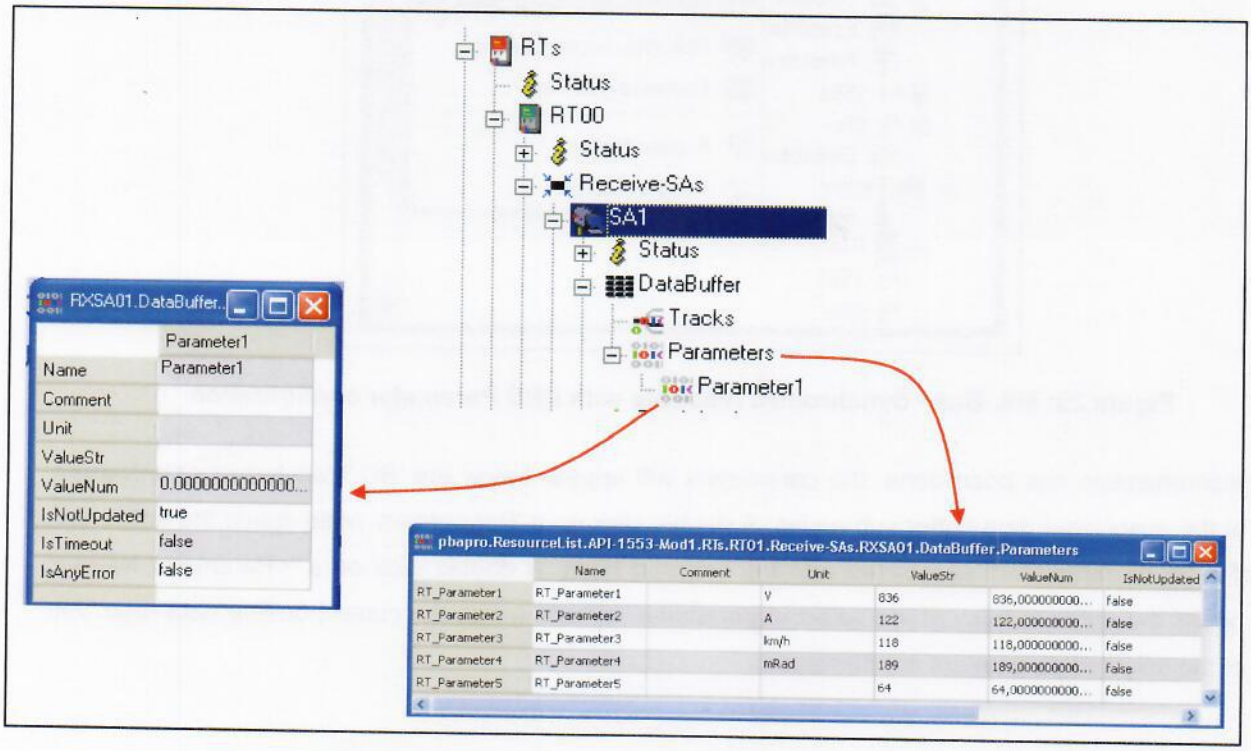


Figure 21: MIL-Bus - Parameter displays

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2.1.6.2 BC related Parameters

To get access to parameters associated with a BC on the resource side as well as for control and display purposes, an explicit synchronisation between the resource and the database is required.

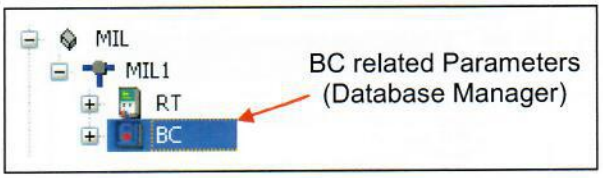


Figure 22: MIL-Bus - BC related Parameters

Such a parameter synchronisation can be applied at any time while the BC is running in order to update and synchronise the parameter nodes on the resource side with changes on database side. This synchronisation is controlled via right mouse click on the MIL resource node and selection of the 'Sync with parameters' menu entry.



Figure 23: MIL-Bus - Synchronise resource with DBS Parameter configuration

If a synchronisation has been done, the parameters will appear below the 'BC.TransferList.<XferName>' node at the associated data buffer sub nodes. A double click on a 'Parameters' node opens the online display of a list of parameters associated with the selected node. A double click on a '<Parameter Name>' node opens the online display of the selected parameter. In both cases the current on-line data resp. value(s) of the selected parameters are displayed.

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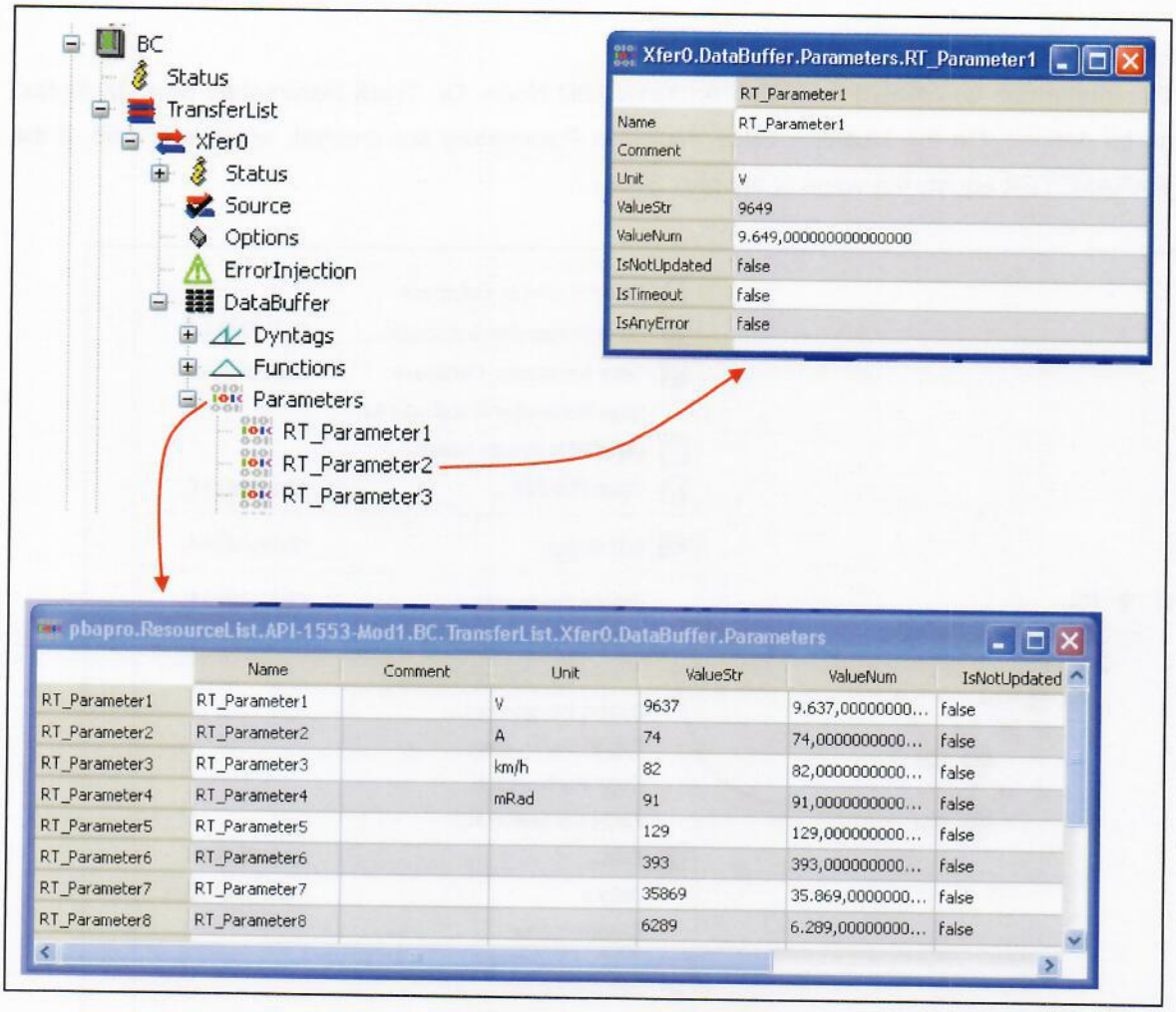


Figure 24: MIL-Bus Parameter resource displays

2.1.6.3 Multiplex/ Track Parameters

Multiplex and Track Parameters allow to switch the meaning of a dedicated Area in a Receive Buffer, according the value of the Track Parameter. For this purpose the On-Board software reacts on each received message and copies the Track Data from the Physical Buffer to a Multiplex Location index specified by the Value of the Track Parameter.

- Track consists of 1 up to n Data Words
- A Track is Multiplexed to 2 up to 1024 (m) Multiplex Locations (States). The Maximum Number of States depends also on the Bit Length of the Track Parameter
- The number of continuous Tracks in the Physical Buffer is 1 up to 128 (k)
- A Multiplex Parameter is located at the Track Number 0 to m-1 at the word position 0 to m-1 and is always read from the multiplexed locations
- The Track Parameter has to be located within Word 0 of the Track

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A Track Parameter can be created on a Sub Address/ MID Node. On Track Parameters Mux (Multiplex) States can be defined. On the Multiplex State, Multiplex Parameters are created, which are valid, if the TRACK_PARAMETER equals the value of the Mux State.

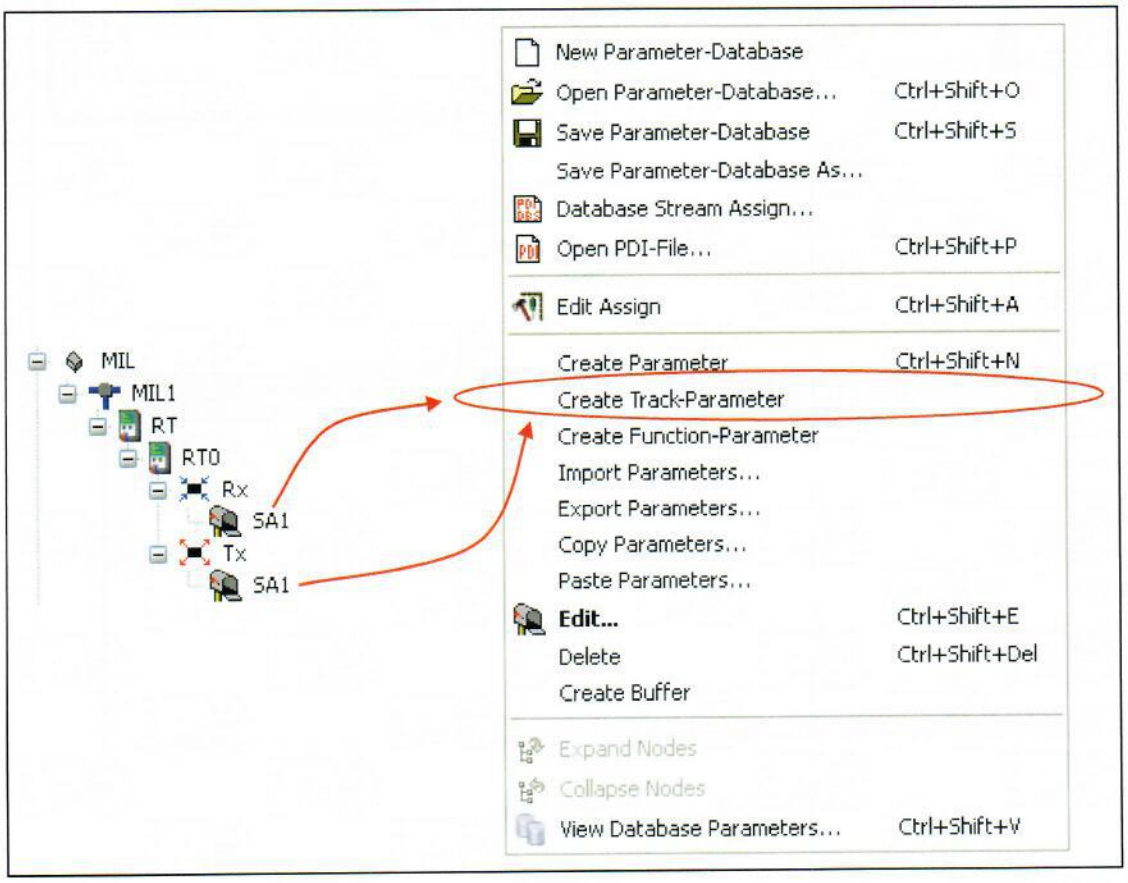


Figure 25: MIL-Bus – Track Parameter creation

Selecting the "Create Track-Parameter" entry will create a new Track Parameter node, where the corresponding context menu of the created Track-Parameter node offers a menu entry to create a Multiplex state. Below the Multiplex State the Parameter, used for raw value conversion, can be created via the context menu of the Multiplex state node. Alternatively to the creation of a Parameter, a second Level Track, which will require another Multiplex state as child, can be created below the First level Track as well.

