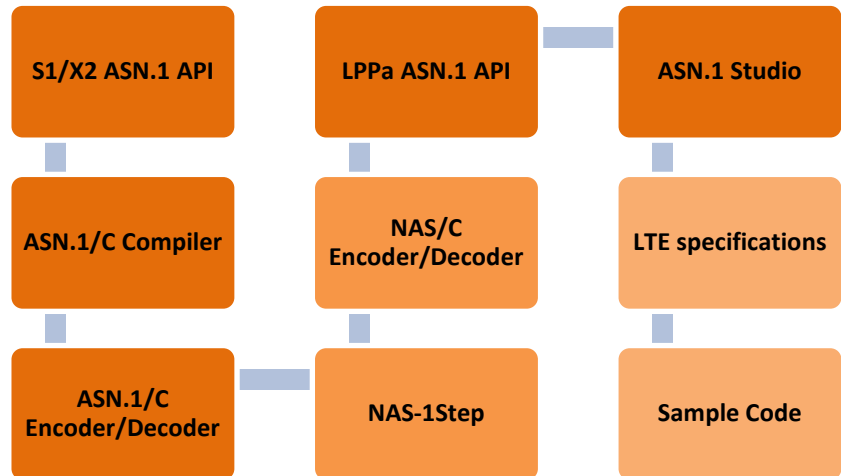## LTE Is Here.

Are You Ready?

The **OSS Nokalva LTE Products** are a complete, easy to use LTE ASN.1 and NAS product suite, tailored to meet the needs of LTE developers. The LTE Products are currently available on Windows, Linux, and several embedded platforms. Other platforms are available on request.

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S1/X2 ASN.1 API	LPPa ASN.1 API	ASN.1 Studio
ASN.1/C Compiler	NAS/C Encoder/Decoder	LTE specifications
ASN.1/C Encoder/Decoder	NAS-1Step	Sample Code

ASN.1/C Tools with S1/X2 & LPPa	
S1/X2 ASN.1 API	Provides S1/X2 developers with a set of functions addressing S1 and X2 data interpretation and construction tasks
S1/X2 API Samples	Sample code showing how to create messages using the S1/X2 API, how to create S1 messages containing LPPa messages using the LPPa API, as well as how to send synchronous/asynchronous messages
LPPa ASN.1 API	Provides LPPa developers with a set of functions addressing LPPA data interpretation and construction task
LPPa API Samples	Sample code showing how to create messages using the LPPa API, how to create S1 messages containing LPPa messages using the S1/X2 API, as well as how to send synchronous/asynchronous messages
ASN.1/C Compiler	Powerful ASN.1:2015 capable compiler
ASN.1/C Encoders/Decoders	Industry-proven, reliable ASN.1 runtime libraries capable of unparalleled encoding/decoding speed
ASN.1 Studio™	ASN.1 IDE that further simplifies the 4G development. Includes custom projects and sample messages for 3GPP LTE S1, X2 and RRC
LTE ASN.1 Specifications & Samples	Support for 3GPP Rel 8-14: S1, X2, LPPa, LCS, SBcAP, M2AP, M3AP, XwAP, and RRC ASN.1 specifications and ample code for various 3GPP Releases showing how to encode/decode messages using the OSS ASN.1 runtime ASN.1 specifications
NAS-1Step	
	Visual application that allows you to create, view and edit NAS messages
NAS/C Encoder/Decoder Library	
	A library capable of converting (binary) NAS messages

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LTE Products – More than Low-Level ASN.1 Support

The **OSS LTE Products** go beyond support for low-level ASN.1 development. These products offer several components designed to ease your implementation of 3GPP LTE **S1, X2** and **LPPa** protocols for eNodeBs, MMEs, and E-SMLCs as well as **NAS** protocols for UEs and eNodeBs.

LTE NAS Support

NAS-1Step is a useful visual tool for anyone working with the NAS protocol, from system designers to application developers to testers. It can be used for a range of activities including displaying a NAS message in a collapsible treeview, editing a NAS message, creating a set of NAS messages for testing purposes, and so on, and allows one to work simultaneously with messages belonging to multiple versions of the NAS protocol (multiple 3GPP releases).

The NAS/C Encoder/Decoder Library facilitates the creation of applications that implement the NAS protocol by taking care of all the unique NAS message serialization aspects such as required and optional information elements, bitlevel format of each type of information element, bit order, half-octet order, and so on. A developer using this encoder/decoder will handle a set of C structures generated by OSS' ASN.1/C compiler and will make simple calls to encode and decode functions as well as auxiliary API functions as needed.

Current users of OSS' ASN.1/C Tools will feel at home with the OSS NAS encoder/decoder API because both the API functions and the C structures are very similar to those used with protocols specified in ASN.1.

LTE S1/X2 & LPPa Support
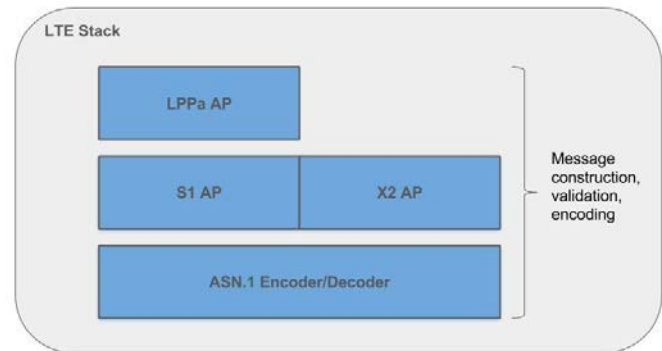
The OSS® **ASN.1 LTE solutions** go beyond support for low-level ASN.1 development. They build upon the robust, and reliable OSS ASN.1 Tools for C, offering several APIs that ease the implementation of 3GPP LTE S1, X2, and LPPa protocols. Depending upon your requirements, you can choose to add-on the S1/X2 ASN.1 API, the LPPa ASN.1 API, or both.

By using our proven OSS ASN.1 encoders/decoders, and continuing OSS' long tradition of developing software highly optimized for embedded systems, the S1/X2 and LPPA APIs make it possible to deploy LTE stacks on different types of platforms, from resource constrained eNodeBs to high performance MMEs and E-SMLCs.

LTE PRODUCTS
SUPPORT FOR 3GPP REL 8-14*

Note: ASN.1 Studio, and the ASN.1/C, ASN.1/C++, ASN/1/Java and ASN.1/C# Tools support any valid ASN.1 schema, including those from 3GPP Rel 8-14 and beyond.

OSS' LTE Products can be easily ported to any platform because OSS has already ported the underlying ASN.1/C encoder/decoder library to more than 500 platforms.

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