

NATO UNCLASSIFIED  
**NORTH ATLANTIC TREATY ORGANIZATION**  
**ORGANISATION DU TRAITE DE L'ATLANTIQUE NORD**

*MILITARY AGENCY FOR STANDARDIZATION (MAS)*  
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*1110 BRUSSELS*

MAS/07-EL/4259  
22 January 1993

To : See MAS Distribution List No. 2

Subject : STANAG 4259 EL (EDITION 1) - NATO REFERENCE MODEL  
FOR OPEN SYSTEMS INTERCONNECTION - ENCODING RULES  
FOR ASN.1

Reference : AC/302-D/578 dated 31 January 1991

Enclosure : STANAG 4259 (Edition 1)

1. The enclosed NATO Standardization Agreement which has been ratified by nations as reflected in page iii is promulgated herewith.

2. The reference listed above is to be destroyed in accordance with local document destruction procedures.

3. AAP-4 should be amended to reflect the latest status of the STANAG.

ACTION BY NATIONAL STAFFS

4. National staffs are requested to examine page iii of the STANAG and if they have not already done so, to advise the Defence Support Division, IS, through their national delegation as appropriate of their intention regarding its ratification and implementation.



E. STAI  
Major-General, NOAF  
Chairman, MAS

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RECORD OF AMENDMENTS

No.	Reference/date of amendment	Date entered	Signature

EXPLANATORY NOTES

AGREEMENT

1. This NATO Standardization Agreement (STANAG) is promulgated by the Chairman MAS under the authority vested in him by the NATO Military Committee.
2. No departure may be made from the agreement without consultation with the tasking authority. Nations may propose changes at any time to the tasking authority where they will be processed in the same manner as the original agreement.
3. Ratifying nations have agreed that national orders, manuals and instructions implementing this STANAG will include a reference to the STANAG number for purposes of identification.

DEFINITIONS

4. Ratification is "The declaration by which a nation formally accepts the content of this Standardization Agreement".
5. Implementation is "The fulfilment by a nation of its obligations under this Standardization Agreement".
6. Reservation is "The stated qualification by a nation which describes that part of this Standardization Agreement which it cannot implement or can implement only with limitations".

RATIFICATION, IMPLEMENTATION AND RESERVATIONS

7. Page iii gives the details of ratification and implementation of this agreement. If no details are shown it signifies that the nation has not yet notified the tasking authority of its intentions. Page iv (and subsequent) gives details of reservations and proprietary rights that have been stated.

Agreed English/French Texts

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NAVY/ARMY/AIR

NATO STANDARDIZATION AGREEMENT  
(STANAG)

NATO REFERENCE MODEL FOR OPEN SYSTEMS INTERCONNECTION -  
ENCODING RULES FOR ASN.1

Annexes: A. Structure of Annexes

B. Military Requirements/Specification of a Basic Set of  
Encoding Rules for ASN.1

- Related Documents: - STANAG 4250 - NATO Reference Model for Open Systems  
Interconnection -  
Part I: General Description
- STANAG 4258 - NATO Reference Model for Open Systems  
Interconnexion - Specification of  
Abstract Syntax Notation 1 (ASN.1)
  - ISO/IS 8825 - Information Processing Systems - Open  
Systems Interconnection  
Specification of Basic Encoding Rules for  
Abstract Syntax Notation One (ASN.1)
  - STANAG 4256 - NATO Reference Model for Open Systems  
Interconnection - Layer 6  
(Presentation Layer) Service Definition
  - STANAG 4266 - NATO Reference Model for Open Systems  
Interconnection - Layer 6  
(Presentation Layer)  
Protocol Specification
  - AC/259-D/1274(Revised) - NATO Interoperability Management  
Plan (NIMP) Second Edition, 1988

AIM

1. The aim of this agreement is to specify a Basic Set of Encoding Rules for ASN.1.

AGREEMENT

2. Participating nations agree that the International Organization for Standardization (ISO) specification of the basic encoding rules (ISO 8825) specifies a set of Basic Encoding Rules for ASN.1 that can be used by the Presentation Layer of the NATO reference model.

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GENERAL

3. This STANAG is associated with the STANAGs that cover the services and protocols required for Open Systems Interconnection (OSI) of NATO data processing and distribution systems. This STANAG is particularly associated with the ASN.1 STANAG 4258 and with the Presentation Layer STANAGs 4256 and 4266.