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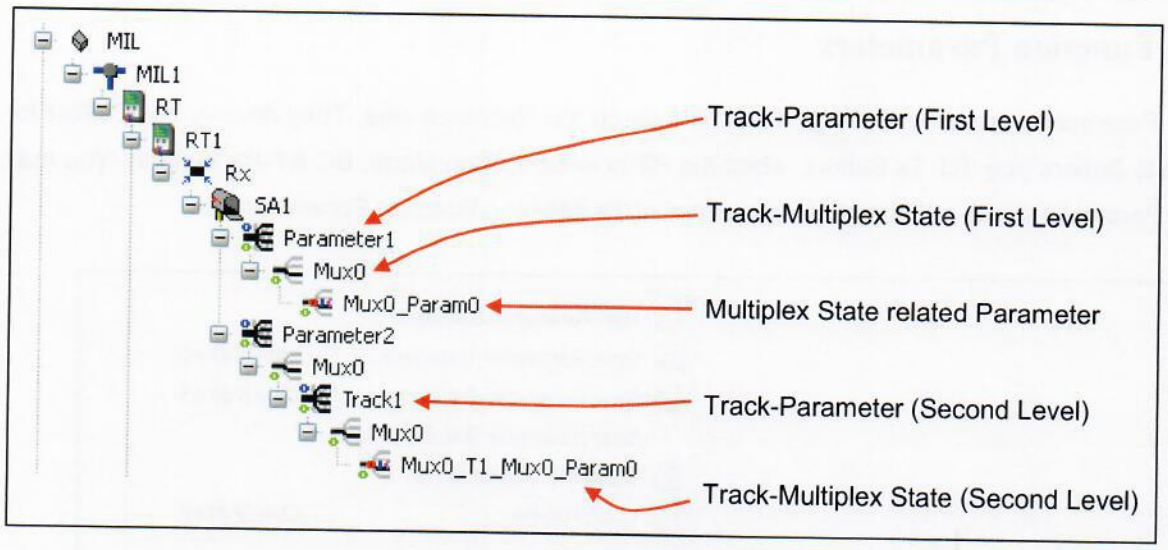


Figure 26: MIL-Bus – Track-Parameter configuration

The Parameter 'Mux0_Param0' in the sample above is valid in case of the Track-Parameter 'Parameter1' has the Value 0 (Mux0). The Parameter Mux0_T1_Mux0_Param0' is valid in case of the Track-Parameter 'Parameter1' has the Value 0 (Mux0). Furthermore, the Second Level Track Value 'Track1' has to be 0 as well.

2.1.6.4 Mode Code Parameters

For Parameters, located on the Data of a 1553 Mode Code Transfer, Sub Address 0 should be used. The "WordPos" of the parameter represents the Mode Code number (e.g. 16 Transmit Vector Word, 17 Synchronise with Data). Mode Codes, which do not have a data word, cannot have any parameters. You may also use the Sub Address 31, if no 1553A Terminal is defined, within the complete system.

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2.1.6.5 Function Parameters

Function Parameters are used to setup dynamic tags on the Resource side. They do only have effect for controllable Buffers (e.g. RT Tx Buffers, when the RT is in Simulation Mode, BC RT-Rx Buffers). You may only use Parameters, with a Bit length less or equal of 16 Bits for a Function Parameter.

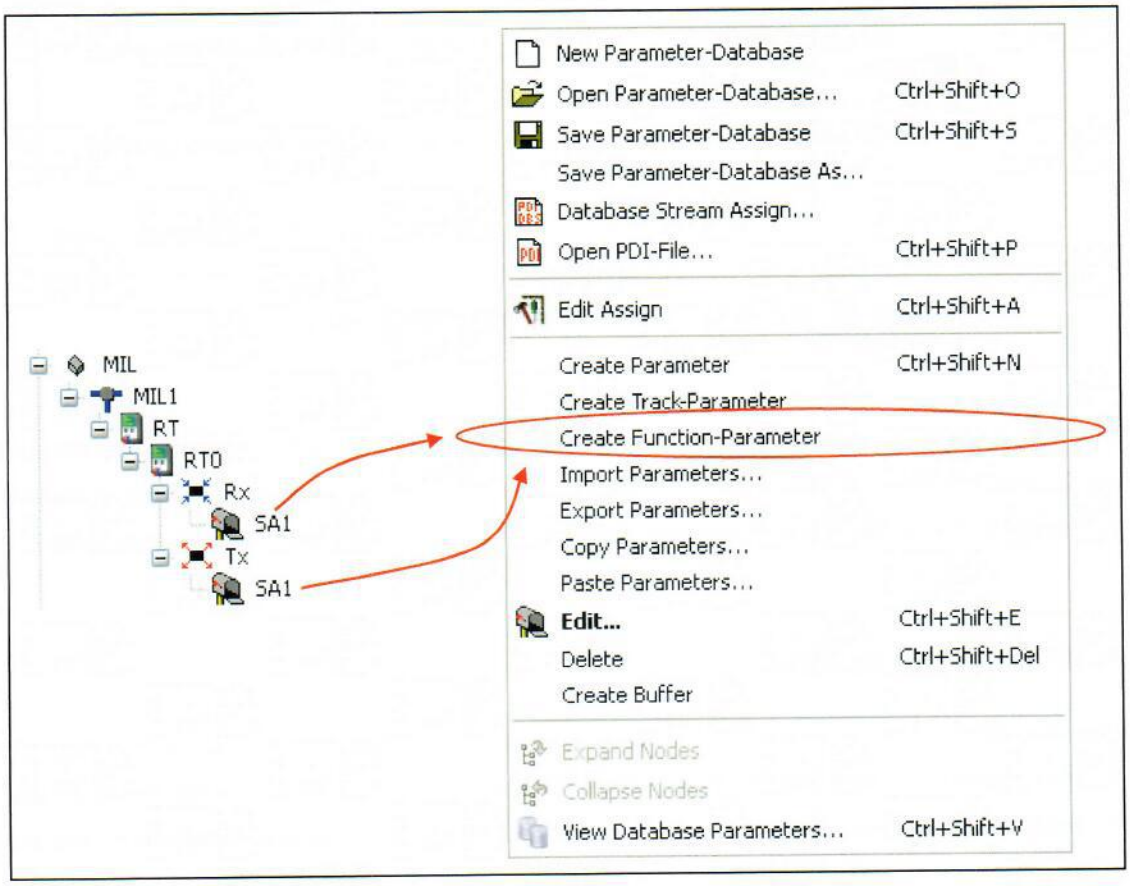


Figure 27: MIL-Bus – Function Parameter creation

Selection of the “Create Function-Parameter” entry will create a new Function Parameter node. Function Parameters can be configured to calculate the Checksum or to setup a dynamic tag on the corresponding Tx Sub address.

2.1.6.6 Parameters in the chronological Bus Monitor

If the resource is properly synchronised with the database, the chronological bus monitor will offer the display of parameters associated with a particular captured message. Selecting a message in the chronological bus monitor opens the detailed message view. In addition to the Meta information of a message, a ‘Parameters’ node is shown within the ‘Message Information’ window. Expanding that node displays the list of all parameters, which are associated with the current message.

Selection of a single parameter displays its location in the raw data of the message by highlighting the associated data word(s) or parts of it in red.

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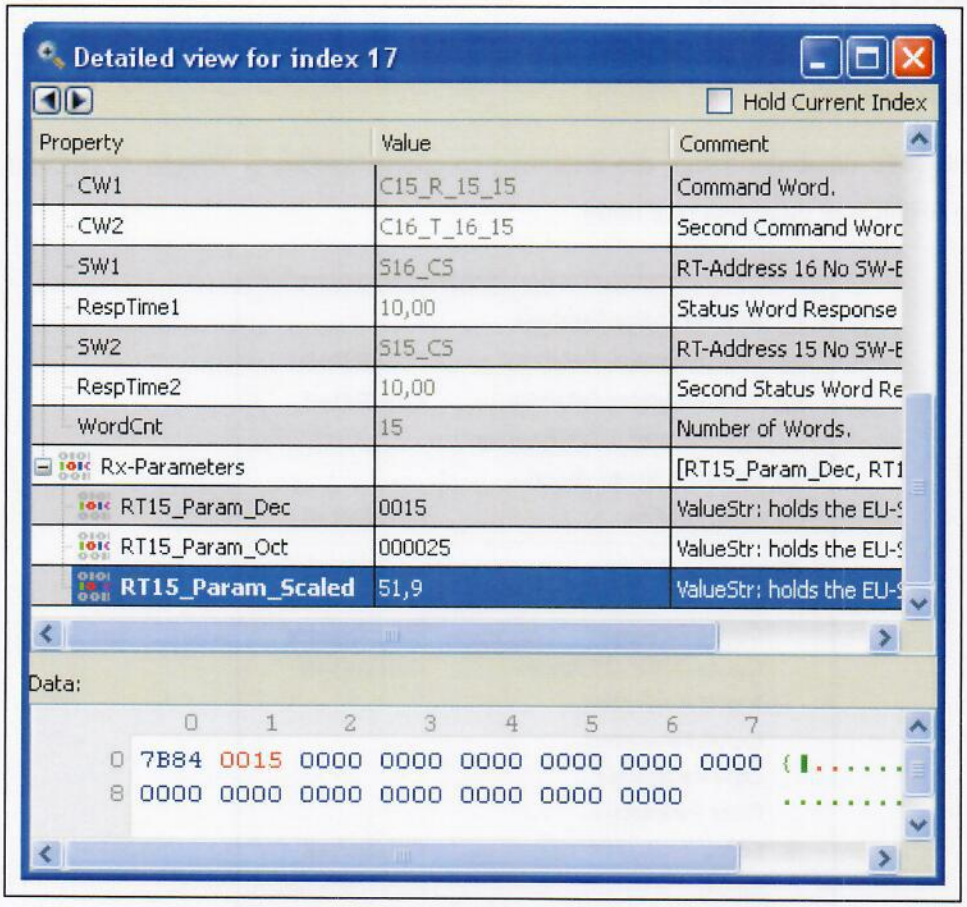


Figure 28: MIL–Bus - Chronological Bus Monitor Parameter Detailed view

2.1.7 Handling of Huge Databases

If huge databases with a large number of parameters are used, it may take a long time to setup all parameters on the resource side. Hence, it is possible to enable the Delayed Creation of the parameters on the Resource side. The Parameters are created on demand resp. only if they are needed (Parameter View opened, Parameter Assigned, Parameter dropped to a Designer Panel etc.). Note that delayed parameters will not be created by the Recursive browser and therefore only the already available parameters will be listed in Recursive Browser view. By default delayed parameter creation is enabled, if the used database contains more than 50,000 parameters. This can be changed via the Settings value of PPDBS/ DelayedCreation/ Treshold.

