

TECHNICAL REPORT

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Information technology — Open Systems Interconnection — LOTOS description of the CCR service

*Technologies de l'information — Interconnexion de systèmes ouverts
(OSI) — Description LOTOS du service CCR*



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Contents

1	Scope	1
2	Normative references	1
3	Definitions	1
4	Symbols and abbreviations	2
5	Conventions	2
6	Introduction to the formal description	2
6.1	Model	2
6.2	Structure	2
6.3	Service overview	5
7	Global constraints of the CCR service	6
8	Service primitives	7
8.1	Basic construction	7
8.2	CSP classification	9
8.3	CSP parameter selectors	11
8.4	CSP parameters	12
8.4.1	Atomic Action Identifier	12
8.4.2	Branch Identifier	12
8.4.3	User Data	12
8.4.4	Recovery State	12
8.5	Others	13

9 Constraints of the superior side 13

9.1 Normal sequence of the superior 13

9.2 Recovery sequence of the superior 15

10 Constraints of the subordinate side 16

10.1 Normal sequence of the subordinate 17

10.2 Recovery sequence of the subordinate 19

11 Constraints of the relation between superior and subordinate 20

11.1 Service Primitive Queue 20

11.2 CCEPRelation 22

Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

The main task of technical committees is to prepare International Standards. In exceptional circumstances a technical committee may propose the publication of a Technical Report of one of the following types:

- type 1, when the required support cannot be obtained for the publication of an International Standard, despite repeated efforts;
- type 2, when the subject is still under technical development or where for any other reason there is the future but not immediate possibility of an agreement on an International Standard;
- type 3, when a technical committee has collected data of a different kind from that which is normally published as an International Standard ("state of the art", for example).

Technical Reports of types 1 and 2 are subject to review within three years of publication, to decide whether they can be transformed into International Standards. Technical Reports of type 3 do not necessarily have to be reviewed until the data they provide are considered to be no longer valid or useful.

ISO/IEC TR 11589, which is a Technical Report of type 2, was prepared by Joint Technical Committee ISO/IEC JTC 1, *Information technology*, Subcommittee SC 21, *Open systems interconnection, data management and open distributed processing*.

Introduction

This Technical Report gives a LOTOS specification of CCR Service Definition defined in ISO/IEC 9804.

LOTOS is a formal description technique(FDT) to define behavior of systems with a formal syntax and semantics.

Aim of this Technical Report is to give an unambiguous, precise, and self-contained description of ISO/IEC 9804.

However, in case of inconsistency between ISO/IEC 9804 and this Technical Report, ISO/IEC 9804 takes precedence over this Technical Report.

Information technology — Open Systems Interconnection — LOTOS description of the CCR service

1 Scope

This Technical Report focuses on one atomic action branch and covers the relevant service primitives with their types and parameters, and the behaviour as to how these service primitives can be issued and received by the CCR service provider.

Service primitives and its parameters are defined in clause 8. The sequential rules on superior side is defined in clause 9, and on subordinate side is defined in clause 10. The relation of the events that occur on the superior and subordinate sides is described in clause 11.

This Technical Report does not cover the following items in ISO/IEC 9804.

- Clause 6: concept. Because formal language can not describe this kind of semantics.
- CCR service-user rules(Annex A), Relationship of CCR to the Application Layer Structure(Annex B).
- Description to manage more than one atomic action branch.

2 Normative references

The following standards contain provisions which, through reference in this text, constitute provisions of this Technical Report. At the time of publication, the editions indicated were valid. All standards are subject to revision, and parties to agreements based on this Technical Report are encouraged to investigate the possibility of applying the most recent editions of the standards listed below. Members of IEC and ISO maintain registers of currently valid International Standards.

ISO/IEC 9804:1994, *Information technology – Open Systems Interconnection – Service definition for the Commitment, Concurrency and Recovery service element.*

ISO/IEC 9805-1:1994, *Information technology – Open Systems Interconnection – Protocol for the Commitment, Concurrency and Recovery service element: Protocol Specification.*

ISO 8807:1989, *Information processing systems – Open Systems Interconnection – LOTOS – A formal description technique based on the temporal ordering of observational behaviour.*

3 Definitions

For the purposes of this Technical Report the definitions given in ISO/IEC 9804 apply.

There is not a term “CCR connection end point” in ISO/IEC 9804. This term is used in this Technical Report to represent the point at which the CCR user recieved the service from CCR provider.

4 Symbols and abbreviations

The abbreviations given in ISO/IEC 9804 apply.

The abbreviation “LOTOS” is defined in ISO 8807.

The following additional abbreviations are employed in this Technical Report.

CCEP CCR Connection End Point
CSP CCR Service Primitive

5 Conventions

An action for a combination of an event and a state not defined in the state table is left to implementer as “a local matter” by ISO/IEC 9804. Such undefined events are not specified in the LOTOS specification at all. This is not an exact representation of natural language specification, because deadlock will occur when the CCR user insists to taking an undefined event. Events not defined in this LOTOS specification are expected to be treated as a local matter.

Clauses 7 through 11 of this Technical Report constitute LOTOS text. All explanatory descriptions are caught between “(*) and “*)” symbols and are treated as comments of the LOTOS text.

ISO/IEC 10731 (Service Conventions) is adopted, but the service primitive names and parameter names may be simplified or modified.

6 Introduction to the formal description

6.1 Model

CCR service is modeled in figure 1.

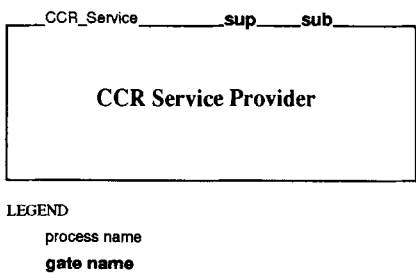


Figure 1 - CCR service model

6.2 Structure

The relationship among the processes are shown in figure 2, and the relationship among the types are shown in figure 3. In these figures, “*” means that “the definition has already listed above”.

