TEXAS
INSTRUMENTS

Service Access Point

Include SAP example

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0.1   Document History

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0.2   References, Abbreviations, Terms

Table of Contents

1   Introduction

This Include Service Access Point (SAP) is made in order to demonstrate the general use and possibilities of an include SAP. By using an include SAP it is possible to use the same structures or elements in several SAPs without having to declare them in every single SAP which use them. This is done by linking to the desired element or structure in the include SAP. In this include document the actual declarations of the linked types used is placed and therefore only needs to be defined once. This way it is also easy to change a structure used in several SAPs without having to change every single SAP. This document is made from the description of the SAP syntax in [TI 8350.301 SAP Syntax]. As for the SAP example document all the parameters in this document are fictive and is only intended for illustrating different possibilities of the SAP syntax. As a result of this the description of the parameters will not be as thorough and informative as it should be for real SAP document.

As for the normal SAPs it is very important to make thorough descriptions of the parameters as this document also serves as documentation. This also goes for the introduction, which should resemble the one for the normal SAPs and clearly describe the purpose and content of the SAP.

Chapter 2 contains a specification of constants used, which are not specific to the value of a particular parameter. Such constants are typically size fields, specifying array or element sizes.

Chapter 3 contains a list of exported parameters. As this is an include SAP no primitives should be defined in this document. This list also serves as a short name index of all the parameters linked from other SAP documents. All exports of parameters shall be done from this section.

Chapter 4 contains the specifications of the common types. It also contains specifications of parameters with predefined values or value ranges. Cross-references to subtypes may be used within this section for complex type declarations

For a more thorough description of the SAP introduction please refer to the Example SAP document [TI 8350.405].

2 Constants

Description:

This section contains declarations of pragmas and constant values. The pragmas are used to modify the behaviour of the TI tool chain and the constants are used throughout the remaining part of the document. In this case the parameters are prefixed with EX_INC and the creation of enumerations in the .val file is enabled. Furthermore two constants are declared of which one is linked to from the example SAP.

Pragma:

Name	Value	Comment
PREFIX	EX_INC	Prefix for this document
ALLWAYS_ENUM_IN_VAL_FILE	YES	Enumeration values in value file
COMPATIBILITY_DEFINES	NO	Compatible to the old #defines
CAPITALIZE_TYPENAME	NO	Not to be used
ENABLE_GROUP	NO	Grouping will not be used

Definition:

Name	Value	Comment
SIZE_MAX	0x0010	Example of a constant used to control the maximum number of elements of an structure (value 16)
LINK_CONSTANT	-2	Example of a constant to be linked in the SAP document.

History:

1-September-01	KKS	Initial
18-September-01	CSH	Changed name EXINC_SIZE_MAX to SIZE_MAX because prefixing of constants is working.
18-September-01	CSH	Added a new constant, which is linked from the EX_SAP.
18-September-01	CSH	COMPATIBILITY_DEFINES.=NO

3   Primitives

As this is an include document there are no primitives defined in this SAP. This section however needs to contain some text in order for the SAP to parse. This section contains all the exported parameters, which have been linked from other SAPs. Note that linked CONSTANTS are not listed here but only in the Constants section above. That is, all exported parameters except from CONSTANTS shall be exported from the following section.

Please notice the SAP ID, which is special for the Include SAPs. As opposed to traditional primitives, which are normally declared in this section the ID starts with 0 as opposed to 8. In order to support several include SAPs the last two digits are used as SAP identifier to number the documents as for normal SAPs. That is if another include SAP was to be added along with this the ID would be 0x00000001 and so forth.

3.1   Exported Parameters

Description:

    This section contains all the exported type from this include document. In addition to this the developer can use it as a Short Name index. (This message is to keep xGen happy, in the following 2 respects: The primitive section cannot be empty and all parameters should be used)

Definition:

Short Name	ID	Direction
EXAMPLE_INC_EXPORT	0x00000000	SLA->MAS

Elements:

Long Name	Short Name	Ref	Type
Complex union example	union_element_2	4.5	UNION
Linked struct example	linked_struct	4.3	STRUCT

History:

    1-September-01   KKS   Initial

4   Parameters

This section contains the actual declarations of parameter types, parameter values and parameter ranges linked to by other SAP documents.

4.1   Signed Integer, 8-bits

Description:

This is the definition of an 8-bit signed integer parameter.

Definition:

Type	Short Name	Comment
S8	signed_8_bit	Used by the linked struct

History:

16-Marts_03   KSP   Initial

4.2   Unsigned Integer, 8-bits

Description:

This is the definition of an 8-bit unsigned integer parameter. This also illustrates the possibility of using the same Definition with three different **Short Names**.

Definition:

Type	Short Name	Comment
U8	unsigned_8_bit_1	Used by union_element_3
U8	unsigned_8_bit_2	Description of the type
U8	unsigned_8_bit	Used by the linked struct

History:

1-September-01   KKS   Initial
16-Marts_03   KSP   Added unsigned_u8

4.3   Linked struct

Description:

This is an example of the definition of a linked STRUCT. The STRUCT is made up of two arrays of simple integers. The first array called unsigned_8_bit is a fixed size array of size 5 and the second called signed_8_bit is a dynamic array of size 1 to 6. For the latter a counter element with prefix c_ is created to determine the actual array size. The type of this counter is dependent of the size of the array.

Definition:

Type	Short Name	Comment
STRUCT	linked_struct	Example of linked struct

Elements:

Long Name	Short Name	CTRL	Ref	Type
Simple integer	unsigned_8_bit	[5]	4.2	U8
Simple integer	signed_8_bit	[1..6]	4.1	S8

History:

16-Marts-03   KSP   Initial

4.4   Struct element2

Description:

This is an example of the definition of a STRUCT. The struct is made up of a single UNION. In addition to this a union controller with prefix ctrl_ is created to determine which element in the union is used.

Definition:

Type	Short Name	Comment
STRUCT	struct_element_2	Container

Elements:

Long Name	Short Name	CTRL	Ref	Type
Union example	union_element_3		4.6	UNION

History:

29-August-01   KKS   Initial
28-September-01   CSH   Adding missing ref

4.5   Union element 2

Description:

This is an example of the definition of a more complex UNION. The UNION contains a U8 element and a STRUCT containing a UNION. Please note that a union cannot contain another union directly due to the creation of the union controller. For more detail on this please refer to the SAP syntax document.

Definition:

Type	Short Name	Comment
UNION	union_element_2	Container

Elements:

Tag ID	Long Name	Short Name	Ref	Type
unsigned_char_example	8-bit unsigned integer	unsigned_8_bit_1	4.2	U8
struct_2_example	Struct 2 example	struct_element_2	4.4	STRUCT

History:

1-September-01   KKS   Initial

4.6 Union element 3

Description:

This is an example of the definition of a simple UNION containing two elements of type U8..

Definition:

Type	Short Name	Comment
UNION	union_element_3	Container

Elements:

Tag ID	Long Name	Short Name	Ref	Type
unsigned_char_1	8-bit unsigned integer	unsigned_8_bit_1	4.2	U8
unsigned_char_2	8-bit unsigned integer	unsigned_8_bit_2	4.2	U8

History:

1-September-01   KKS   Initial