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2.2 ARINC429 Parameters

2.2.1 Stream creation

To create an ARINC429 database setup, the database component offers a 'Create ARINC429 Stream' menu entry on the ARINC429 database root node.

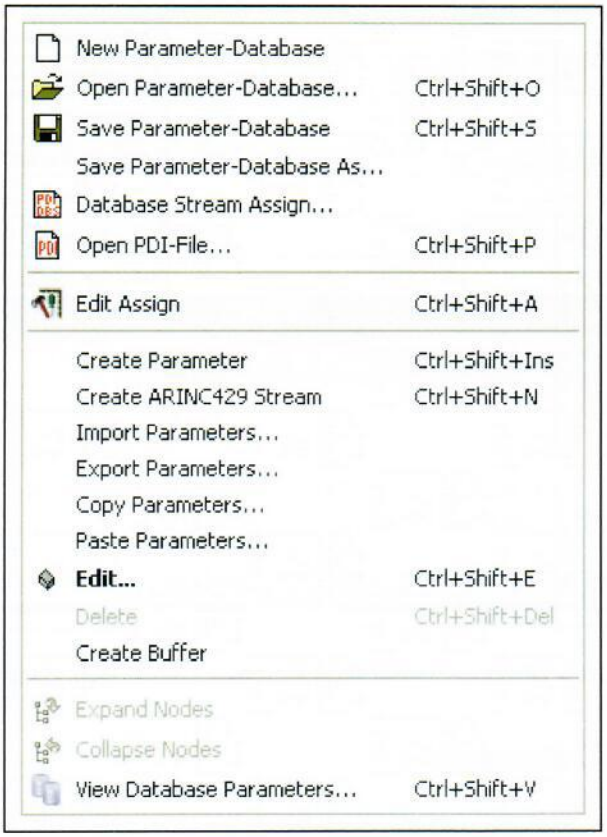


Figure 29: A429 - Stream Creation

Selection of the 'Create ARINC429 Stream' entry will create a new ARINC429 stream node for definition of ARINC429 parameters.

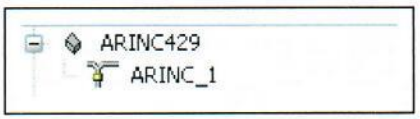


Figure 30: A429 - DBS Stream node

The properties of a new stream node are the 'Alias' and the 'StreamId'. The 'StreamId' property defines the association with the corresponding resource in the way that it has to match with the 'DbsStreamId' property of the Resource.

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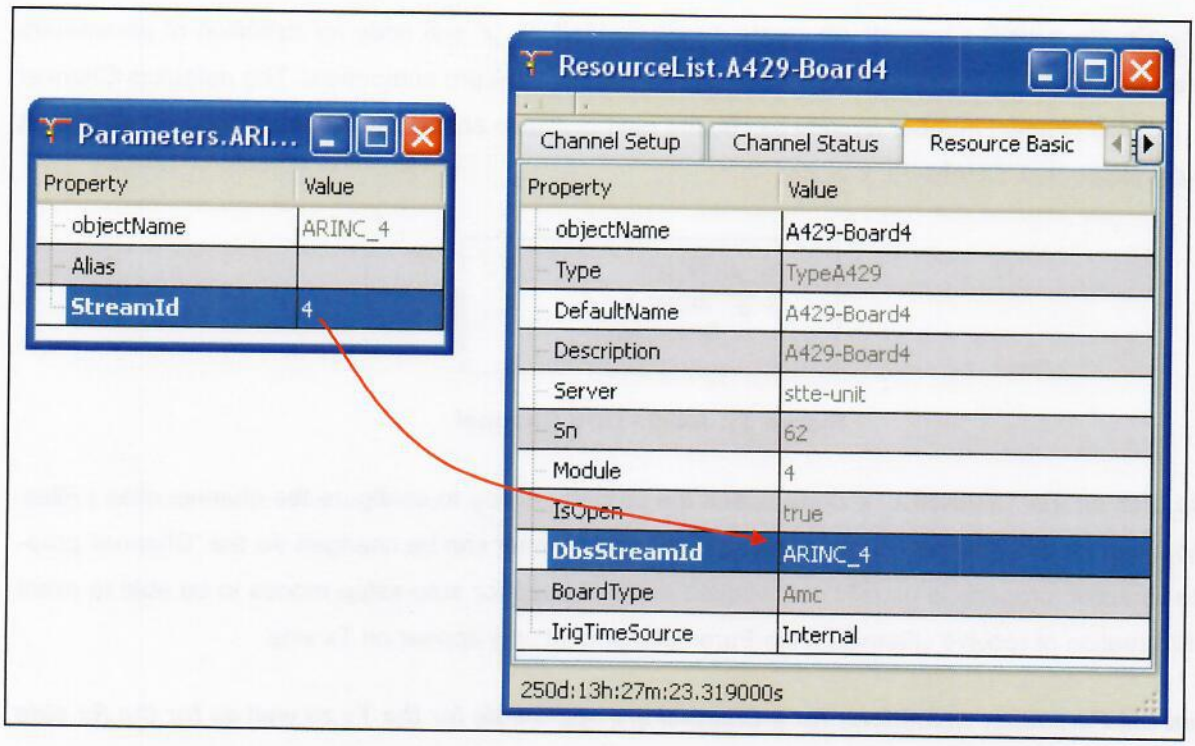


Figure 31: A429 - Database to Resource association

2.2.2 Channel creation

Selection of a 429 stream node and right mouse click offers a context popup menu for further operations.

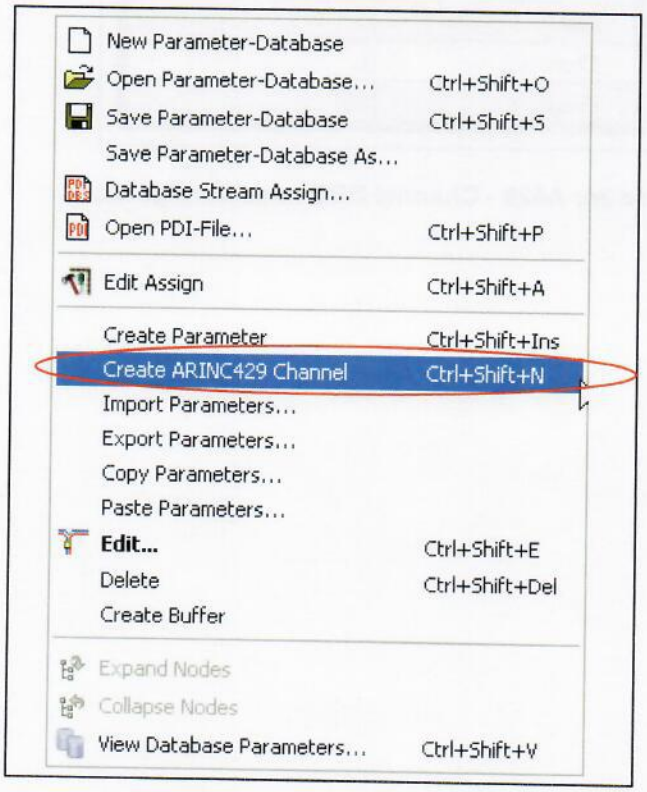


Figure 32: A429 - Channel creation

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The entry 'Create ARINC Channel' will create a new 'CHANNEL_x' sub node for definition of parameters associated with an ARINC Channel of an ARINC429 resource PBA.pro component. The default is Channel number 1. If this channel number already exists, the next available channel number will be used as default number of subsequent 'CHANNEL'x' nodes.



Figure 33: A429 - DBS Channel

A double click on the 'CHANNEL_x' node opens the property dialog to configure the channel alias ('Alias' property), used for this channel. Furthermore, the channel number can be changed via the 'Channel' property. The Direction property is usually not required and just used for auto setup modes to be able to avoid automatic creation of receive channels if the Parameter should only appear on Tx side.

Note that the Parameter definitions for a Channel are applicable for the Tx as well as for the Rx side if the corresponding label is available.

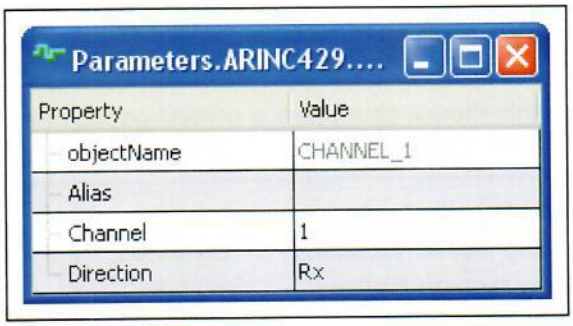


Figure 34: A429 - Channel DBS node configuration

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2.2.3 Label creation

Selection of a 'CHANNEL_x' node and right mouse click offers a context menu for further operations.

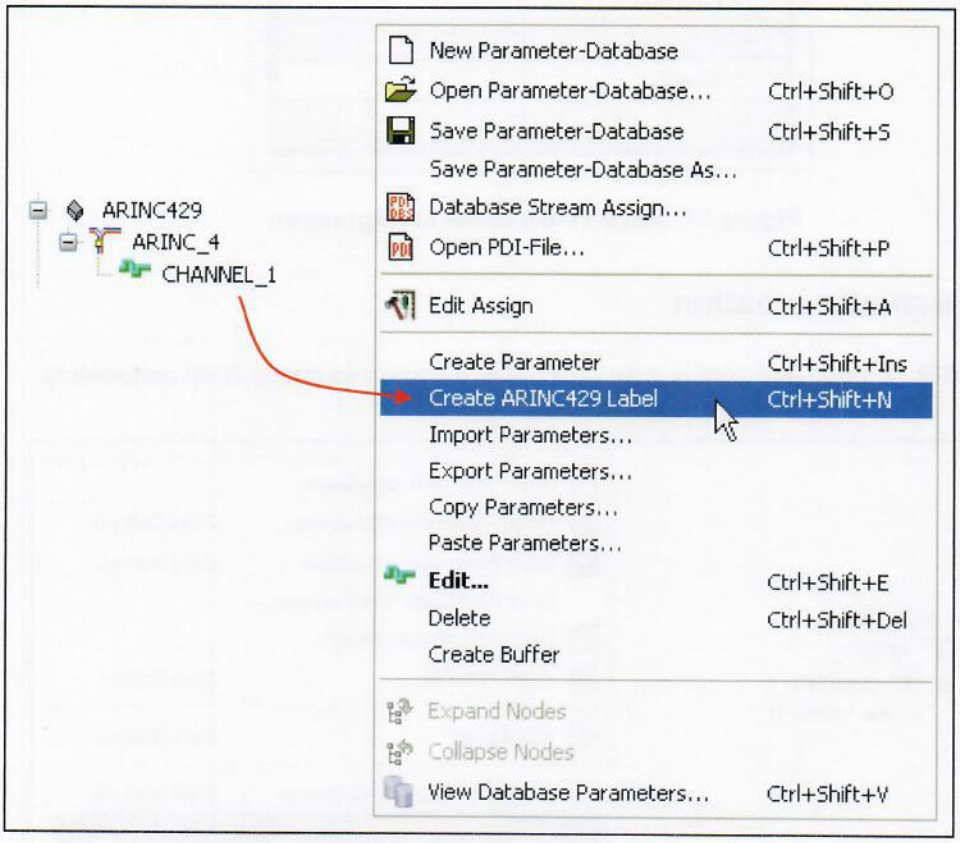


Figure 35: A429 - DBS Label creation

The entry 'Create ARINC Label' will create a new 'LABEL_x' sub node for definition of parameters which are associated with the Label Number x on the corresponding channel of the ARINC429 resource PBA.pro component.