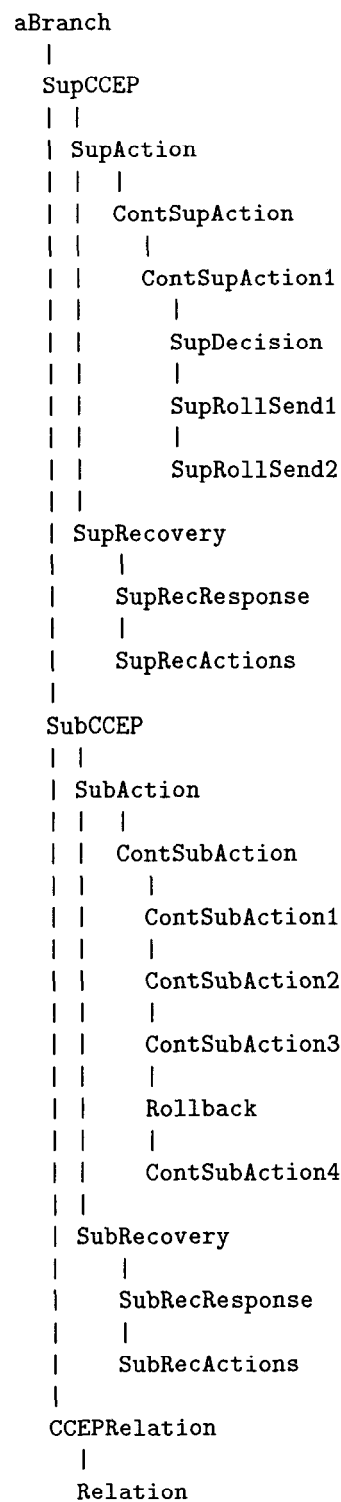


Figure 2 - Relationship among the processes

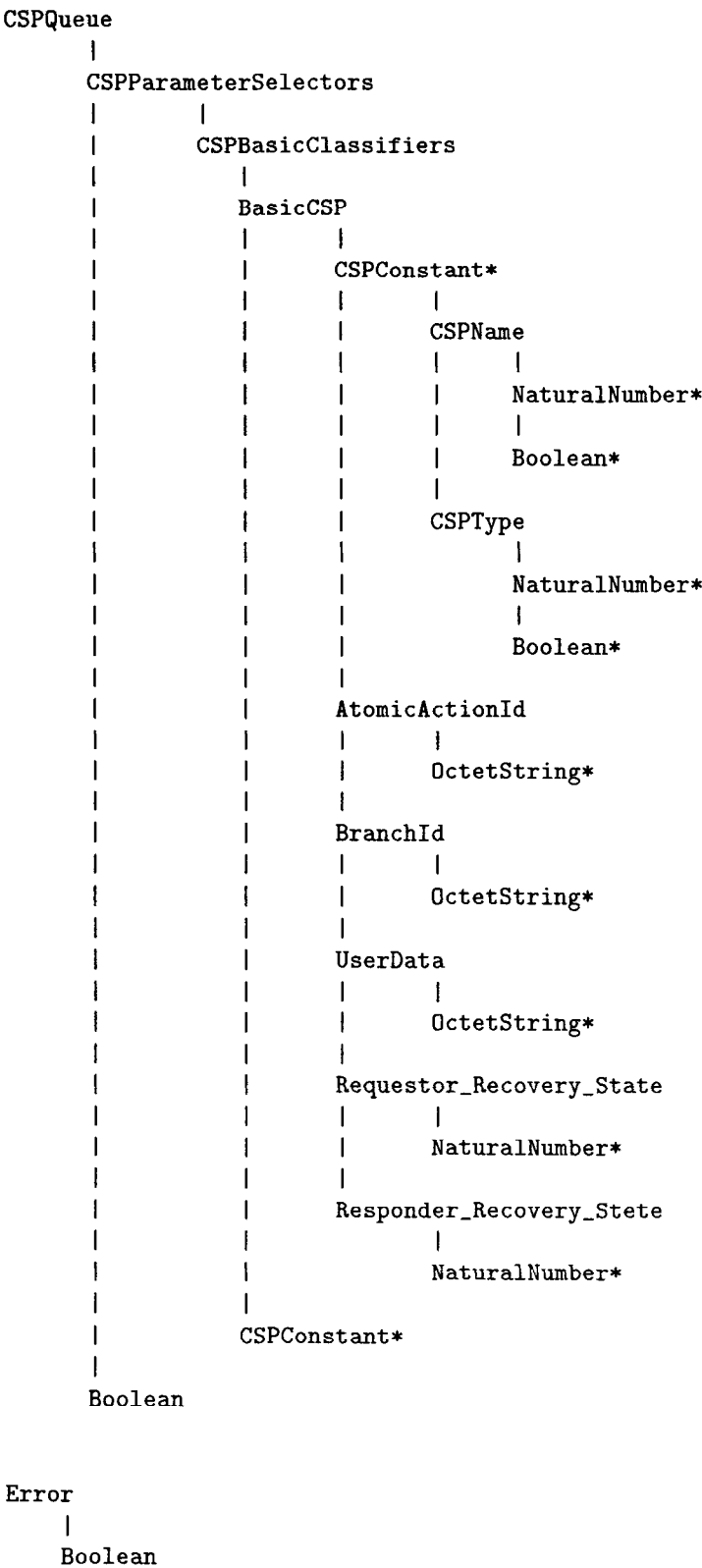


Figure 3 - Relationship among the types