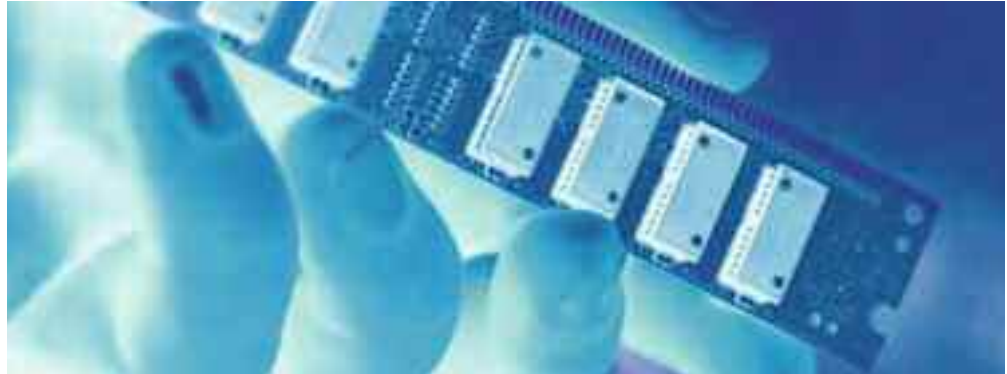


## HIGH LEVEL PERFORMANCES ASN.1 TOOLS FOR C, C++ AND JAVA



### About Marben Products

Since the 1980's, Marben Products has been supplying portable software solutions that meet standards from the most established telecommunication standardization bodies. Marben Products is recognized as a leading provider of standards based protocol software for Service Providers, Equipment Manufacturers and Software Development Companies.

Marben Products delivers highly robust and efficient signalling, routing and AAA solutions for the network control plane of Next Generation Networks (NGN) and the service control plane of IP Multimedia Subsystem (IMS).

Telecom players such as: ADC, Adtran, Alcatel-Lucent, Amdocs, Ciena, Cisco, Ericsson, Fujitsu, HP, Motorola, Nortel, Oracle, Siemens Communications, Sprint Nextel, Tellabs, Telesciences have been trusting MARBEN™ Products for its high quality performance products, expertise and industry leading support.

Marben Products is an affiliate of NE Technologies, Inc.

### MARBEN PRODUCTS OFFER

For now more than 20 years, Marben Products provides worldwide **ASN.1 solutions**. Our World class ASN.1 products enjoy a solid reputation for portability and robustness, with the capability to meet the performance and reliability requirements of telecom applications. They are widely used in various telecom applications such as GSM, UMTS, Intelligent Network, Billing (CDRs, TAP3), Network Management and Aeronautical Telecommunication Network.

**The MARBEN™ ASNSDK** product line (ASN.1 Software Development Kit) provides a powerful set of ASN.1 tools to speed up the development and the validation of your ASN.1 based application, thus reducing significantly the time to market. It satisfies the requirements of various kinds of application with a **Time optimized (TCE)** and a **Memory optimized (MCE)** Class of encoders/decoders.

### PRODUCT TARGET

**The TCE (Time optimized Class of Engines)** family of the **MARBEN™ASNSDK** product line, has been especially designed to satisfy high level performance requirements for ASN.1 values encoding/decoding

**ASNSDK TCE** conforms to **ASN.1 standards** with the whole set of ASN.1 encoding/decoding engines (**BER, DER, PER and XER**). It takes benefit from the powerful features such as extensibility, Information Objects, Parameters, automatic encoding/decoding of open type values.

Moreover, the ASNSDK TCE provides an **ASN.1 to XML translator**, which enables you to take benefit from many off-the-shelf XML tools to process your ASN.1 data in a user-friendly manner. It also offers a generic API dedicated to generic application such as browser or protocol analyzer that have to process (e.g. to display, to edit) ASN.1 data without prior knowledge of their types.

Delivered as portable source code, the TCE runtimes can fit to most of operating systems and platforms. XML Built-in facilities ease and speed up the integration and the validation of your application.

### KEY BENEFITS

*The MARBEN™ ASNSDK TCE* constitutes a suitable set of ASN.1 tools to speed up the development of your ASN.1 based applications requiring **PER** (both aligned and unaligned variant), **BER, DER** and **XER** (both Basic and canonical) encoding/decoding of data:

#### Fast

The maximum of processing is performed off line at the ASN.1 compilation; thus saving CPU time consumption during the encoding/decoding phase.

#### Portable

Benefit from our long experience in the design of portable products and thanks to an easy-to-use customization mechanism, the TCE encoding/decoding runtimes are portable on most of operating systems and platforms (Real Time OS, Windows, Linux, Unix platforms...).

#### Scalable

The TCE encoding/decoding runtimes are fully re-entrant in order to run on multi-threads system.