Figure 36: A429 - DBS Label node

Per default, the database manager starts with LABEL_0 and performs an auto increment on further creations. A double click on the corresponding node opens the property editor of the node, where the Label number, the Alias of the Label as well as a 'Comment' can be modified resp. specified.

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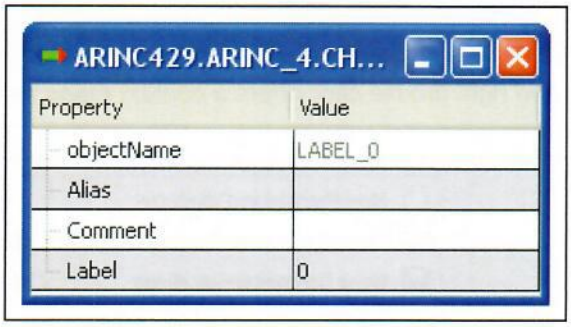


Figure 37: A429 - DBS Label configuration

2.2.4 SSM Parameter creation

Selection of a 'LABEL_x' node and right mouse click offers a context to create SSM parameters.

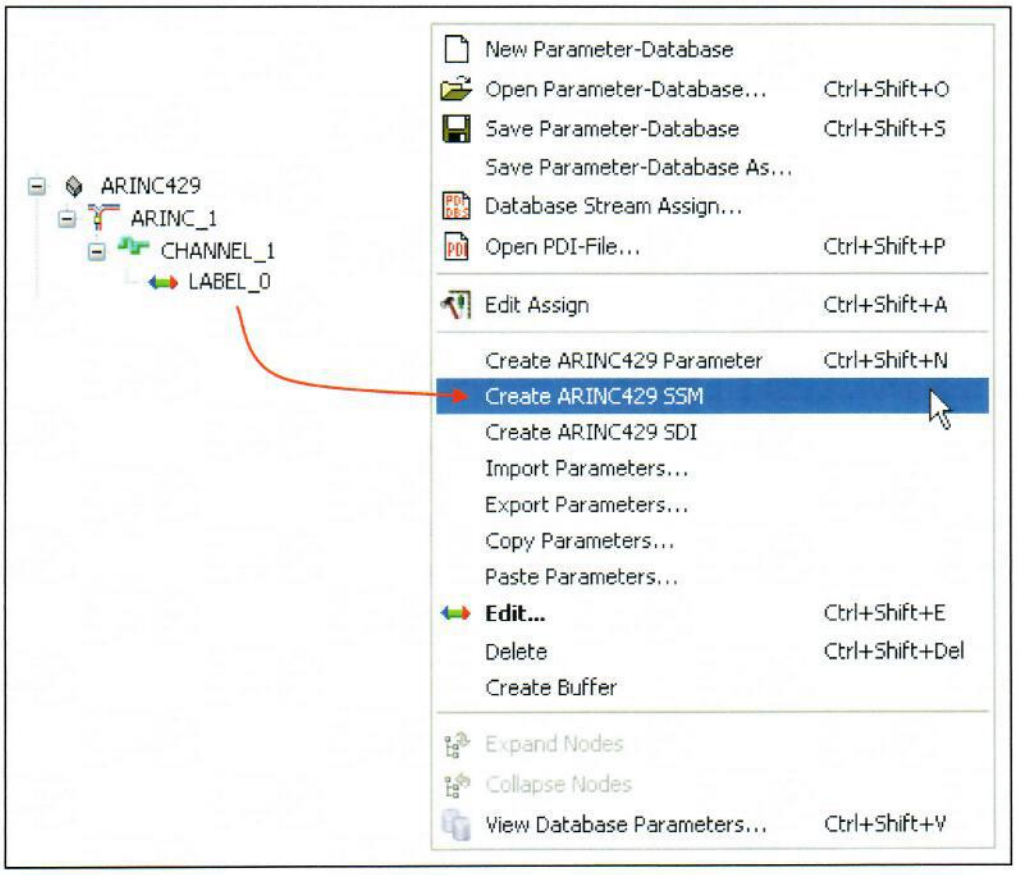


Figure 38: A429 - SSM Parameter creation

The entry 'Create ARINC429 SMM' will create a new 'SSM' sub node which represents a 2-Bit SSM enumerated parameter on the selected label. See the default settings for an SSM parameter below. The default values for bit position, bit length and format settings are editable and can be modified by the user.

Note that only one SSM node per label is supported.

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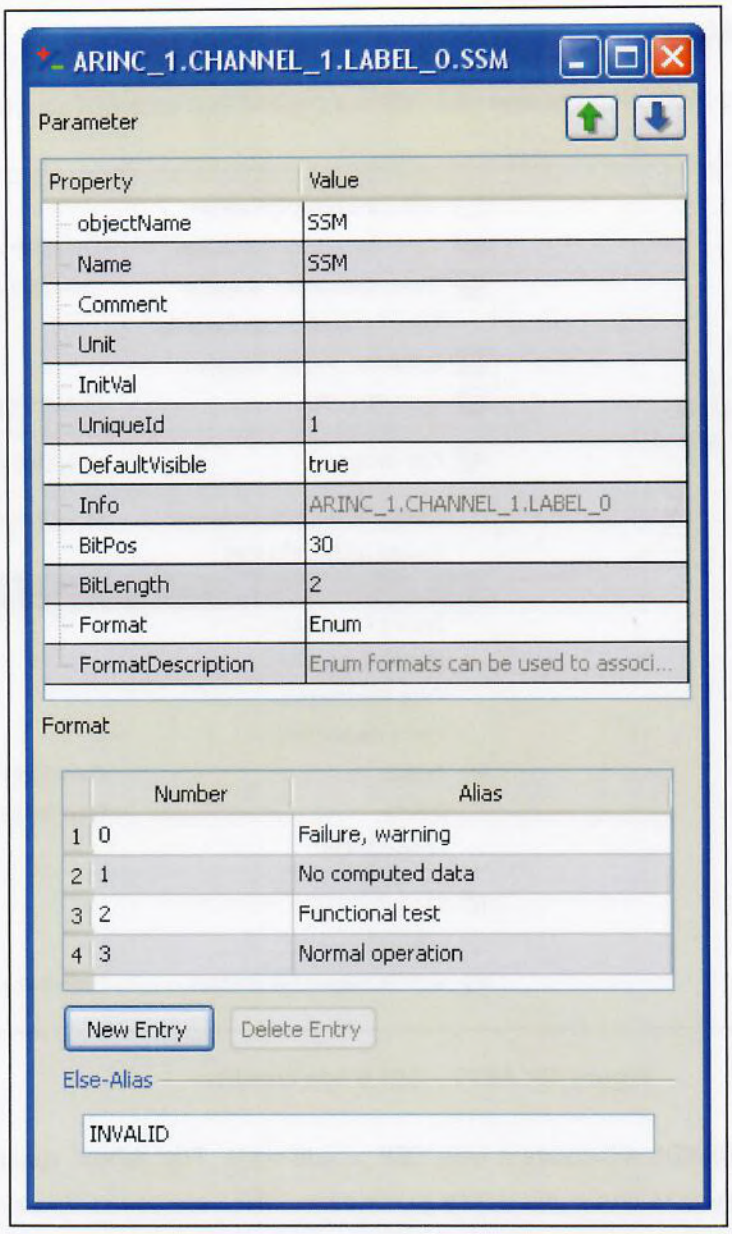


Figure 39: A429 - SSM DBS node configuration

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2.2.5 SDI node creation

Selection of a 'LABEL_x' node and right mouse click offers a context to create SDI structural nodes.

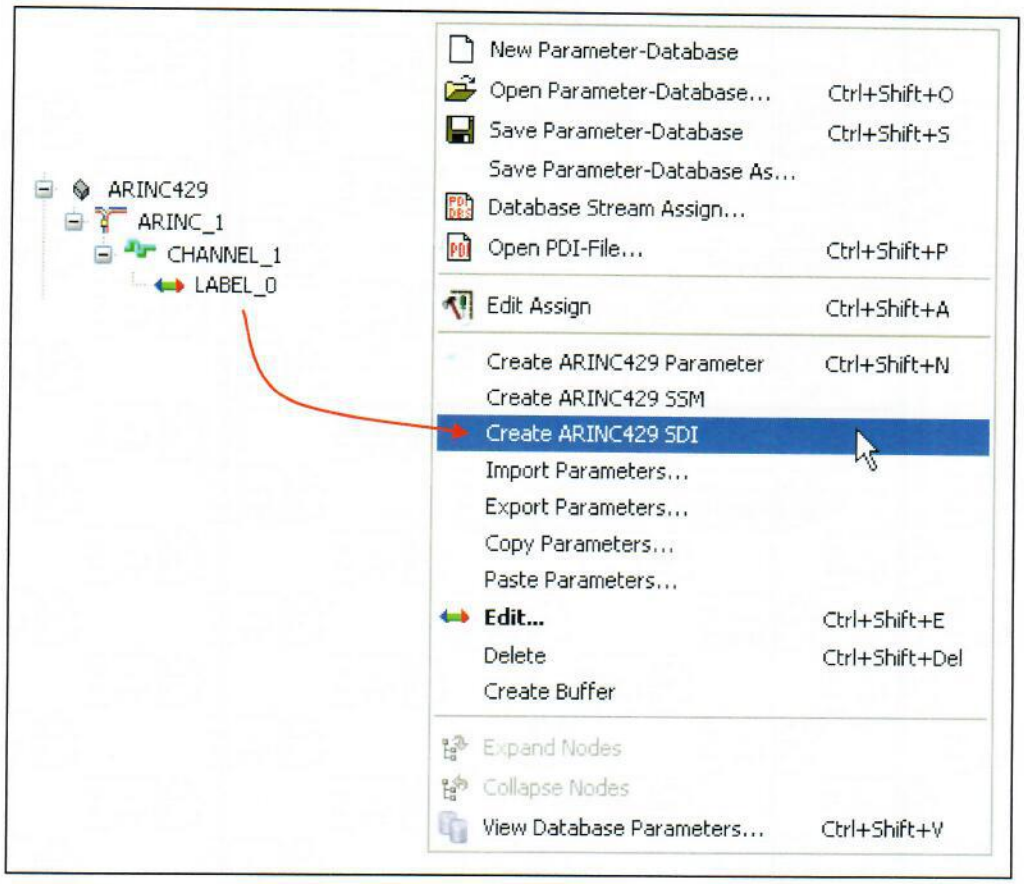


Figure 40: A429 – SDI Node creation

The entry 'Create ARINC429 SDI' will create a new 'SDI_x' sub node. The default value is 1. The 'SDI_x' sub node is a structural element to group and define parameters, which are associated to an SDI value.



Figure 41: A429 - SDI DBS node

A double click on the 'SDI_x' node will open the property editor to change the SDI number via the 'SdiMode' property. The 'ExLabel' property displays the "virtual" label number, which is automatically calculated by 'Number' * 256. Up to 4 SDI nodes representing the SDI values 0,1,2,3 are supported. As the SDI is displayed binary, the SDI can be set either to SDI_00, SDI_01, SDI_10 or SDI_11. Hence, the label can be extended by the two SDI bits, whereby "virtual" label numbers from 0....1023 can be set. Furthermore an Alias as well as a comment can be set for a SDI node.