4. In the lower layers of the NATO Reference Model for Open Systems Interconnection each user data parameter of a service primitive is specified as the binary value of a sequence of octets (bytes).

5. In the Presentation Layer, the nature of data parameters changes. Application layer standards require the presentation service user data to carry the value of quite complex types, including strings of characters as well as numerical data. In order to specify the value which is carried, they require a defined notation which does not determine the representation of the value. This is called an abstract syntax notation. It is supplemented by the specification of one or more encoding rules which determine the value of the Session Layer octets carrying such Application Layer values. This is called a Transfer Syntax.

6. In order to correctly interpret the representation of a value (whether by marks on paper or bits on a communication line), it is necessary to know (usually from the context), the type of the value being represented. The identification of a type is an important part of the subject standard.

7. A very general technique for defining a complicated type is to define a small number of simple types by defining all possible values of the simple types, then combining these simple types in various ways.

8. STANAG 4258 defines a notation which both enables complicated data types to be defined and also enables values of these types to be specified. This is done without determining the way an instance of this type is to be represented (by a sequence of octets) during transfer. A notation which provides this facility is called a notation for abstract syntax definition.

9. This STANAG defines encoding rules that may be applied to data values expressed using ASN.1 to generate a transfer syntax.

10. This STANAG is associated with STANAG 4258 which is based on ISO 8824. However, additional sets of encoding rules may be developed for particular application areas, and use of STANAG 4258 does not mandate the use of STANAG 4259.

STRUCTURE AND CONTENTS

11. This STANAG has been developed in accordance with the agreed policy for development of a Single Architecture for NATO Technical Interoperability Standards (SANTIS) described in STANAG 4250, paragraphs 4, 5 and 6.

12. This STANAG contains Annex A, which lists the remaining annexes and describes their structure. There is one annex corresponding to each ISO standard.

CAVEAT

13. This STANAG examines the civil standards on which it is based in terms of relevant military requirements. These requirements are addressed in one of the following ways:

- (a) through enhancements to the civil standards; or
- (b) through the adoption and interpretation (as required) of the civil standards.

14. In this STANAG no deficiencies in relation to military requirements have been identified.

IMPLEMENTATION OF THE AGREEMENT

15. This STANAG specifies encoding rules for the abstract syntax notation specified in STANAG 4258. These encoding rules are not implemented in isolation but, rather, in conjunction with Application Layer protocols which use ASN.1 to specify the abstract syntax of the data carried by the protocol.

16. This STANAG is implemented when a nation has instructed that all future military communication systems requiring interoperability with NATO shall be procured in accordance with the specifications detailed in this agreement. Each annex corresponding to a selected standard, or a set of standards, includes an appropriate mandatory conformance clause.

N A T O   U N C L A S S I F I E D

ANNEX A to  
STANAG 4259  
(Edition 1)

STRUCTURE OF ANNEXES

1. This STANAG now contains two annexes, (Annexes A and B).
2. Annex B contains information regarding military requirements and their impact on the Basic Encoding rules for ASN.1.

N A T O   U N C L A S S I F I E D

ANNEX B to  
STANAG 4259  
(Edition 1)

MILITARY REQUIREMENTS/SPECIFICATION OF A BASIC SET OF ENCODING RULES FOR ASN.1

INTRODUCTION

1. The standardization agreement presented in the main part of this STANAG concerns the specification of Basic Encoding Rules for ASN.1 originating from ISO. This annex takes into account the military requirements discussed in the NATO Interoperability Management Plan (NIMP) for the purpose of establishing necessary enhancements to the Specification of ASN.1.

OBSERVED ISO DEFICIENCIES

2. No deficiencies have been found in the Specification of ASN.1 in relation to the eight military requirements identified in the NIMP.

NOTE

3. Additional sets of encoding rules for ASN.1 may be required for specific applications giving either compressed (minimum volume) or encrypted encodings. No specific requirements in this area have yet been identified. Following work in these areas by ISO additional ASN.1 encoding rule STANAGs may be developed.

CONFORMANCE

4. This STANAG specifies encoding rules for an abstract syntax notation. It does not specify individual implementations and therefore does not include a conformance requirement.