#### Easy to integrate

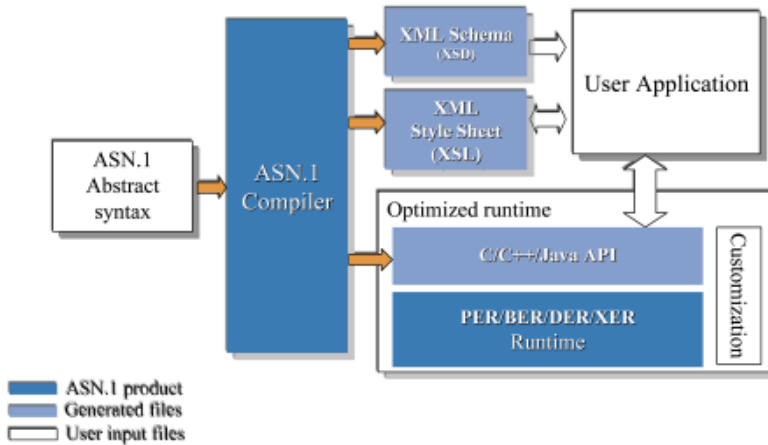
The TCE encoding/decoding runtimes produce **XML format traces** that allow to check the validity of a message, to analyze a decoding problem and to easily get a trace of the decoded value.

#### Cost-effective

Thanks to the ASN.1 to XML translator and the numerous off-the-shelf XML tools, you have fast and cost-effective solutions to develop your ASN.1 based application.

## TECHNICAL OVERVIEW

The *MARBEN™* ASNSDK TCE encompasses an **ASN.1 compiler**, **ASN.1 to XML translator** and a **PER** (both aligned and unaligned variant), **BER**, **DER** and **XER** (both basic and canonical) encoding/decoding engines providing either **ANSI C**, **C++** or **Java API**.



### TCE ASN.1 Compiler

The TCE ASN.1 compiler conforms to **ASN.1** standards (ITU-T X.680, X.681, X.682, X.683). It takes as input the user ASN.1 description, performs syntax and semantic checks and produces, if needed, the corresponding error messages. It generates a **C**, **C++** or **Java API** corresponding to the user ASN.1 description, and code that the TCE runtimes have to use to encode/decode ASN.1 data.

### TCE Runtimes

The TCE runtimes provide encoding/decoding services as well as constraints check and traces services. The user application has access to these encoding/decoding services through the **C**, **C++** or **Java API** generated by the TCE ASN.1 compiler.

The **C**, **C++** or **Java APIs** are user-friendly. To each type of the input ASN.1 description corresponds a C structure, a C++ class or a Java class. An ASN.1 value is a variable of a C type or an instance of a C++ class or a Java Class. To encode or decode a value, the PER, BER, DER or XER encoding or decoding method/function has simply to be called. The TCE runtimes reduce the complexity of your application programs by being able to automatically encode or decode open type values.

### Generic and SAX-like Java API

The TCE-Java runtimes also offer a Generic Java API to handle ASN.1 data in a generic way. The Generic Java API provides Java classes that are independent of the input ASN.1 description. The user has access to an ASN.1 value by providing the name of its ASN.1 type or the numeric identifier

generated by the ASN.1 compiler. The SAX-like API works exactly like an XML SAX API. Each decoded ASN.1 piece of data is given back to the user in XML format.

### ASN.1 to XML Translator

Based on the input ASN.1 description, the ASN.1 compiler generates an **XML Schema** (XSD) that conforms to XER (XML Encoding Rules) together with default **XML Style sheet** (XSL). Used in conjunction with the XER runtime, these features enable the user to:

- Encode any XML values, that conform to the XML Schema generated, in BER, DER or PER encoding (and vice-versa),
- Use off-the-shelf XML tools such as XSL processor to process ASN.1 values.

### An Open XML Architecture

The *MARBEN™* ASNSDK compiler encompasses an XML Semantic Tree generator. This Semantic Tree represents in XML format, a synthesis of all the information contained in the input ASN.1 description. This feature enables users to develop their own ASN.1 solution (such as building generic decoding engines or ASN.1 to other formal notation gateways) based on an open XML architecture.

## CONFORMANCE

ITU-T X.680 (2002) | ISO/IEC 8824-1: 2002,  
 ITU-T X.681 (2002) | ISO/IEC 8824-2: 2002,  
 ITU-T X.682 (2002) | ISO/IEC 8824-3: 2002,  
 ITU-T X.683 (2002) | ISO/IEC 8824-4: 2002,  
 ITU-T X.690 (2002) | ISO/IEC 8825-1: 2002,  
 ITU-T X.691 (2002) | ISO/IEC 8825-2: 2002,  
 ITU-T X.693 (2001) | ISO/IEC 8825-4: 2002.

## SYSTEM REQUIREMENTS

TCE ASN.1 Compiler: PC Windows 32 bits (2000, XP, 2003), PC Linux and UNIX platforms (Solaris, HP-UX).

TCE C and C++ runtimes are delivered as portable source code.

TCE Java runtimes are delivered as Java byte code compatible with all Java Runtime Environment from J2ME CLDC 1.0 up to J2EE.

## RELATED OFFERS

### MARBEN™ ASN.1 Value Editor

The *MARBEN™* ASN.1 Value Editor is an easy-to-use graphical tool that allows you to rapidly decode, create, edit, modify and encode any ASN.1 values without developing any software.

### Consulting, Training and Custom service

[www.marben-products.com](http://www.marben-products.com)

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