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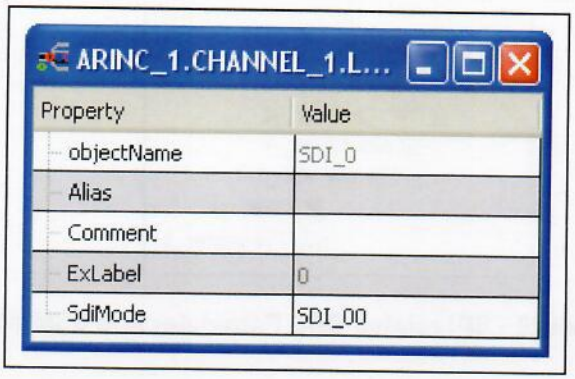


Figure 42: A429 - SDI DBS node configuration

2.2.5.1 SDI related Parameter creation

Selection of the 'SDI_x' node and a right mouse click offers a context menu for creation of ARINC429 parameters associated to a 'SDI_x' node. In addition to this, the creation of an SDI related SSM is supported as well.

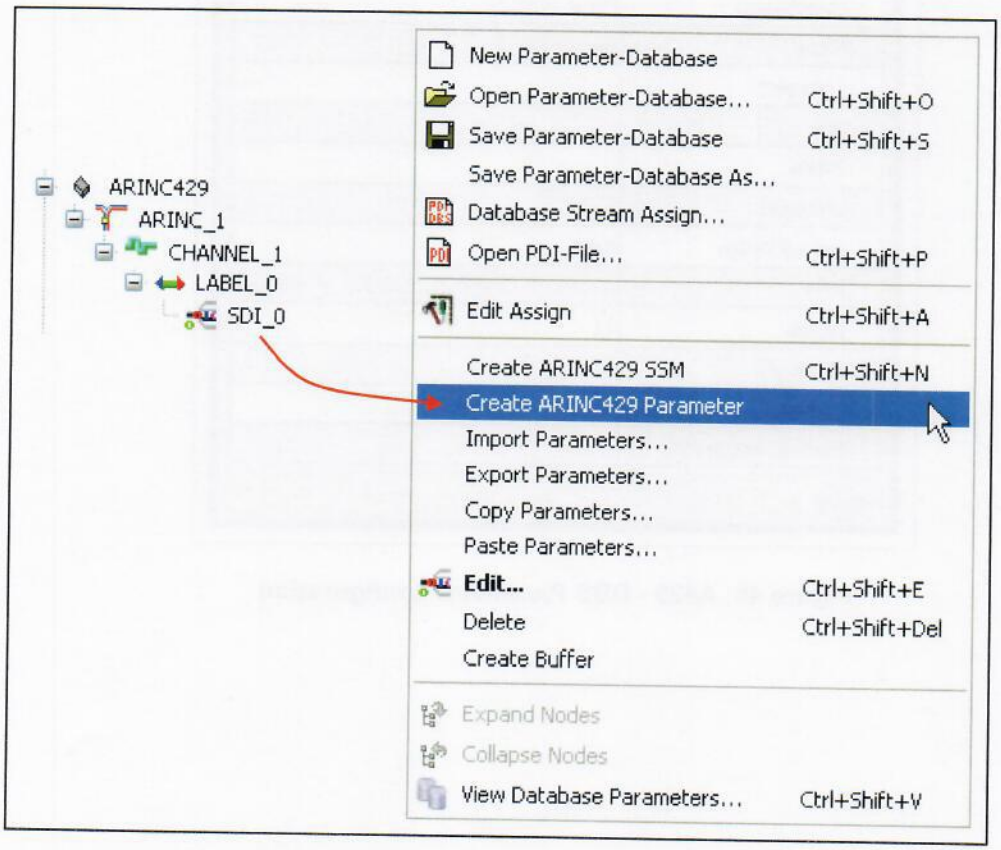


Figure 43: A429 - SDI related Parameter creation

While the selection of the 'Create ARINC429 Parameter' will create a new 'Parameter_x' node below the 'SDI_x' node, representing an ARINC429 Parameters associated with 'SDI_x', selection of 'Create ARINC429 SSM' will create a SSM node (as explained in chapter 2.2.4, SSM Parameter creation).

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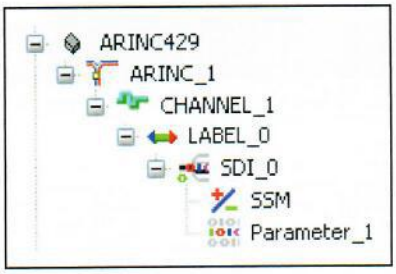


Figure 44: A429 - SDI related DBS Parameter and SSM node

A double click on the Parameter node offers modification of the basic parameter properties. See chapter 3, Edit Parameter Formats of this document for further details on editing Parameters.

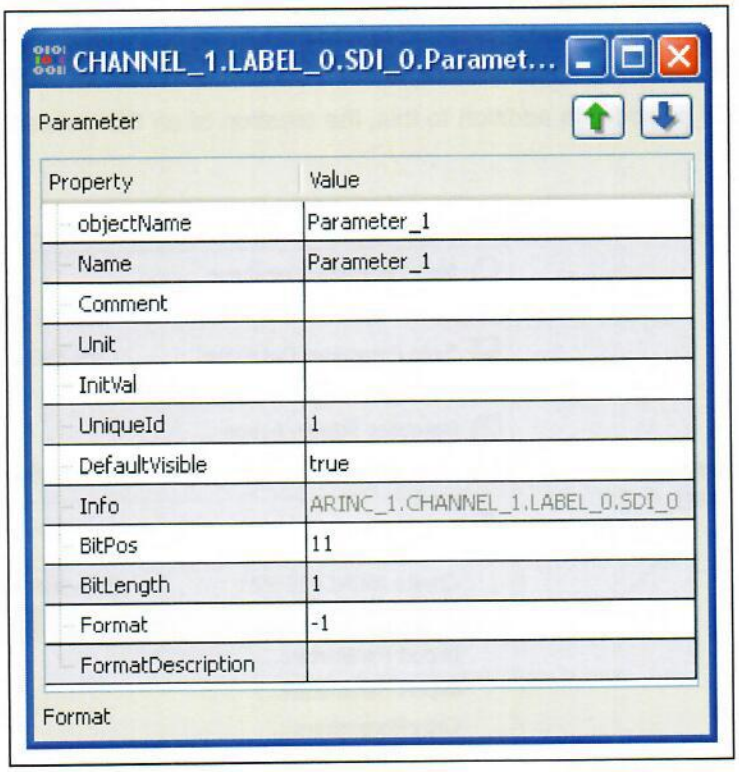


Figure 45: A429 - DBS Parameter configuration

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2.2.6 Parameter creation

Selection of a 'LABEL_x' node and right mouse click offers a context menu for creation of ARINC429 Parameters associated with the selected ARINC429 Label (independent from SDI).

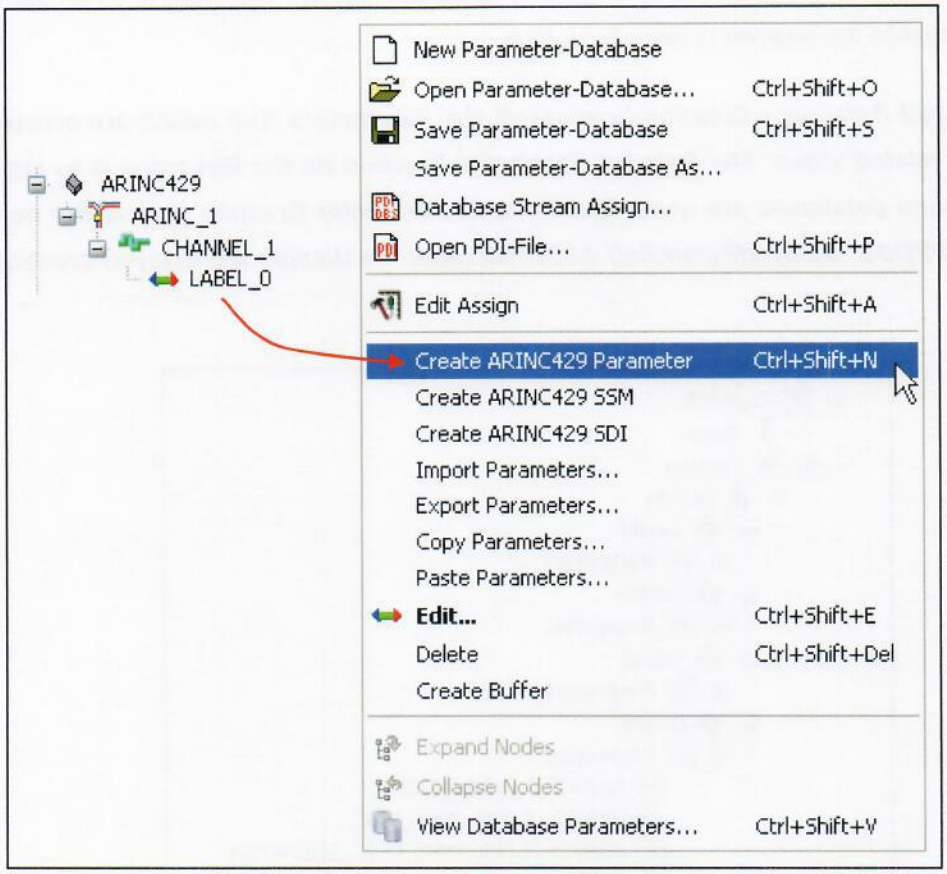


Figure 46: A429 - Parameter creation

The selection of the 'Create ARINC429 Parameter' creates a new 'Parameter_x' node below the 'LABEL_x' node, representing a ARINC429 Parameter associated with Label x. If SDI sorting is enabled on resource side, the Parameter is valid for all SDI values.



Figure 47: A429 - DBS Parameter node

A double click on the Parameter node offers modification of the basic parameter properties. See chapter 3, Edit Parameter Formats of this document for further details on editing Parameters.

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2.2.7 Parameter handling on Resource Side

For ARINC channels, configured in Receive mode, the associated parameters can be accessed via the corresponding Label sub node of an ARINC429 Channel 'Activity' sub node. A synchronisation between the resource and the database is performed automatically when the receiver is started or when the database has been changed while the receiver is already running.

Note: If the Delayed Parameter Creation is enabled, the Parameters Sub nodes are created on the first open of the related views. The Delayed Parameter Creation on the Resource is to improve the performance if huge databases are used. The Delayed Parameter Creation option can be disabled via the Settings PPDBS/ DelayedParamRef/ A429DBSLabel. To disable the delayed creation set the value to "false".

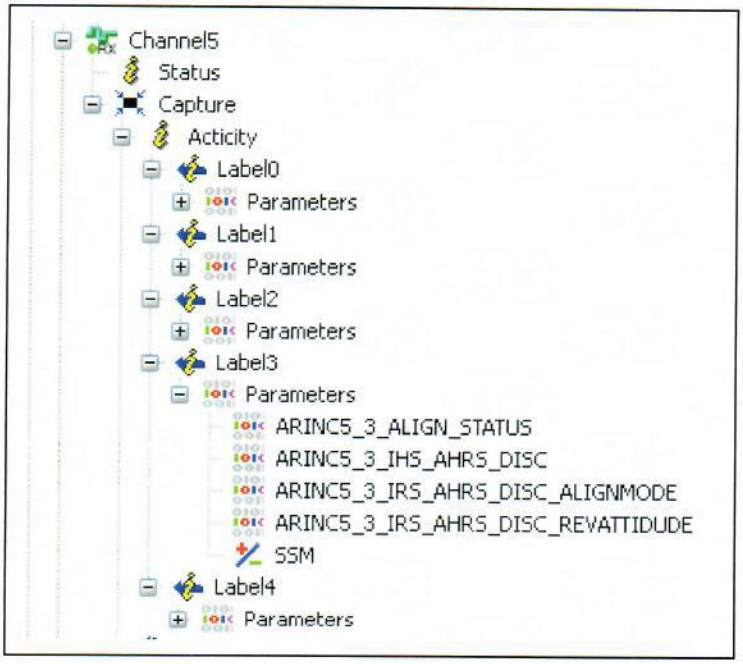


Figure 48: A429 - Parameter instances on Rx resource side

For ARINC channels configured in Transmit mode, the associated parameters can be accessed via the corresponding Label sub node of an ARINC429 Channel 'Activity' sub node. A synchronisation between the resource and the database is performed automatically when the transmitter is started or when the database has been changed whilst the transmitter is active.

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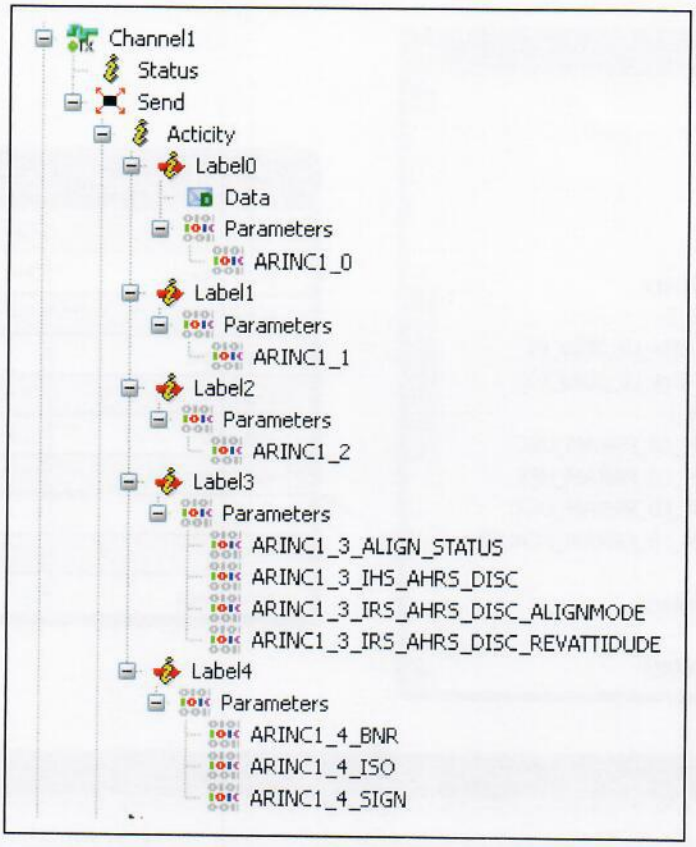


Figure 49: A429 - Parameter instances on Tx resource side

A double click on a 'Parameters' node opens the online display and lists the parameters associated with the selected node. A double click on a '<Parameter Name>' node opens the online display of the selected parameter. In both cases the on-line data resp. value(s) of the corresponding parameters will be displayed.

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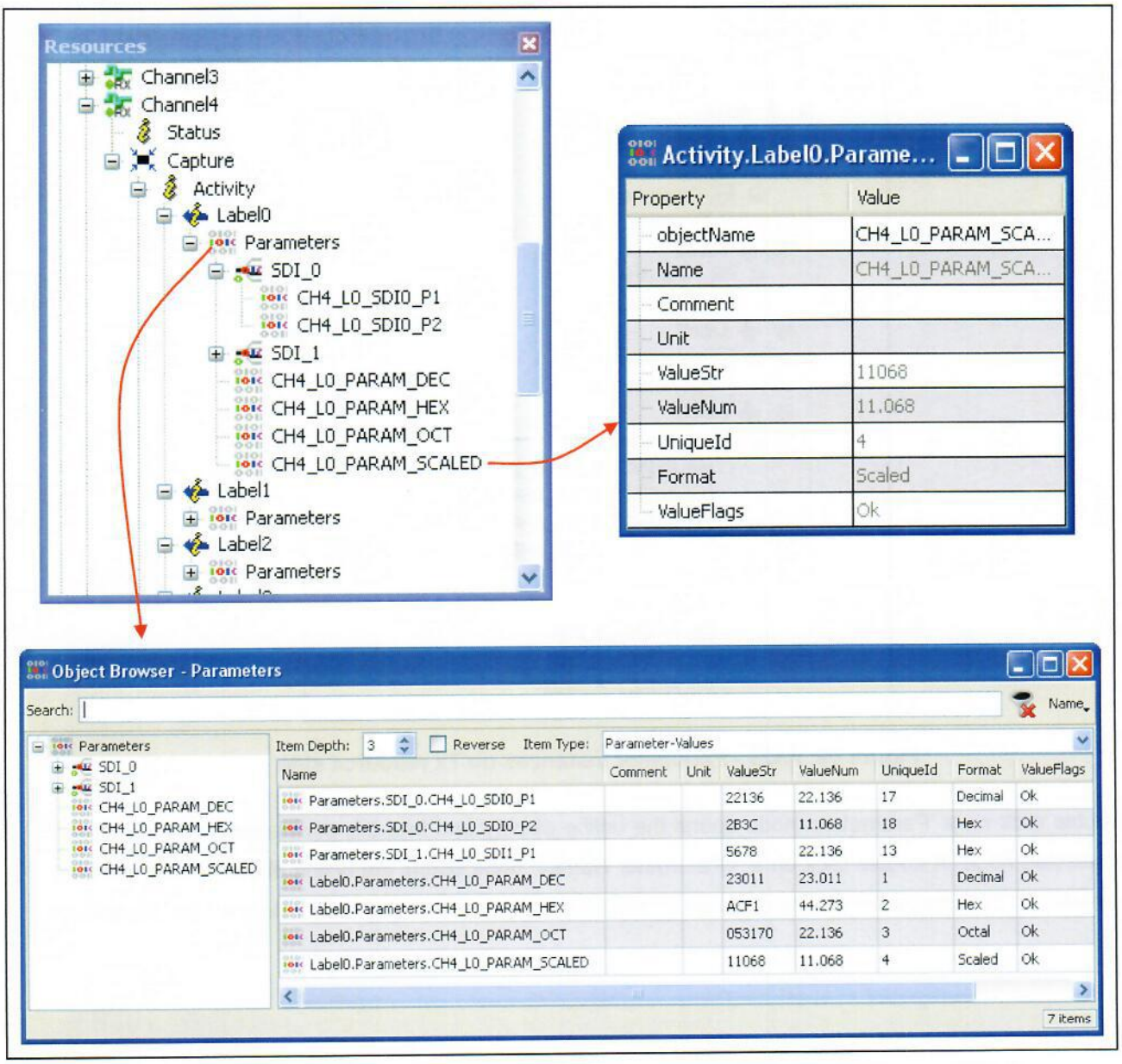


Figure 50: A429 - Parameter online displays

2.2.8 Parameters in the chronological Bus Monitor

If the resource is properly synchronised with the database, the chronological bus monitor will display the parameters associated with a particular captured message. Selecting a message in the chronological bus monitor opens the detailed message view. In this view the Meta information of the message as well as a 'Parameters' node will be displayed. Expanding that node will list all parameters, associated with the current message.

Selection of a single parameter will indicate its location in the raw data of the message by highlighting the associated data word(s) or parts of it in red.

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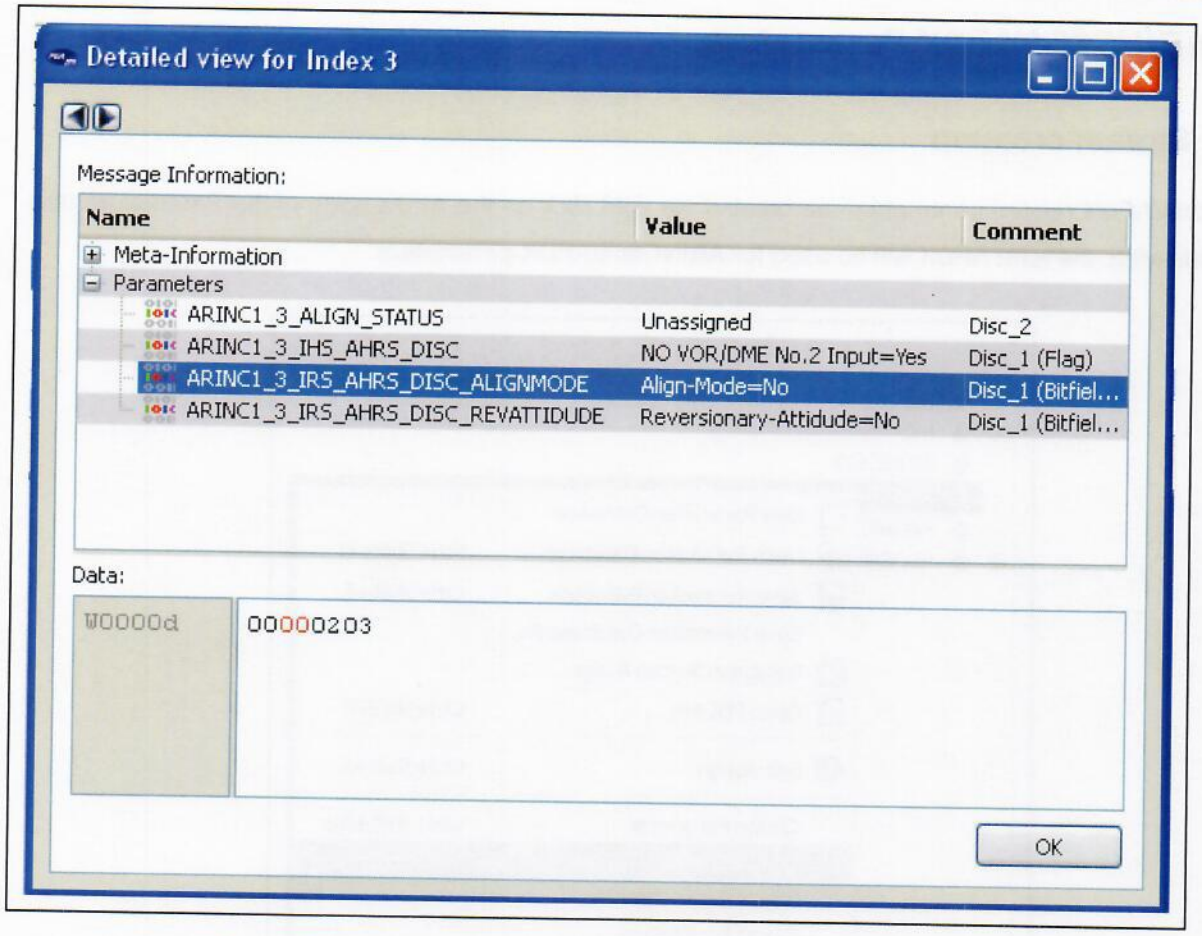


Figure 51: A429 - Parameters in Detailed view of Index View

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2.3 ARINC664/AFDX Parameters

2.3.1 Stream creation

ARINC664/AFDX related parameters are created via right click on the AFDX node of the Parameters tree. In the following, the term AFDX will be used for ARINC664/AFDX parameters.

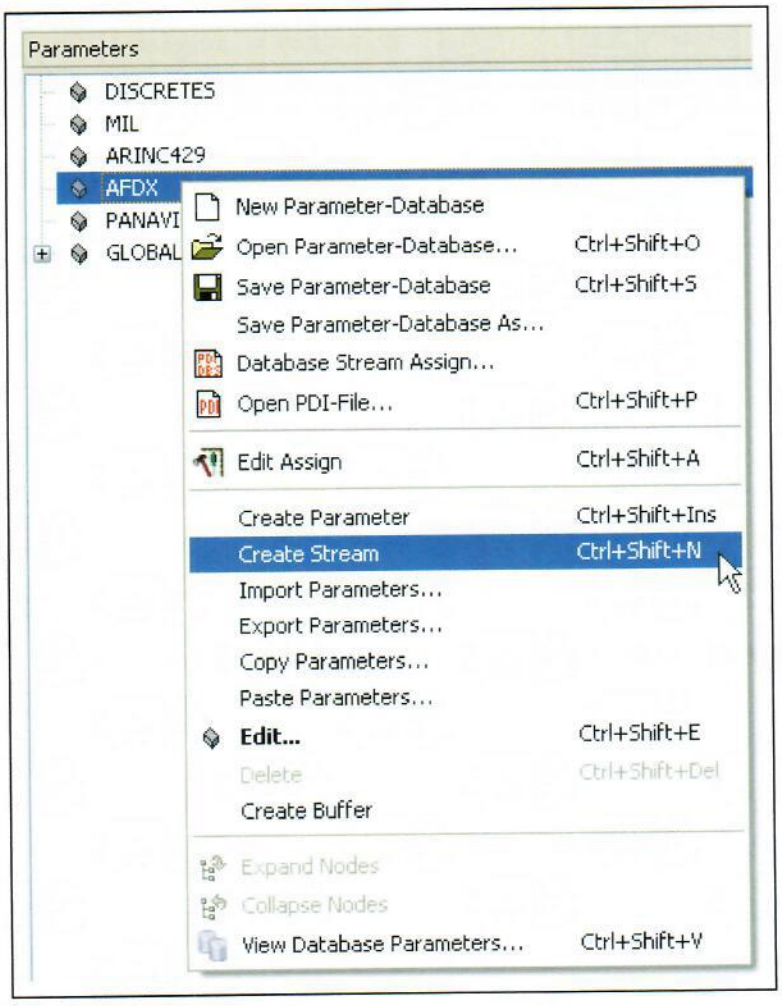


Figure 52: AFDX - Stream creation

A right click on the AFDX node in the Parameters tree will pop up the associated AFDX context menu, where the 'Create Stream' command will create a new AFDX stream node for definition of AFDX Parameters.



Figure 53: AFDX - DBS Stream node

The properties of a new stream mode are the 'Alias' and the 'StreamId'.

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The 'StreamId' property defines the association with the corresponding AFDX port. This means that this property resp. the value of the property has to match with the 'StreamId' property of the AFDX port (see below).

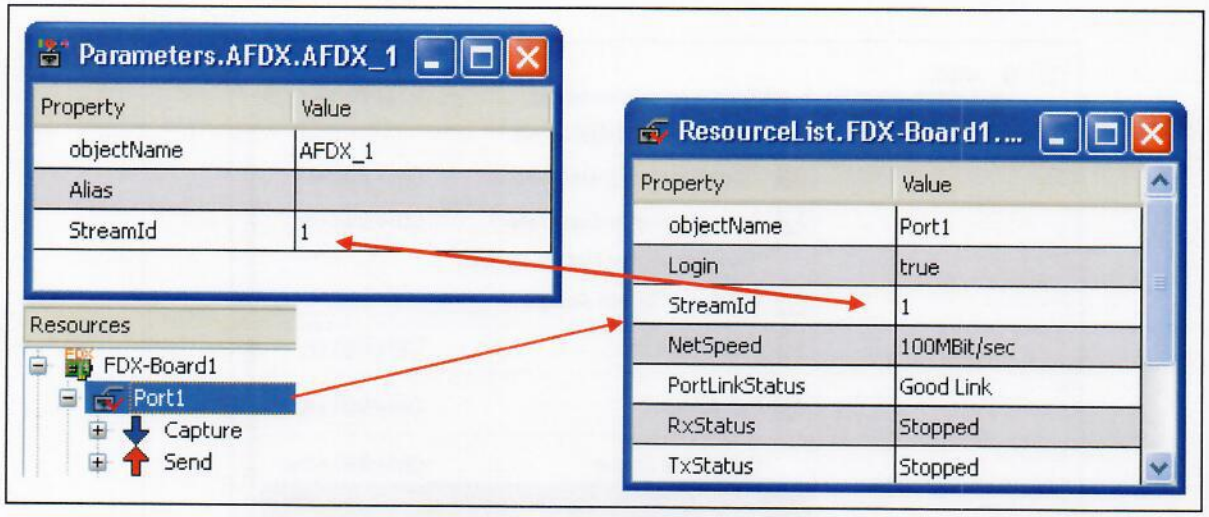


Figure 54: AFDX – Database to Resource association

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2.3.2 Virtual Link creation

Selection of a stream node (e.g. AFDX_1) and right mouse click offers a context menu for further operations.

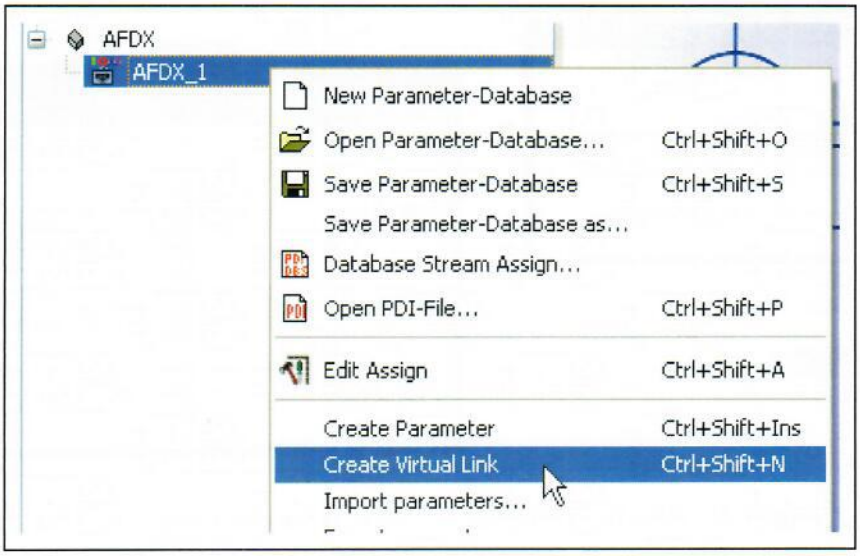


Figure 55: AFDX - DBS VL creation

'Create AFDX VL' creates a new Virtual Link (VL) sub node for definition of parameters associated with a virtual link of a PBA.pro AFDX resource component.



Figure 56: AFDX - DBS VL node

The virtual link number and the VL alias name can be set via the VL's property editor. This editor will pop up on double click on the VL node. Note that the VL number can be set to a Wildcard placeholder "*". If the property is set to a wildcard, all VL's will match to this database VL resp all tree nodes below the VL node. Thus, the knowledge of the VL is not required in any case.

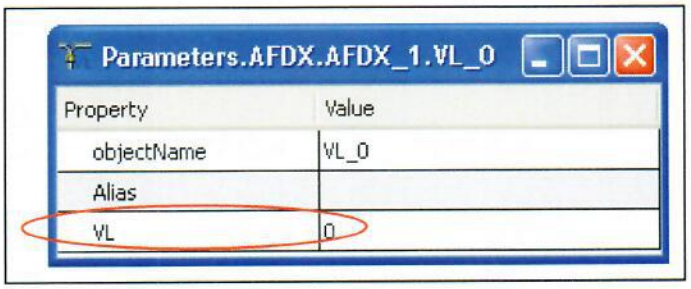


Figure 57: AFDX - DBS VL configuration

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2.3.3 Message creation

Selection of a virtual link node and right mouse click offers a context menu for creation of AFDX Messages, related to the virtual link.

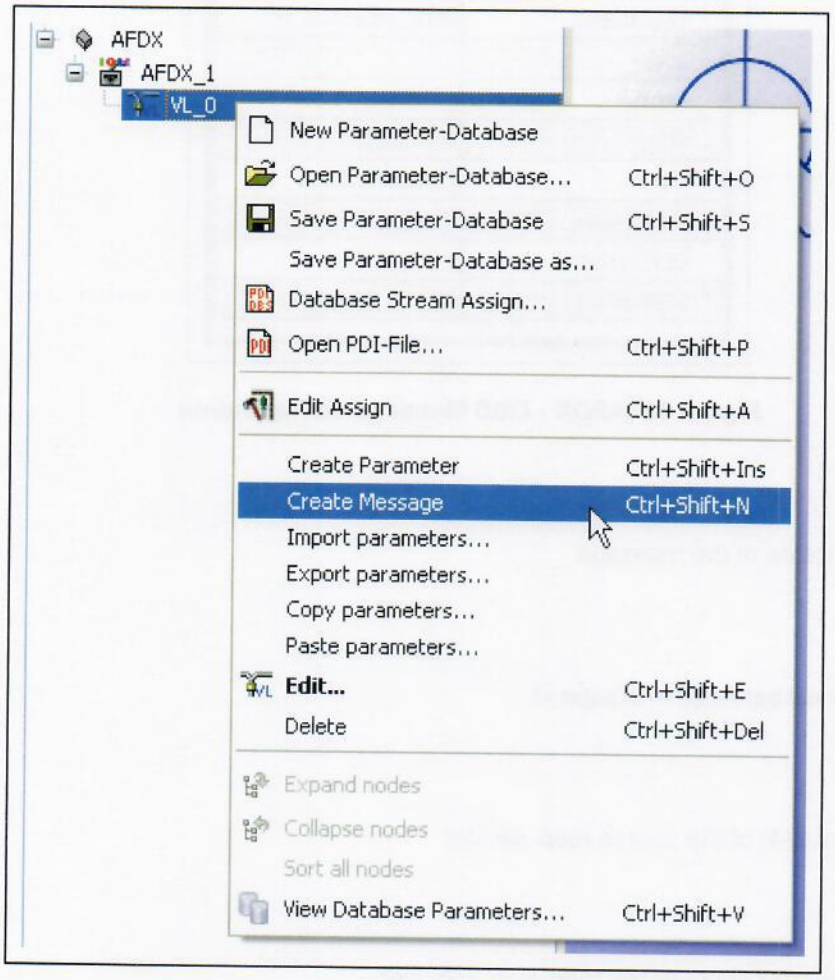


Figure 58: AFDX - Message creation

The 'Create Message' command will create a new, empty message definition node for the selected virtual link.



Figure 59: AFDX - DBS Message node

A double click on the 'AFDX_MESSAGE_x' node opens the property dialog which supports configuration of the message properties.

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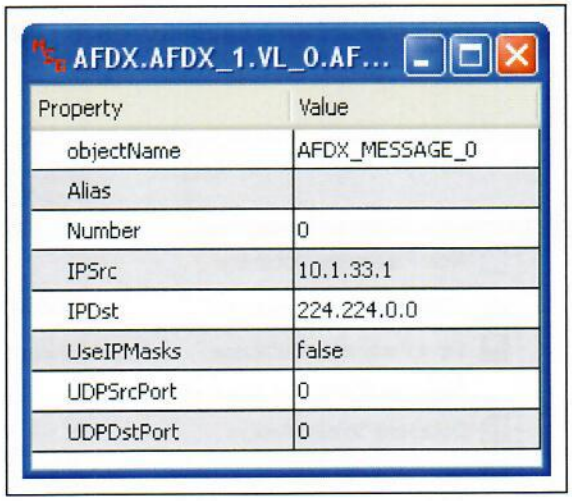


Figure 60: AFDX - DBS Message configuration

- **Alias:**

  The Alias name of the message

- **Number:**

  Message number resp. message id

- **IPSrc:**

  IP-Address (V4) of the source resp. sender

- **IPDst:**

  IP-Address (V4) of the destination resp. receiver

- **UseIPMasks:**

  This property indicates if IP masking features are used or not. See the wildcard section below for further details

- **UDPSrcPort:**

  UDP port of the source resp. sender

- **UDPDstPort:**

  UDP port of the destination resp. receiver

Note: To identify a message, the quintuplet, build of

- **the virtual link address**

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- **IP source and destination addresses**
- **UDP source and destination ports**

have to be unique.

2.3.3.1 Wildcarding the AFDX Message

Comparable with the VL number, the IP source and destination as well as the UDP source and destination ports can be wild carded. While the UDP source port and UDP destination port are wild carded by setting the corresponding property to the wildcard character "*", IP wildcarding is done by so called IP Masks.

To wildcard either the source or destination IP, the IP Masks have to be enabled by setting the UseIP-Masks property to true, where two additional IP Mask properties will be provided.

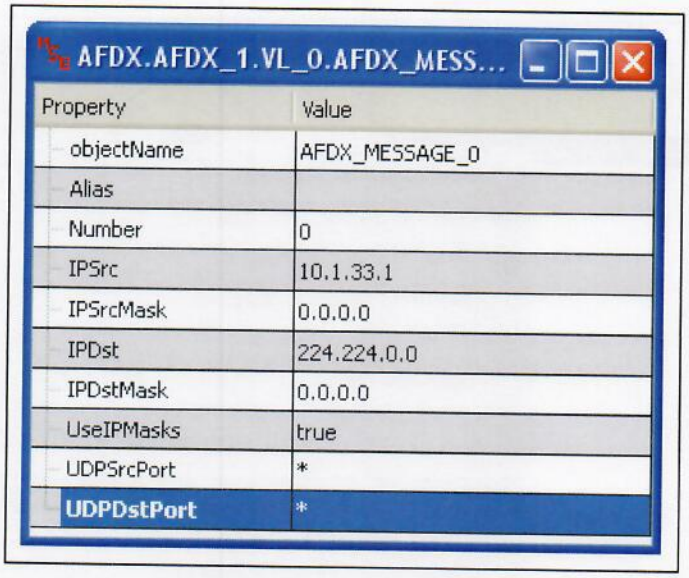


Figure 61: AFDX - DBS Message IP Wildcarding

Wildcarding of an IP is comparable to sub netting in Ethernet networks. Like an IP address the IP mask contains four bytes (32 bits) and is often written using the same "dotted-decimal" notation. For example, a very common IP mask in its binary representation 11111111 11111111 11111111 00000000 is typically shown in the equivalent, more readable form 255.255.255.0. All bits of the Mask, which are set to 0 are ignored resp. accepted. All bits set to 1 have to match the IP definition exactly.

Example:

All IP's from 192.168.0.0 to 192.168.0.255) should be accepted. Thus, the following configuration is to be set up:

- *UseIPMasks property is to be set to true*
- *the IPSrc property to 192.168.0.0*

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- *The IPSrcMask property to 255.255.255.0*

Note: As all values of the last IP section will be accepted, the IPSrc property could be set to any accepted IP address like 192.168.0.50 or 192.168.0.123 as well.

2.3.4 Creation of Global Parameters, Functional Data Sets and Frame Header Parameters

Selection of an AFDX message node and right mouse click offers a context menu for creation of 'Global Parameters', a 'Functional Data Set' (FDS) and 'Frame Header Parameters'. These types of object nodes will act as parameter containers for structuring different types of parameters.

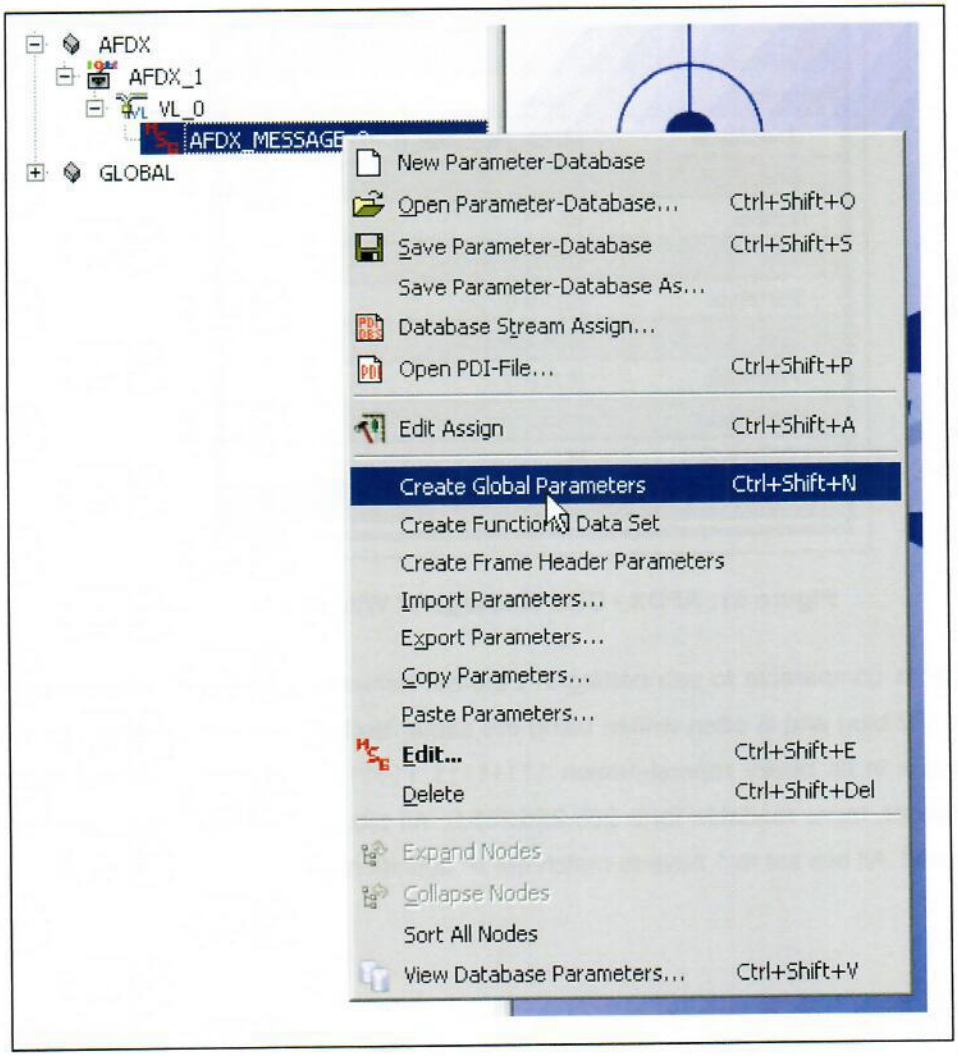


Figure 62: AFDX - Global Parameters, FDS and Frame Header Parameters creation

While the 'Create AFDX Global Parameters' and the 'Create Frame Header Parameters' entries will allow to just create a simple AFDX parameter (located below the new entry 'GlobalParameters' / 'Frame-

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HeaderParameters'), the 'Create AFDX Functional Data Set' entry provides the possibility to structure the later defined parameters of a message via functional data sets.

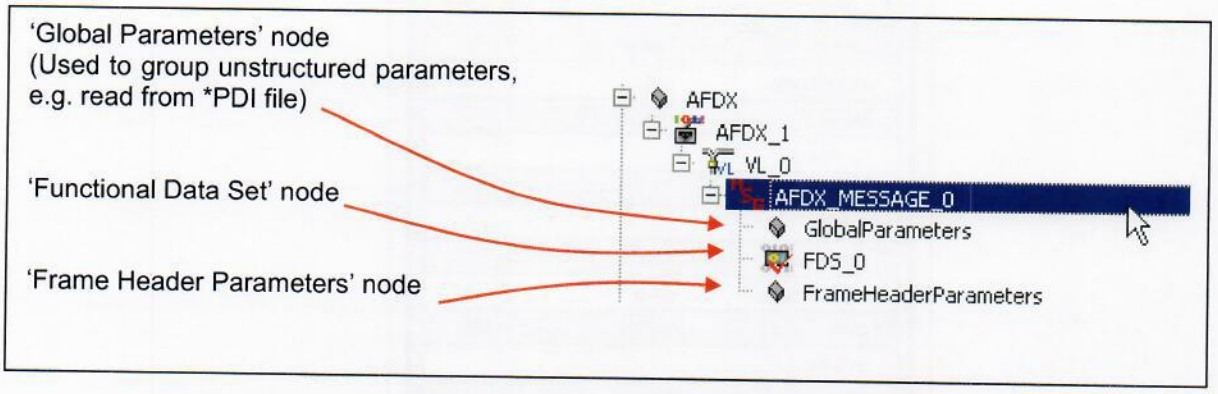


Figure 63: AFDX - Global Parameters, FDS and Frame Header Parameters node

The FDS number and the FDS alias name can be set via the FDS_x's property editor which will pop up on double click. The setup of parameters will be explained in the following chapters.

2.3.5 Functional -Status and -Data Set Parameter creation

Within a Functional Data Set (FDS) two different types of parameters can be configured. While each FDS can hold multiple 'Data Set parameters' (DS) to describe and convert message sections into engineering units. 'Functional Status' (FS) parameters occur only once per FDS. The FS parameter is used to indicate the validity of the DS parameters. The 'Create AFDX FS' resp. 'Create AFDX DS' command will create the corresponding node.

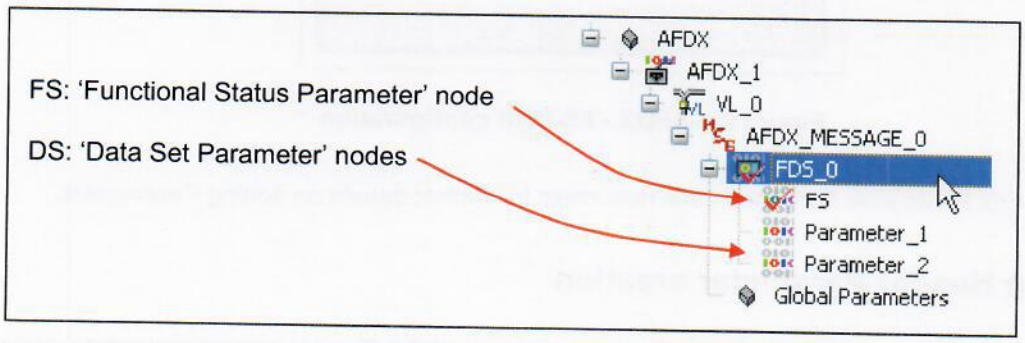


Figure 64: AFDX - FS and Data Set Parameter nodes

A double click on the 'FS' node or 'Data Set Parameter' node will open the property editor dialog. This dialog can be used for configuration of the properties of the corresponding parameter node. The FS parameter is used to show if the send data was valid or not. Therefore the properties of the FS parameter are pre-configured as follows:

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